FINAL
FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER

ANNUAL REPORT FOR 2012
REVISION 1.0

RAVENNA ARMY AMMUNITION PLANT,
RAVENNA, OHIO

October 31, 2013

GSA Contract Number GS-10F-0293K
Delivery Order W912QR-11-F-0266

Prepared for:



U.S. Army Corps of Engineers
600 Martin Luther King Jr. Place
Louisville, Kentucky 40202

Prepared by:



Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
31-10-2013	Final	October 2011 through October 2013

4. TITLE AND SUBTITLE

Facility-Wide Groundwater Monitoring Program
RVAAP-66 Facility-Wide Groundwater
Annual Report for 2012
Revision 1.0
Ravenna Army Ammunition Plant
Ravenna, Ohio

5a. CONTRACT NUMBER
GS-10F-0293K

5b. GRANT NUMBER
NA

5c. PROGRAM ELEMENT NUMBER
NA

6. AUTHOR(S)
Miller, John, M. - Environmental Quality Management, Inc.

5d. PROJECT NUMBER
NA

5e. TASK NUMBER
W912QR-11-F-0266

5f. WORK UNIT NUMBER
NA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Environmental Quality Management, Inc
1800 Carillon Boulevard
Cincinnati, Ohio 45240

8. PERFORMING ORGANIZATION REPORT NUMBER
NA

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

US Army Corps of Engineers
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-2232

10. SPONSOR/MONITOR'S ACRONYM(S)
USACE

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
NA

12. DISTRIBUTION/AVAILABILITY STATEMENT

No Limitations

13. SUPPLEMENTARY NOTES

None

14. ABSTRACT

This document presents a summary of the facility-wide quarterly groundwater monitoring conducted during the October 2011 through July 2012 time frame (4 quarters of groundwater monitoring). Included in the report are:

- Summary of the groundwater elevations and water level measurements taken for each of the wells sampled.
- Discussion of newly installed wells.
- Results of well inspections conducted in July 2012.
- Summary of well repair activities in 2012.
- Analytical summary tables.
- Discussion of analytes detected above the identified clean levels.

15. SUBJECT TERMS

Facility-wide, groundwater wells, monitoring, inspection, RVAAP, Annual 2012, RI/FS.

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			John M. Miller
None	None	None	SAR	587	19b. TELEPHONE NUMBER *(Include area code)* 513-825-7500

Reset

Standard Form 298 (Rev. 8/98)
Prescribed by ANSI Std. Z39.18

Ohio EPA
40 years and moving forward

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

October 10, 2013

Mr. Mark Patterson
Installation Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

CERTIFIED MAIL
7012 3460 0002 1239 3733

And

Mr. Brett Merkel
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22203

CERTIFIED MAIL
7012 3460 0002 1239 3771

RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FWGWMP, RESPONSE TO OHIO EPA COMMENT LETTER, DATED JUNE 24, 2013 AND THE FINAL ANNUAL REPORT FOR 2012 DATED OCTOBER 2, 2013, (OHIO EPA ID 1# 267-000859-036)

Dear Mr. Patterson and Mr. Merkel:

The Ohio Environmental Protection Agency (Ohio EPA), received the (1) "Ravenna Army Ammunition Plant, Portage/Trumbull Counties, FWGWMP, Response to Ohio EPA Comment letter, dated June 24, 2012," regarding the FWGWMP Final Annual report for 2012, and the (2) "Final Annual Report for 2012" report. The response to Ohio EPA's comment letter is dated October 1, 2013 and the report is dated October 2, 2013. Both documents were received at Ohio EPA's Northeast District Office (NEDO) on October 2, 2013.

Ohio EPA reviewed the response to comments letter and the Final Annual Report for 2012. The screening process continues to be an issue and cannot be approved by Ohio EPA personnel. The screening process is only proposed at this time and as yet has not been implemented. This is the only issue that is blocking approval of the Final Annual Report for 2012 and continues to be unresolved at this time. If the Army revises the document to remove the screening process, which is found in Section 4.1, pages 44-46 (steps 1-4), or provides replacement pages, Ohio EPA will be able to approve this

E-MAILED 10-11-2013 GH

Scanned
By: GH
Date: 10-11-2013

RECEIVED 10-11-2013 GH

report. If this approach is amendable to the Army, Ohio EPA will provide comments on the proposed screening methodology under separate cover.

Ohio EPA is aware that a response to Ohio EPA comments regarding the Draft RI/FS work Plan has recently been submitted to the Agency. Although this has not yet been reviewed, Ohio EPA would request that this same approach, deleting the screening process, occur to facilitate approval at the current time. In addition, if the screening process is not resolved prior to submittal of the FWGWMP Annual Report for 2013, please delete all references and sections regarding the screening process. This would also be applicable to other future documents.

Pursuant to the CERCLA process, the property owner usually can provide the expected land use to assist in ensuring the investigation addresses all receptors for both current and future land uses. However, it is the understanding of Ohio EPA that the end use for ground water has not yet been finalized. Therefore, please be advised that future modifications may be required by Ohio EPA to address incompatible land uses with the findings of this. Please call me at (330) 963-1207, if you have any questions on the above.

Sincerely,

Vicki Deppisch

Vicki Deppisch
Division of Environmental Response and Revitalization

VD/nvr

cc: Cullen Grasty, USACE
Katie Tait, OHARNG
Kevin Sedlack, ARNG

ec: Eileen Mohr, Ohio EPA, NEDO, DERR
Al Muller, Ohio EPA, NEDO, DDAGW
Justin Burke, Ohio EPA, CO, DERR
Kevin Palombo, Ohio EPA, NEDO, DERR
Brian Tucker, Ohio EPA, CO, DERR
Nancy Zikmanis, Ohio EPA, NEDO, DERR

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

OHIO EPA
NORTHEAST DISTRICT OFFICE
2110 EAST AURORA ROAD
TWINSBURG OH 44087

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

MARK PATTERSON, RVAAP
BUILDING 1037
8451 STATE ROUTE 5
RAVENNA OH 44266

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* Gail Harris
C. Date of Delivery 10-11-2013

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number 7012 3460 0002 1239 3733 NRAINES for VD10/10/13
(Transfer from service label)

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

COPY

CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Environmental Quality Management, Inc. (EQM) has completed the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Annual Report for 2012.* Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in this project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions, methods, procedures, and materials used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Corps of Engineers policy.

Colleen Lear, LG, CPG
Senior Project Geologist

9-30-13
Date

John M. Miller, CHMM
Senior Project Manager

9/30/13
Date

FINAL
FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER

ANNUAL REPORT FOR 2012
REVISION 1.0

RAVENNA ARMY AMMUNITION PLANT,
RAVENNA, OHIO

October 31, 2013

GSA Contract Number GS-10F-0293K
Delivery Order W912QR-11-F-0266

Prepared for:

U.S. Army Corps of Engineers
600 Martin Luther King Jr. Place
Louisville, Kentucky 40202

Prepared by:

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240

Document Distribution for the
Final
FWGWMP Annual 2012 Report
Ravenna Army Ammunition Plant

Name/Organization	Number of Printed Copies	Number of Electronic Copies
ARNG Cleanup Program Manager, Brett Merkel	0	1
OHARNG – CRJTMC-ENV, Env. Scientist, Katie Tait	1	1
Ohio EPA - NEDO, Project Coordinator, Kevin Palombo	3	3
RVAAP Facility Manager, Mark Patterson	2	2
USACE Technical Manager, Mark Nichter	2	3
EQM Project Manager, John Miller	1	1

ARNG – Army National Guard
OHARNG – CRJMTC-ENV – Ohio Army National Guard Camp Ravenna Joint Military Training Center – Environmental
Ohio EPA - NEDO - Ohio Environmental Protection Agency – Northeast District Office
RVAAP – Ravenna Army Ammunition Plant
USACE – U.S. Army Corps of Engineers
EQM – Environmental Quality Management, Inc.

TABLE OF CONTENTS

Section Page

Table of Contents i
List of General Acronyms iv
List of Area of Concern Acronyms vi
Executive Summary vii

SECTION 1. INTRODUCTION 1
1.1 Facility Description 1
1.2 Project Description 1
1.3 Annual Report 5
1.4 Summary of the Scope of Work for 2011-12 6
1.5 Annual Report Requirements and Report Presentation 7
1.6 Changes to the FWGWMP in 2012 8
1.7 Changes to the FWGWMP in 2013 10

SECTION 2. SUMMARY OF WELLS INSTALLED OR ABANDONED IN 2012 11

SECTION 3. SUMMARY OF 2011-12 FWGWMP EVENTS 16
3.1 Groundwater Elevation Monitoring 16
3.2 Monitoring Well Inspection/Repair Results 33
3.2.1 Inspection Results – July 2012 33
3.2.2 Well Repair and Maintenance – 2012 35
3.3 Load Line 12 Groundwater Elevations 39
3.4 Sedimentation/Turbidity and pH 39
3.4.1 Sedimentation/Turbidity 39
3.4.2 pH 41
3.5 Summary of Groundwater Sampling Results 42
3.5.1 October 2011 42
3.5.2 January 2012 42
3.5.3 April 2012 42
3.5.4 July 2012 43

SECTION 4. SUMMARY/ASSESSMENT OF ANNUAL FWGWMP ANALYTICAL RESULTS 44
4.1 Introduction 44
4.2 Background Wells 74
4.3 Building 1200 75
4.4 C Block 75
4.5 Central Burn Pits 76
4.6 Demolition Area #2 77
4.7 Erie Burning Grounds 78
4.8 Facility-Wide Wells 79

TABLE OF CONTENTS (continued)

Section Page

4.9 Fuze and Booster....80
4.10 Load Line 1....81
4.11 Load Line 2....82
4.12 Load Line 3....83
4.13 Load Line 4....84
4.14 Load Line 6....85
4.15 Load Line 10....86
4.16 Load Line 11....87
4.17 Load Line 12....88
4.18 NACA Test Area....89
4.19 Ramsdell Quarry Landfill....90
4.20 Sharon Conglomerate....92
4.21 Winklepeck Burning Grounds....93
4.22 MCL and RSL Exceedances....94
4.22.1 Inorganics....94
4.22.2 Volatile Organic Compounds....95
4.22.3 Semivolatile Organic Compounds....95
4.22.4 Pesticides and Herbicides....95
4.22.5 Explosives and Propellants....96
4.22.6 Hexavalent Chromium....96
4.23 Alpha, Beta, and Gamma Radionuclides....96
4.24 Assessment of Groundwater Remedial Action Effectiveness....97

SECTION 5. FWGWMP ANNUAL RECOMMENDATIONS/REVIEW....98
5.1 FWGWMP Annual Recommendations....98

SECTION 6. REFERENCES....103

List of Figures

1-1 RVAAP General Location Map....2
1-2 RVAAP Facility Map....3
2-1 New RI Well Locations in Eastern Portion RVAAP....13
2-2 New RI Well Locations in Central Portion RVAAP....14
2-3 New RI Well Locations in Western Portion RVAAP....15

TABLE OF CONTENTS (continued)

Section Page

List of Tables

2-1 Justification for New Wells 12
3-1 Depth to Water and Potentiometric Elevation (July 2012) 17
3-2 Well Construction Details, Including July 2012 Depth to Bottom Measurements 23
3-3 Groundwater Elevations 29
3-4 Comparison of Groundwater Elevation Basal Sharon Conglomerate Wells 32
3-5 Well Inspection Summary (July 2012) 36
4-1 Facility-Wide Chemicals of Potential Concern in Groundwater 45
4-2 Summary of Constituents Detected (October 2011) 48
4-3 Summary of Constituents Detected (Semi Annual Wells 2012) 53
4-4 Summary of Constituents Detected (Quarterly New Wells 2012) 60
4-5 RVAAP Facility-wide Background Criteria (SAIC, 2001b) 67
4-6 Exceedances of MCLs and RSLs 68

Appendices

Appendix A Correspondence Documenting the Change in Wells to be Sampled
Appendix B List of Wells Sampled by Quarter
Appendix C Water Level Measurement Field Sheets – July 2012
Appendix D October 2011 Water Level Measurements & Potentiometric Maps
Appendix E Well Inspection Sheets
Appendix F Load Line 12 Potentiometric Maps
Appendix G Rationale for the Use of Filtered Metals
Appendix H Reporting Limits that Currently Do Not Meet the RVAAP QAPP Project Action Requirements, MCLs and/or RSLs
Appendix I Time-Trend Graphs
Appendix J Maps of FWGWMP Study Areas
Appendix K Correspondence and Comment/Response Table

Plates

Plate 1 Monitoring Wells at RVAAP
Plate 2 Potentiometric Surface of Unconsolidated Aquifer (July 2012)
Plate 3 Potentiometric Surface of Homewood (July 2012)
Plate 4 Potentiometric Surface of Upper Sharon (July 2012)
Plate 5 Potentiometric Surface of Sharon Conglomerate (July 2012)

LIST OF GENERAL ACRONYMS

amsl	Above Mean Sea Level
AOC	Area of Concern
ARNG	Army National Guard
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CRJMTC	Camp Ravenna Joint Military Training Center
COC	Chemical of Potential Concern
COPC	Chemical of Potential Concern
CR	Compliance Restoration
DFFOs	Director's Final Findings and Orders
DNT	Dinitrotoluene
DOD	Department of Defense
EIS	Environmental Investigation Services
EPA	Environmental Protection Agency
EQM	Environmental Quality Management, Inc.
FS	Feasibility Study
ft	Feet
FWCUGs	Facility-wide Cleanup Goals
FWGWMP	Facility-wide Groundwater Monitoring Program
FWSAP	Facility-wide Sampling and Analysis Plan
GOCO	Government Owned, Contractor Operated
GSA	General Services Administration
GW	Groundwater
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
IRP	Installation Restoration Program
IDW	Investigation-Derived Waste
µg/L	Microgram per Liter
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	Milligrams per Kilogram
MMRP	Military Munitions Response Program
mw	Monitoring Well
NORM	Naturally occurring radioactive material
NTU	Nephelometric turbidity unit
OHARNG	Ohio Army National Guard
%	Percent
PBA	Performance Based Acquisition
PCBs	Polychlorinated biphenyls
pCi/L	Picocuries per liter
PQL	Practical Quantitation Limit
PRG	Preliminary Remediation Goal
PVC	Polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act

LIST OF GENERAL ACRONYMS (continued)

RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	Remedial Investigation
RLs	Reporting Limits
ROD	Record of Decision
RO1	Radius of Influence
RBC	Risk-based Cleanup
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SRC	Site Related Chemical
SSHP	Site Safety and Health Plan
s.u.	Standard Units
SVOC	Semi-volatile Organic Compound
TNT	Trinitrotoluene
U.S.	United States
USACE	United States Army Corps of Engineer
USEPA	United States Environmental Protection Agency
USP&FO	United States Property and Fiscal Officer
VOC	Volatile Organic Compound

LIST OF AREA OF CONCERN ACRONYMS

ASY	Atlas Scrap Yard
B12	Building 1200
BKG	Background
CBL	C Block
CBP	Central Burn Pits
CP	Cobbs Pond
DA2	Demolition Area #2
EBG	Erie Burning Grounds
FBQ	Fuze and Booster Quarry
FWG	Facility-Wide Groundwater
LNW	Landfill North of Winklepeck
LL	Load Line
MBS	Mustard Burial Site
NACA	National Advisory Committee for Aeronautics
NTA	NACA Test Area
RQL	Ramsdell Quarry Landfill
SCF	Sharon Conglomerate Formation
WBG	Winklepeck Burning Grounds

EXECUTIVE SUMMARY

Past Department of Defense (DOD) activities at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio, date to 1940 and include the manufacturing, loading, handling, and storage of military explosives and ammunition. Residual contamination from these early activities at RVAAP has been identified in groundwater beneath the facility. Currently, the approximately 21,683-acre facility is primarily used for military training.

The United States (U.S.) Army Corps of Engineers (USACE) is performing Comprehensive Environmental Response Compensation and Liability Act (CERCLA) closure at the former RVAAP under the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). The overall goal is to remediate the RVAAP installation so all of the property can be transferred to the Army National Guard (ARNG) and be used by the Ohio Army National Guard (OHARNG) as a military training site. Activities conducted under the IRP include monitoring of an extensive network (now 281 wells) of groundwater monitoring wells at the RVAAP facility. To date, 243 current Facility-Wide Groundwater Monitoring Program (FWGWMP) wells at the facility have been sampled and analyzed a minimum of four quarters. In 2012, an additional 38 wells were installed as part of the Remedial Investigation (RI) for achieving a Record of Decision (ROD) for facility-wide groundwater. The new wells are currently being sampled quarterly as part of the FWGWMP. Monitoring of the facility-wide groundwater is specified as a requirement of the Ohio EPA's "Director's Final Findings and Orders" (DFFOs). The DFFOs were issued to the U.S. Department of the Army on June 10, 2004.

In 2004, the U.S. Army and the Ohio Environmental Protection Agency (EPA) finalized the FWGWMP Plan, which details the requirements of the program for the 243 existing wells. The FWGWMP was initiated in 2005 with three consecutive quarters of FWGWMP well sampling. Quarterly sampling has continued through the current monitoring event (October 2012). In addition, five Resource Conservation and Recovery Act (RCRA) wells located at Ramsdell Quarry Landfill (RQLmw-007, RQLmw-008, and RQLmw-009) and Demolition Area 2 (DETmw-003 and DETmw-004) are sampled on a semiannual basis (i.e., twice per calendar year). By agreement with the U.S. Army and the Ohio EPA and in accordance with Amendment No. 1 to the FWGWMP Plan, this Annual Report for 2012 summarizes the October 2011, as well as the January, April, and July 2012 sampling events.

The following activities were conducted by Environmental Quality Management, Inc. (EQM) during the 2012 annual reporting period:

- Performed groundwater sampling of select wells on a quarterly basis.
  - In October 2011, 32 wells, including the five RCRA wells, were sampled.
  - In January 2012, 35 wells, including the five RCRA wells, were sampled.

  - In April 2012, 32 wells were sampled.
  - In July 2012, 73 wells, including the five RCRA wells, were sampled.
- Immediately prior to the July 2012 sampling event, water levels in the 281 RVAAP monitoring wells were gauged. Water levels were also measured in the 243 wells prior to the October 2011 sampling event (243 wells prior to the installation of the 38 new wells installed in 2012). This information was used to generate updated potentiometric maps.
- Performed laboratory analyses and data validation for the collected samples.
- Reduced quarterly data and preparation of individual sampling event reports.
- Prepared the requisite Investigation-Derived Waste (IDW) characterization and disposal report.
- Prepared the 2012 Annual Report, including the overall program review requirement.
- Performed maintenance on selected groundwater monitoring wells. Specific maintenance items included: replacing well caps and locks, clearing brush and trees from around wells, stabilizing concrete pads, reapplying well numbers on protective casings, and replacing sand packing around well casings.

During this reporting period, aluminum (15 wells), arsenic (36 wells), beryllium (one well), chromium (one well), cobalt (18 wells), iron (58 wells), lead (one well), manganese (73 wells), thallium (one well), and vanadium (one well) were reported at concentrations exceeding their respective Maximum Contaminant Levels (MCLs) and/or Regional Screening Levels (RSLs) during at least one sampling event from the 172 wells sampled. The following general observations were noted regarding the inorganic constituents: 1) the MCL for aluminum was exceeded in 15 wells, and the aluminum RSL was exceeded in one well during one sampling event; 2) all detected arsenic concentrations exceeded the RSL and 49% of the detected arsenic concentrations exceeded the MCL; 3) beryllium exceeded the MCL in one well during one sampling event; 4) chromium exceeded the MCL in one well during one sampling event; 5) cobalt exceeded the RSL in 18 wells; there is no MCL for cobalt; 6) iron exceeded the MCL in 58 wells, and it exceeded the RSL in nine wells on at least one occasion; 7) lead exceeded the MCL in one well; there is no RSL for lead; 8) manganese exceeded the MCL in 73 wells, and it exceeded the RSL in 38 wells on at least one occasion; 9) thallium exceeded the RSL in one well on one occasion; and 10) vanadium exceeded the RSL in one well on one occasion; there is no MCL for vanadium.

Benzene (one well), carbon tetrachloride (one well), and chloroform (one well) were reported at concentrations exceeding their respective RSLs during at least one sampling event. The following general observations were noted regarding the volatile organic compounds (VOCs): 1) benzene was identified at concentrations exceeding the RSL but not the MCL in one well on two occasions; 2) carbon tetrachloride exceeded the RSL but

not the MCL in one well on two occasions; and 3) chloroform exceeded the RSL in one well on one occasion; there is no MCL for this VOC.

During this reporting period, bis(2-ethylhexyl)phthalate (65 wells), naphthalene (one well), dibenzo(a,h)anthracene (one well), and indeno(1,2,3-cd)pyrene (one well) were reported at concentrations exceeding their respective MCLs and/or RSLs during at least one sampling event. The following general observations were noted regarding the semi-volatile organic compounds (SVOCs): 1) bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL in 65 wells, and it exceeded the MCL in three wells on at least one occasion; 2) naphthalene exceeded the RSL but not the MCL in one well on one occasion; 3) dibenzo(a,h)anthracene exceeded the RSL in one well on one occasion; there is no MCL for this SVOC; and 4) indeno(1,2,3-cd)pyrene exceeded the RSL in one well on one occasion; there is no MCL for this SVOC.

The presence of dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene in well RQLmw-007 is the first reported detection of these two SVOCs at concentrations above screening levels at Ramsdell Quarry Landfill. Similarly, the presence of naphthalene in the new RI well NTAmw-119 is the first reported detection of this SVOC above screening levels in the NACA Test Area. There are no MCL values for these SVOCs; however, the dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene concentrations did exceed the corresponding FWCUGs in groundwater for Resident Farmer – Adult and Child pursuant to *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, March 2010). Naphthalene did not exceed these criteria. Under the 2nd screening step for qualifying site chemicals at RVAAP presented in the Draft 2010 Addendum to the Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater (USACE, 2010), dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene qualify as new chemicals of potential concern (COPCs) in Ramsdell Quarry Landfill. Note that these compounds are already listed COPCs for facility-wide groundwater at RVAAP.

Beta-BHC (three wells) was reported at concentrations exceeding the RSL during at least one sampling event during the 2012 reporting period. There are no established MCLs for this pesticide/herbicide.

Also during the 2012 reporting period, 2,4-dinitrotoluene (one well), 2,4,6-trinitrotoluene (two wells), nitrobenzene (one well), nitrate as nitrite (one well), and RDX (four wells) were reported at concentrations exceeding their respective RSLs during at least one sampling event. In addition, nitrate as nitrite exceeded its MCL in one well during one sampling event. There are no MCLs for the other explosives and propellants. In July 2012, the compound nitrobenzene was identified in well RQLmw-008; this was the first occurrence of this compound in this well. However, nitrobenzene has been identified in other wells in the Ramsdell Quarry Landfill area, and it is considered a COPC for this area.

Hexavalent chromium was identified in three wells at concentrations exceeding its RSL value during the July 2012 sampling event. There is no established MCL for hexavalent chromium.

The Army has proposed, with concurrence from the Ohio EPA and the OHARNG, to move from an area-specific approach to a facility-wide wide approach for the groundwater (RVAAP-66 facility-wide groundwater). This will provide a more focused approach for achieving the goals of the FWGWMP.

In order to accomplish the goal for a facility-wide approach for groundwater, the following activities are anticipated to be completed in support of a signed ROD:

- The OHARNG would like to utilize groundwater in certain areas of the facility. Specific areas for groundwater use have not been specifically identified by the OHARNG. Ongoing activities in pursuit of the ROD for facility-wide groundwater will better determine contaminated areas (if any) and help identify where groundwater can or cannot be utilized at the facility.

- Prepare and submit the RI Work Plan. Note that the draft RI Work Plan has been submitted for review and comment. Certain elements of the RI Work Plan, such as installation of new monitoring wells, were completed in 2012.

- Prepare the RI Report, which will include groundwater modeling, refining the facility-wide groundwater conceptual site model, and conducting a human health baseline risk assessment for facility-wide groundwater exposure.

- Prepare and complete the Feasibility Study (FS).

- Preparation and completion of the Proposed Plan, including the public hearing and comment period.

- Prepare and complete the ROD.

SECTION 1

INTRODUCTION

1.1 Facility Description

Past Department of Defense (DOD) activities at the Ravenna Army Ammunition Plant (RVAAP) date to 1940 and include the manufacturing, loading, handling, and storage of military explosives and ammunition. Until 1999, the RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a 2-year period from 2002 and 2003 and the actual total acreage of the property was found to be 21,683.289 acres. As of February 2006, a total of 20,403 acres of the former 21,683 acre RVAAP have been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio for use by the OHARNG as a military training site. The current RVAAP consists of 1,280 acres in several distinct parcels scattered throughout the confines of the OHARNG Camp Ravenna Joint Military Training Center (CRJMTC). The RVAAP and CRJMTC are collocated on contiguous parcels of property and the CRJMTC perimeter fence completely encloses the remaining parcels of the RVAAP. The CRJMTC is in northeastern Ohio within Portage and Trumbull Counties, approximately 4.8 kilometers (3 miles) east-northeast of the City of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the City of Newton Falls (Figure 1-1). The RVAAP portions of the property are solely located within Portage County. The CRJMTC (inclusive of the RVAAP) is a parcel of property approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (see Figures 1-1 and 1-2). The CRJMTC is surrounded by several communities: Windham on the north; Garrettsville 9.6 kilometers (6 miles) to the northwest; Newton Falls 1.6 kilometers (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 kilometers (3 miles) to the south. When the RVAAP was operational CRJMTC did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated (GOCO) industrial facility. The RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP, and therefore references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current CRJMTC and RVAAP, unless otherwise specifically stated.

1.2 Project Description

In 2004, the United States (U.S.) Army and the Ohio Environmental Protection Agency (EPA) finalized the Facility-Wide Groundwater Monitoring Program (FWGWMP) Plan, which details the requirements of the program. The FWGWMP was initiated in 2005 with three consecutive quarters of FWGWMP well sampling. Quarterly sampling has continued through the current monitoring event (October 2012). The initial FWGWMP

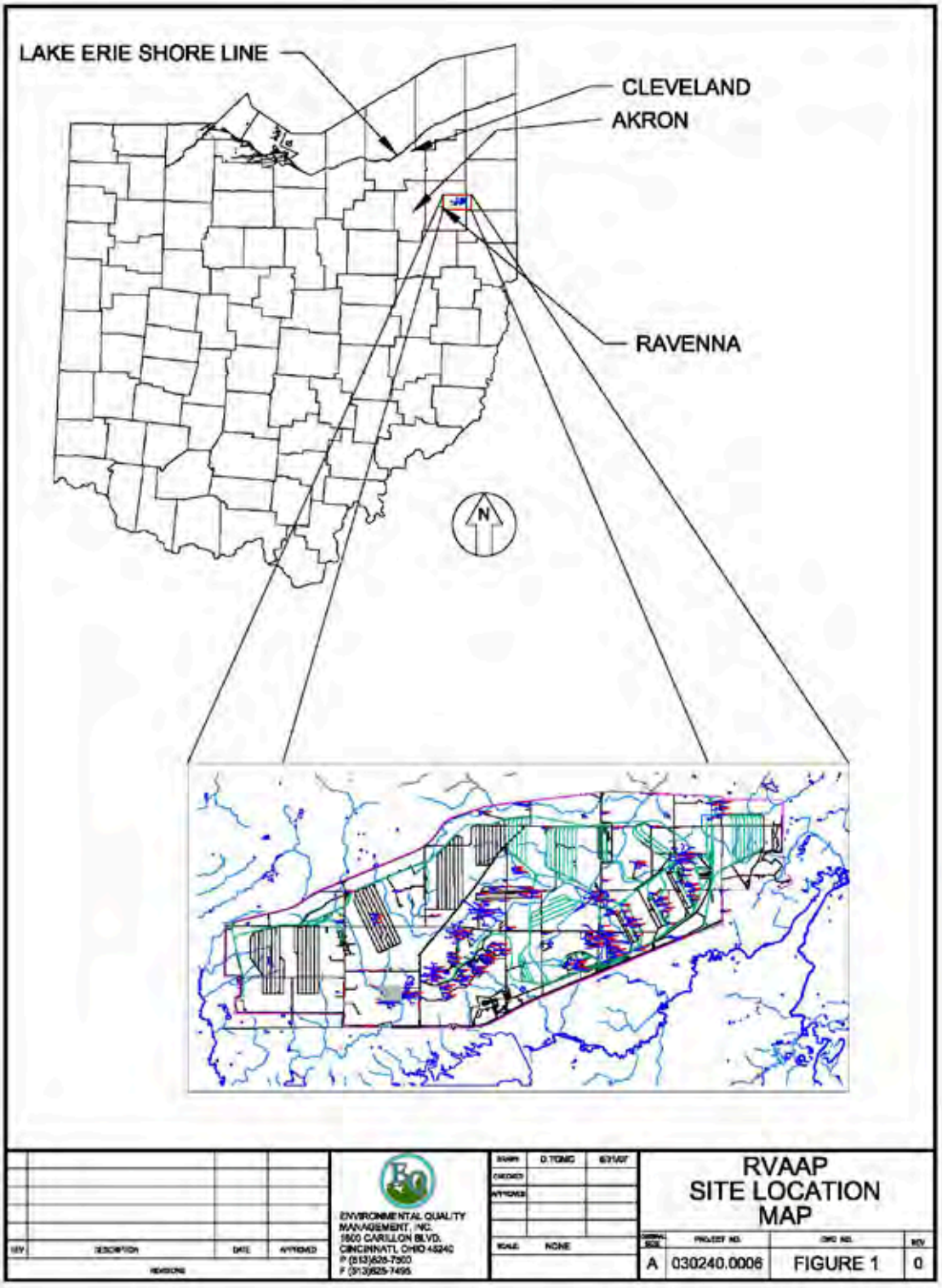


Figure 1-1. RVAAP General Location Map

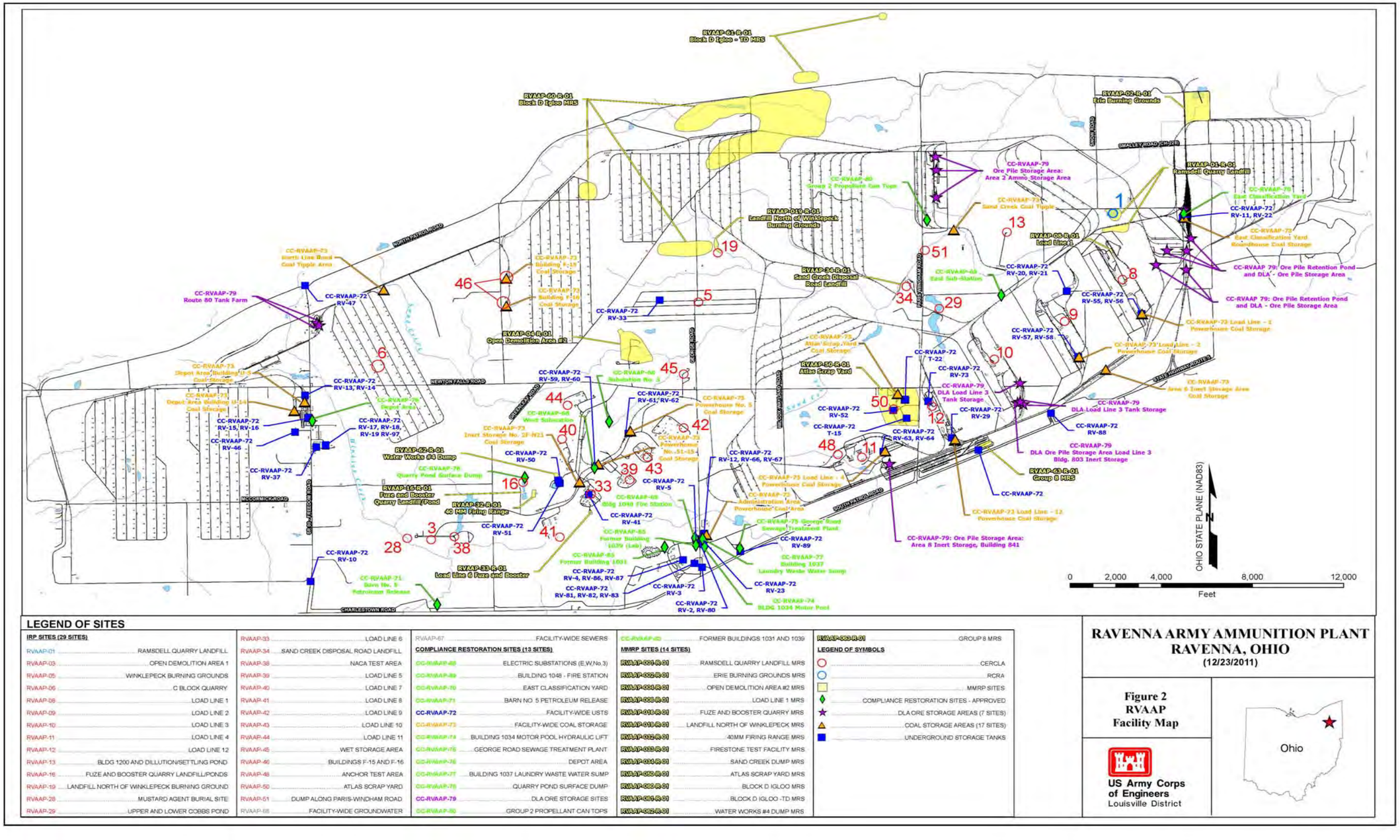


Figure 1-2. RVAAP Facility Map

wells identified for monitoring were sampled once every quarter, with the exception of the five Resource Conservation and Recovery Act (RCRA) wells, which include Ramsdell Quarry Landfill (RQL) wells RQLmw-007, RQLmw-008, and RQLmw-009 and Demolition Area 2 (DA2) wells DETmw-003 and DETmw-004. The RQL and DA2 wells are sampled twice a year.

Details of the program design and requirements are contained in the *RVAAP Facility-Wide Groundwater Monitoring Program Plan* (Portage Environmental, September 2004). This document contains the Facility-Wide Sampling and Analysis Plan (FWSAP), Site Safety and Health Plan, and Quality Assurance Project Plan addenda that pertain to the proposed work. Additional details pertaining to performance of field and laboratory activities are contained in the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, February 2011). As detailed in the FWGWMP Plan, the initial monitoring program consisted of the sampling of 36 wells specified in Table 4-1 of the FWGWMP Plan. Fourteen of these wells were "Background Wells," and the remaining wells were situated at various Areas of Concern (AOCs) at RVAAP. The first sampling event for this project was conducted in April 2005. The final assessment monitoring event for the initial well sampling and analysis was completed in October 2007. Section 1.5.1 of this report presents the current groundwater monitoring activities

In 2011, the USACE, under a General Services Administration (GSA) Performance Based Acquisition (PBA) contract, retained Environmental Quality Management, Inc. (EQM) (Contract No. GS-10F-0293K – Delivery Order W912QR-11-F-0266) to obtain a signed Record of Decision (ROD) for the Facility-Wide groundwater (RVAAP-66) at the former RVAAP. In support of completion of a Remedial Investigation/Feasibility Study (RI/FS) necessary to supplement the ROD, EQM submitted the *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum* (EQM, January 2012) to install 38 additional monitoring wells to complete hydrogeologic system modeling and conduct contaminant fate-and-transport modeling for the Facility-Wide groundwater approach. The new wells will be sampled quarterly until at least four quarters of data have been obtained from each location.

As a supplement to the FWGWMP Groundwater Addendum, EQM also submitted the *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Semiannual Monitoring Addendum* (EQM, January 2012), which proposed that the facility-wide groundwater monitoring schedule be modified from a quarterly to semiannual basis (January and July events only). Under this approach, thirty-five (35) wells (including the five RCRA wells) were selected for sampling during the semiannual events in 2012. Nineteen (19) wells were selected in association with or paired with several of the new RI wells to assess horizontal and/or vertical contaminant distribution in groundwater. Two (2) wells are located in the northern portion of the facility to provide upgradient data for the various site-wide models. In addition, four (4) potential exit pathway wells were selected that have no direct association with the new wells. One well, LL12mw-182, has historically been found to contain bis(2-ethylhexyl)phthalate at concentrations exceeding screening levels. A new stainless steel well was installed near

this location and both wells are being sampled to determine if bis(2-ethylhexyl)phthalate is an artifact of the polyvinyl chloride (PVC) well materials used to construct the older well. At this point, bis(2-ethylhexyl)phthalate is being evaluated as a chemical detected in the groundwater at RVAAP. As such it will be screened using the approved screening process to determine if it is a site related chemical (SRC) and eventually a chemical of potential concern (COPC). Five wells (LL10mw-003, LL12mw-185, LL12mw-187, LL12mw-242, and LL12mw-245) were selected for potential source evaluations, and one (1) well (LL12mw-246) located potentially upgradient of two of the newly installed wells was selected to provide groundwater quality data in support of the fate-and-transport model. Besides fulfilling the selection criteria, the groundwater quality information obtained from this well network will be incorporated into the hydrogeologic system and contaminant fate-and-transport models.

1.3 Annual Report

By agreement with the U.S. Army and the Ohio EPA and in accordance with Amendment No. 1 to the FWGWMP Plan, the Annual Report for 2012 summarizes the October 2011, as well as the January, April, and July 2012 sampling events.

Amendment No. 1 changed the annual reporting period from January 1 – December 31 to October 1 – September 30. The change to the program was made so that the Annual Report for 2006 would include monitoring activities performed in the 4th quarter of 2005, and the 1st, 2nd, and 3rd quarters of 2006. Subsequent annual monitoring periods would also follow this pattern, such as the 2007 annual report, which covers the fourth quarter of 2006 and the first, second, and third quarters of 2007. This change was made because it was discovered that requiring the 4th quarter data to be included in the current years' Annual Report did not allow sufficient time to collect and analyze samples, verify and validate data, assess results, and still make the December deadline (Milestone date) for including these results in the Annual Report.

The results of the sampling events covered under this Annual Report are presented in the following documents:

- *Facility-Wide Groundwater Monitoring Program, Report on the October 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio* dated May 10, 2012.
- *Facility-Wide Groundwater Monitoring Program, Report on the January 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio* dated July 18, 2012.
- *Facility-Wide Groundwater Monitoring Program, Report on the April 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio* dated September 11, 2012.

- *Facility-Wide Groundwater Monitoring Program, Report on the July 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio* dated February 14, 2013.

The results for the October 2012 sampling event will be submitted in a separate document and will be summarized in the Annual Report for 2013.

1.4 Summary of the Scope of Work for 2011-12

As mentioned previously, the USACE, under a GSA PBA contract, retained EQM to obtain a signed ROD for the facility-wide groundwater (RVAAP-66) at the former RVAAP. One objective of this project is to continue monitoring under the RVAAP Facility-Wide Groundwater Monitoring Program. The following tasks were performed in accordance with specifications contained in the Semiannual Addendum, the FWGWMP Plan Addendum, the FWSAP, and the Scope of Work written by the USACE:

- Performed groundwater sampling of select wells on a semi-annual basis. The wells sampled are identified in Section 1.5.1 of this report. The wells were sampled by EQM. The RCRA wells at Ramsdell Quarry (RQLmw-007, RQLmw-008, and RQLmw-009) and at Demolition Area 2 (DET-3 and DET-4) were also sampled during this timeframe (October 2011, April, and July 2012). Note that per the FWGWMPP and the DFFOs, the RCRA wells are sampled twice per calendar year. In 2011, these wells were sampled in April and October 2011. The 2012 Annual Report includes the quarterly data from October 2011 through July 2012. This has resulted in the RCRA wells being sampled three times within the 2012 annual reporting period.
- Performed groundwater sampling of 38 new remedial investigation (RI) wells on a quarterly basis beginning in April 2012. Note that seven of these wells were not completed prior to the April 2012 event; the first sampling of these seven new wells occurred in July 2012.
- Gauged depth-to-water at the 281 RVAAP monitoring wells immediately prior to the July 2012 sampling event. Additionally, depth-to-water was also measured immediately prior to the October 2011 sampling event (243 wells). The water-level measurements were used to generate updated potentiometric maps. Note that as described in Section 3.1 the potentiometric maps from both of these events are presented in this report. The next scheduled water-level measurement event for all wells is April 2013, which will be reported in the 2013 Annual Report.
- Performed laboratory analyses and data validation for the collected samples.
- Reduced quarterly data and preparation of individual sampling event reports.
- Prepared the requisite Investigation-Derived Waste (IDW) characterization and disposal report.

- Prepared the 2012 Annual Report, including the overall program review requirement.
- Performed maintenance on selected groundwater monitoring wells.

1.5 Annual Report Requirements and Report Presentation

This report presents the FWGWMP 2012 Annual Report. The report is structured in the following way:

- Section 1 – Introduction
- Section 2 – Summary of Monitoring Wells Installed or Abandoned in 2012
- Section 3 – Summary of Annual FWGWMP Events
- Section 4 – Summary and Assessment of Annual FWGWMP Analytical Results
- Section 5 – FWGWMP Annual Recommendations/Review
- Section 6 – References

The appendices contain the following items:

- Appendix A Correspondence Documenting the Change in Wells to be Sampled
- Appendix B List of Wells Sampled by Quarter
- Appendix C Water Level Measurement Field Sheets – July 2012
- Appendix D October 2011 Water Level Measurements & Potentiometric Maps
- Appendix E Well Inspection Sheets
- Appendix F Load Line 12 Potentiometric Maps
- Appendix G Rationale for the Use of Filtered Metals
- Appendix H Reporting Limits that Currently Do Not Meet the RVAAP QAPP Project Action Requirements, MCLs and/or RSLs
- Appendix I Time-Trend Graphs
- Appendix J Maps of FWGWMP Study Areas
- Appendix K Correspondence and Comment/Response Table

The following lists the information required for the annual report as detailed in Section 5.2 of the FWGWMP Plan, as well as where this information is presented in this report:

- An evaluation of the current groundwater flow direction(s) based on water-level elevation data collected in October 2011 and July 2012 is discussed in Section 3.1.
- An evaluation of the trends of contamination detected in groundwater, as well as an assessment of the effectiveness of any groundwater remediation activities is presented in Section 4.0.
- The plots of concentration trends are presented in Appendix I and are discussed in Section 4.0.

- The facility map is presented in Section 1.0. The monitoring well network map and groundwater flow maps are presented in Plates 1, 2, 3, 4, and 5. Additional FWGWMP monitoring well locations are shown in Appendix J.
- The results of the monitoring well inspections are presented in Appendix E and summarized in Section 3.2.
- FWGWMP annual recommendations and review are presented in Section 5.0.

1.6 Changes to the FWGWMP in 2012

The following changes were made to the FWGWMP during sampling and analysis for the 2012 reporting period. On October 22, 2007 the USACE submitted to the Ohio EPA the *Draft Proposal to Update the Facility-Wide Ground Water Monitoring Program* (USACE, October 2007) at the Ravenna Army Ammunition Plant. This proposal presented recommendations for modifications to the FWGWMP, the Director's Final Findings and Orders (DFFOs), and the Conceptual Plan in Appendix F of the Findings and Orders as presented below.

Section 3.1.2.2 of the FWGWMP Plan establishes a protocol for adding and removing wells from the FWGWMP: *"Future wells installed as part of individual AOC investigations conducted under the ongoing Comprehensive Environmental Response Compensation and Liability Act (CERCLA) process at RVAAP will be evaluated for incorporation into the FWGWMP upon completion of at least four quarterly groundwater sampling events to be conducted as part of the Remedial Investigation (RI) phase at each AOC. The frequency of the initial sampling events may be other than quarterly if agreed upon by the Army and Ohio EPA."* Based on this protocol the USACE notified the Ohio EPA on December 12, 2007, that the wells to be sampled would be changed effective with the January 2008 monitoring event. The Ohio EPA provided concurrence with this change in an email dated January 8, 2008. The Ohio EPA was notified of an additional change on February 27, 2008, increasing the number of wells to be sampled for the April 2008 event. The Ohio EPA was notified on March 21, 2008, that the number of FWGWMP wells to be sampled in April 2008 (and the July 2008, October 2008, and January 2009 events) would be increased to 132 plus the five RCRA wells sampled semi-annually (in order to complete four quarters of sampling for each of the 132 wells).

Beginning with the April 2009 sampling event, the remaining wells on the list contained in the *Draft Proposal to Update the Facility-Wide Ground Water Monitoring Program* (USACE, October 2007) were sampled. This sampling was completed with the January 2010 monitoring event.

A revised list of wells to be sampled during 2010-2011 was submitted to the Ohio EPA in early 2010. The list of wells to be sampled and scheduling issues were discussed with the Ohio EPA in a telephone conference verified in a subsequent email on May 26, 2010. A copy of the email and the well sampling schedule for 2010-2011 is presented in Appendix A.

Additionally, the wells to be sampled and the analytes to be analyzed during the July 2011 monitoring event were discussed with the Ohio EPA in emails in July 2011. For the summer (July 2011) groundwater monitoring event it was agreed to monitor the wells and analytes presented in Table 4-2 of the *2010 Addendum to the Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater* (USACE, 2010). Note that while this document has not been finalized information contained in the report has been used after approval from the Ohio EPA. A copy of the email and the well sampling schedule for 2010-2011 is presented in Appendix A.

Current activities conducted under the IRP include monitoring of an extensive network (now 281 wells) of groundwater monitoring wells at the RVAAP facility. To date, 243 current FWGWMP wells at the facility have been sampled and analyzed a minimum of four quarters. Beginning in February 2012, an additional 38 groundwater monitoring wells were installed at RVAAP as part of the RI for Facility-Wide groundwater. The 38 new wells are currently undergoing quarterly monitoring. To supplement quarterly monitoring of the new wells, 35 existing wells (including the five RCRA wells) are being monitored on a semiannual basis (i.e., January and July) to evaluate potential exit pathways, horizontal and vertical contaminant distribution, and upgradient groundwater quality. Details of the current program design and requirements are contained in the *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Semiannual Monitoring Addendum* (Semiannual Addendum; EQM, January 2012). Additionally, this document supplements the *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum* (FWGWMP Plan Addendum; EQM, January 2012), which includes three parts that pertain to the proposed work: Part I – Environmental Investigation Services Addendum (EIS Addendum), Part II – Quality Assurance Project Plan Addendum (QAPP), and Part III – Site Safety and Health Plan (SSHP) Addendum. Additional details pertaining to performance of field and laboratory activities are contained in the *Final Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (FWSAP; SAIC, 2011).

The current wells to be sampled and the analytes to be analyzed from each well were approved in the FWGWMP Plan Addendum. The lists of FWGWMP wells monitored for each of the four quarters (October 2011, January 2012, April 2012, and July 2012) are presented in Appendix B.

Note that on April 9, 2012, the USACE submitted a letter to the Ohio EPA as a request to adopt the U.S. Environmental Protection Agency's (USEPA) Regional Screening Levels (RSLs) for use in the RVAAP Facility-Wide Groundwater Monitoring Program. The RSLs are intended as a replacement for the use of USEPA's former Preliminary Remediation Goals (PRGs) for evaluating RVAAP's groundwater quality. The Ohio EPA submitted a response letter on April 23, 2012, approving the request. This represents an official addendum to RVAAP's FWGWMP Plan. Note that the RSLs used in this report are the most recent available (April 2012).

RVAAP's FWGWMP will no longer use USEPA's former PRGs to evaluate groundwater at the facility. From January 2012, RVAAP's groundwater monitoring program shall use USEPA's RSLs.

No other changes to the FWGWMP were implemented during the 2011-12 reporting period.

1.7 Changes to the FWGWMP in 2013

The well monitoring schedule as presented in Appendix A will be followed going into the July 2012 monitoring event as described in Section 1.5. As presented in Section 5, the Army, in agreement with the Ohio EPA, has initiated moving from an area-specific approach to a facility-wide wide approach for the groundwater (RVAAP-66 facility-wide groundwater). In support of this approach, the Army initiated activities in the latter half of 2011 in support of an eventual ROD for the facility-wide groundwater. These activities included addendums to the FWGWMP Plan to install additional groundwater monitoring wells as well as proposing revisions to the overall groundwater monitoring schedule and analytes, installation of 38 new RI wells in 2012, quarterly sampling of the new RI wells, and semiannual sampling of existing site wells in January and July 2012. Additional details concerning these changes are presented in Section 5.

No changes are proposed to the well monitoring schedule for the 2012-2013 reporting period at this time. The need for changes to the wells to be monitored will be evaluated after the January 2013 sampling event.

SECTION 2

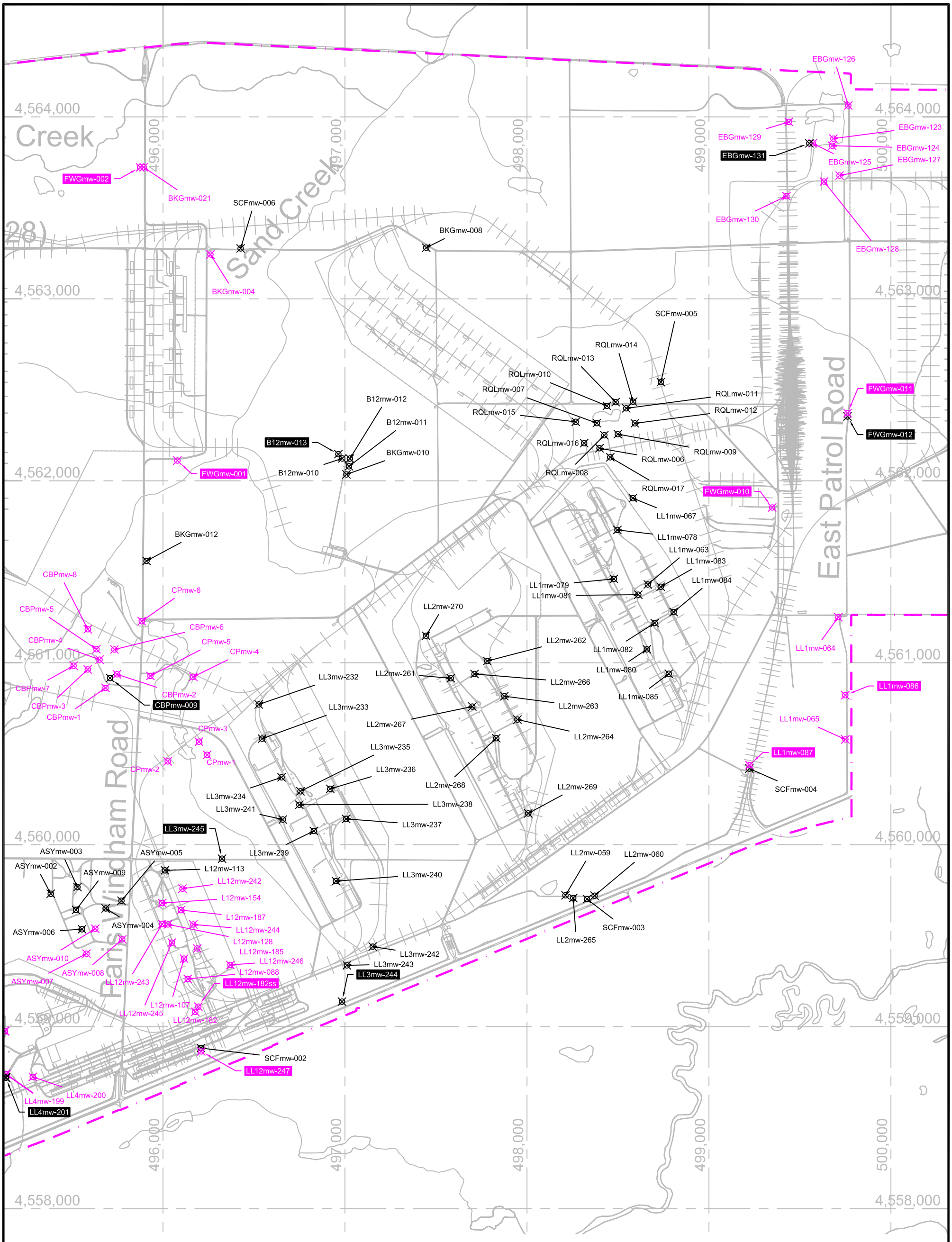
SUMMARY OF WELLS INSTALLED OR ABANDONED IN 2012

As part of the Facility-Wide groundwater RI, 38 groundwater monitoring wells were installed at RVAAP during two mobilizations between February and June 2012. The primary objective of the new wells was to provide additional information in support of hydrogeologic and fate-and-transport models. In addition, twelve (12) of these wells (LL1mw-086, EBGmw-131, LL1mw-087, LL12mw-247, LL3mw-244, FWGmw-002, FWGmw-004, FWGmw-007, FWGmw-011, FWGmw-012, FWGmw-015, and FWGmw-016) were installed to further evaluate potential exit pathways, especially along the southern and eastern borders. Thirteen (13) of the new wells (FWGmw-001, FWGmw-003, FWGmw-004, FWGmw-005, FWGmw-008, FWGmw-009, FWGmw-010, FWGmw-011, FWGmw-012, FWGmw-013, FWGmw-014, FWGmw-015, and FWGmw-016) were placed in the vicinity of current Compliance Restoration (CR) sites to secondarily assess potential groundwater impacts from these units. One stainless steel well (LL12mw-182ss) was installed to assess whether the occurrence of bis(2-ethylhexyl)phthalate is the result of leaching from PVC well materials. Lastly, placement of many of the new wells within the RVAAP was proximate to AOCs to evaluate vertical contaminant distribution and/or particle inflow/outflow through the central portion of the facility. The wells were installed and sampled in accordance with the *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum* (EQM, January 2012). Further information regarding the well installation activities and geologic findings are provided in the *Draft Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Monitoring Well Installation Report* (EQM, October 2012). Table 2-1 provides justification for the placement of the new wells. Figures 2-1 through 2-3 show the well locations in reference to current site features and existing well locations.

Table 2-1. Justification for New Wells

New Well Number	Vertical Delineation	Horizontal Delineation	Used in Groundwater Model	Exit Pathway	CR Site Evaluation	First-water Bearing Zone Well	Bedrock Well	Initial Investigation of GW Quality at AOC/Area	Permeability Testing
LL1mw-086	x		x	x			a		
EBGmw-131	x		x	x			Sharon		c
LL1mw-087		x	x	x		x			
LL12mw-247		x	x	x		x			b
LL4mw-201	x		x				Sharon		c
LL3mw-244	x	x	x	x			Sharon		c
LL3mw-245	x	x	x				Sharon		c
CBPmw-009	x		x				Sharon		c
FWGmw-001			x		CR-79, CR-80	x		x	
B12mw-013		x	x				Sharon		
FWGmw-002	x		x	x			a		
FWGmw-003			x		CR-73	x		x	
WBGmw-018		x	x			x			b
WBGmw-019	x		x				Sharon		c
WBGmw-020	x		x				Sharon		b,c
WBGmw-021	x		x				Sharon		c
DA2mw-114	x		x				Sharon		c
DA2mw-115	x		x				Sharon		
FWGmw-004			x	x	CR-83	x		x	
FWGmw-005			x		CR-73, CR-76	x	Homewood	x	
FWGmw-006			x			x		x	
FWGmw-007			x	x		x		x	
FWGmw-008			x		CR-73, CR-76	x		x	
FWGmw-009			x		CR-73, CR-76	x		x	b
NTAmw-119	x		x				a		
LL6mw-008		x	x			x			
LL6mw-009	x		x				Homewood		b,c
LL11mw-011		x	x			x			
LL11mw-012	x		x				Sharon		c
FWGmw-010			x		CR-79	x		x	
FWGmw-011			x	x	CR-70, CR-73	x		x	
FWGmw-012			x	x	CR-70, CR-73		Sharon	x	c
FWGmw-013			x		IRP-45		Sharon	x	
FWGmw-014			x		CR-79	x		x	
CBLmw-005		x	x				Homewood		c
FWGmw-015			x	x	CR-69, CR-73, CR-74, CR-77, & CR-83	x		x	b
FWGmw-016			x	x	CR-69, CR-73, CR-74, CR-77, & CR-83		Sharon	x	c
LL12mw-182ss			x			x			

a Completed in second water-bearing zone within deep overburden instead of bedrock as proposed.
b Shelby tube sample to be collected and submitted for permeability testing using ASTM Method D-5084.
c Rock core sample to be collected and submitted for permeability testing using ASTM Method D-5084.



COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

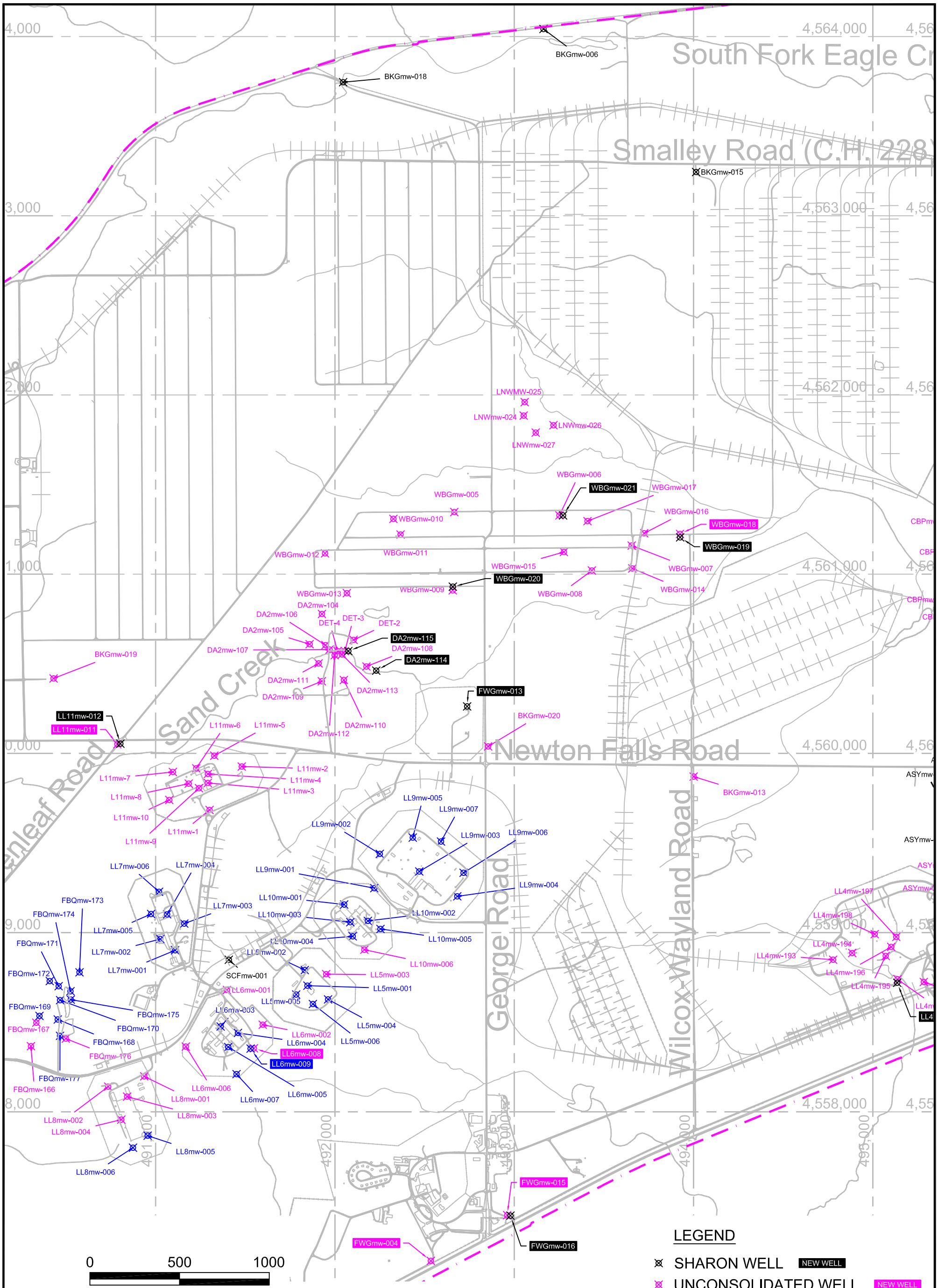
REVISIONS

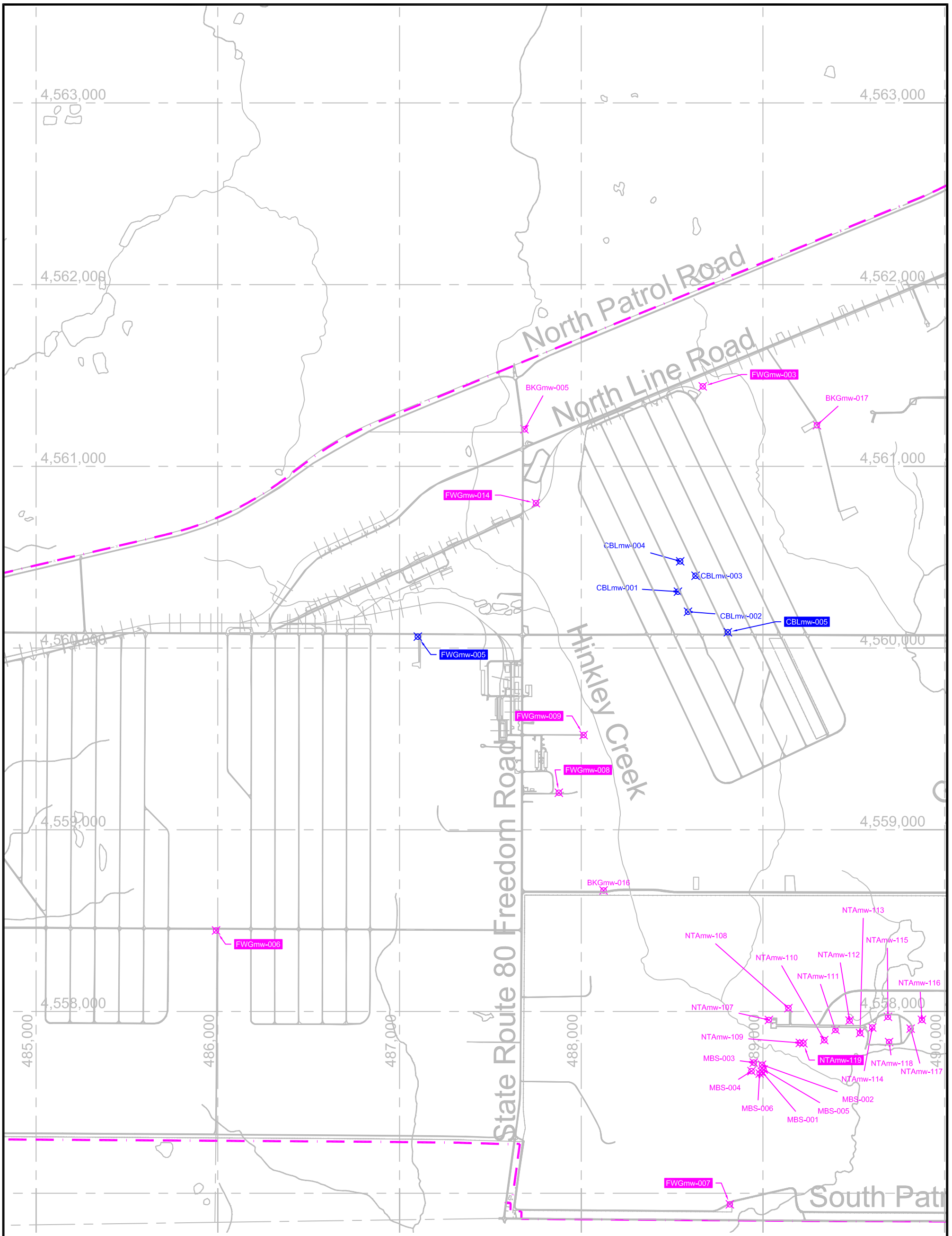
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	08-15-2012
CHECKED	S. SPESSHARDT	08-16-2012
APPROVED	J. MILLER	08-16-2012
SCALE:	AS SHOWN	

NEW RI WELL LOCATIONS IN EASTERN PORTION RVAAP

SIZE	PROJECT NO.	DWG NO.	REV
B	030174.0016	FIGURE 2-1	0


BKGmw-006
BKGmw-018
BKGmw-015
South Fork Eagle Cr
Smalley Road (C.H. 228)
4,564,000
4,563,000
4,562,000
4,561,000
4,560,000
4,559,000
4,558,000
LNWMW-025
LNWmw-024
LNWmw-026
LNWmw-027
WBGmw-006
WBGmw-021
WBGmw-017
WBGmw-005
WBGmw-016
WBGmw-018
WBGmw-019
WBGmw-010
WBGmw-012
WBGmw-011
WBGmw-015
WBGmw-007
WBGmw-020
WBGmw-009
WBGmw-008
WBGmw-014
WBGmw-013
DA2mw-104
DA2mw-106
DET-4
DET-3
DET-2
DA2mw-105
DA2mw-115
DA2mw-107
DA2mw-108
DA2mw-114
DA2mw-111
DA2mw-113
DA2mw-109
DA2mw-110
DA2mw-112
FWGmw-013
BKGmw-019
LL11mw-012
LL11mw-011
L11mw-6
L11mw-5
L11mw-2
L11mw-7
L11mw-4
L11mw-8
L11mw-3
L11mw-10
L11mw-1
L11mw-9
BKGmw-020
BKGmw-013
Newton Falls Road
Sand Creek
Georgetown-Wayland Road
Wilcox-Wayland Road
LL9mw-005
LL9mw-007
LL9mw-002
LL9mw-003
LL9mw-006
LL9mw-001
LL9mw-004
LL7mw-006
LL7mw-004
LL7mw-003
LL10mw-001
LL10mw-003
LL10mw-002
LL10mw-004
LL10mw-005
LL10mw-006
FBQmw-173
FBQmw-174
LL7mw-005
FBQmw-171
LL7mw-002
LL7mw-001
FBQmw-172
SCFmw-001
LL5mw-002
LL5mw-003
LL5mw-001
LL6mw-001
LL5mw-005
LL5mw-004
LL6mw-003
LL5mw-006
LL6mw-002
LL6mw-004
LL6mw-008
LL6mw-009
FBQmw-169
FBQmw-175
FBQmw-167
FBQmw-170
FBQmw-168
FBQmw-176
FBQmw-177
FBQmw-166
LL6mw-006
LL6mw-007
LL6mw-005
LL8mw-001
LL8mw-003
LL8mw-002
LL8mw-004
LL8mw-005
LL8mw-006
LL4mw-197
LL4mw-198
LL4mw-194
LL4mw-193
LL4mw-196
LL4mw-195
FWGmw-015
FWGmw-016
FWGmw-004
0
500
1000
SCALE (METERS)
LEGEND
SHARON WELL
NEW WELL
UNCONSOLIDATED WELL
NEW WELL
HOMEWOOD WELL
NEW WELL
COORDINATE SYSTEM UTM NAD 83 ZONE 17
N
REV
DESCRIPTION
DATE
APPROVED
REVISIONS
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM
DRAWN R. RUSSELL 08-15-2012
CHECKED S. SPESSHARDT 08-16-2012
APPROVED J. MILLER 08-16-2012
SCALE: AS SHOWN
NEW RI WELL LOCATIONS
IN CENTRAL PORTION RVAAP
SIZE B
PROJECT NO. 030174.0016
DWG NO. FIGURE 2-2
REV 0



COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	08-15-2012
CHECKED	S. SPESSHARDT	08-16-2012
APPROVED	J. MILLER	08-16-2012
SCALE:	AS SHOWN	

NEW RI WELL LOCATIONS IN WESTERN PORTION RVAAP

SIZE	PROJECT NO.	DWG NO.	REV
B	030174.0016	FIGURE 2-3	0

SECTION 3

SUMMARY OF 2011-12 FWGWMP EVENTS

3.1 Groundwater Elevation Monitoring

Depth to water from the top of the inner casing was measured in all of the 243 FWGWMP and 38 newly installed wells during July 16-24, 2012. The monitoring well location map, identified as Plate 1, is included with this report. The water-level measurement field sheets are presented in Appendix C.

Water-level measurements were obtained in accordance with procedures in Section 4.3.3.1 of the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, February 2011). Water-level measurements were made from the top of the inner casing to the top of the groundwater surface using an electronic measuring tape. The depth to the bottom of the well from the top of the inner casing also was measured with the electronic measuring tape. Depth-to-water and groundwater elevations for the RVAAP wells are presented in Table 3-1. Well construction details and depth-to-well bottom measurements are presented in Table 3-2.

Each monitoring well was inspected at the time of water-level measurement and the results are discussed in Section 3.2. The monitoring well inspection sheets are presented in Appendix E**.** Additionally, groundwater elevation measurements are also obtained each time a groundwater sample is collected as part of the FWGWMP, although the measurements from the quarterly sampling events are not used to produce the potentiometric maps. Note that in order to obtain seasonal groundwater fluctuation data, water level measurements were also collected as part of the October 2011 monitoring event. These potentiometric maps, depth-to-water measurements, groundwater elevations, well construction details and depth-to-bottom measurements are presented in Appendix D. Discussion of the Load Line 12 wells is presented in Section 3.3. Table 3-3 presents the water-level elevations taken between the October 2011 and July 2012 quarterly sampling events for all wells that have been sampled as a part of the FWGWMP. Since the July 2012 measurements are the most current they are discussed in detail in the following text.

Since completion of the last annual report (October 2011), a facility-wide groundwater RI was initiated and 38 new monitoring wells were installed to evaluate potential off-site migration, vertical communication between the “first water” and deeper water-bearing zones and to better define conditions on the western side of RVAAP where AOCs are not located. Prior to the facility-wide RI, AOC-specific well installation programs were designed to screen monitoring wells in the “first water.” Across RVAAP the first water was found in both unconsolidated glacial material and in bedrock (i.e., Homewood and Sharon Formations). At some AOCs (e.g., Atlas Scrap Yard, Load Lines 1, 4, 5, 6, and 12, Fuse and Booster Quarry, etc.) “first water” wells were completed in both unconsolidated material and in bedrock.

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Background	BKGmw-004	Unconsolidated	967.66	14.00	953.66
	BKGmw-005	Unconsolidated	1151.94	14.67	1137.27
	BKGmw-006	Sharon	1028.88	23.18	1005.70
	BKGmw-008	Sharon	972.90	17.66	955.24
	BKGmw-010	Sharon	1006.18	18.24	987.94
	BKGmw-012	Sharon	1000.07	11.48	988.59
	BKGmw-013	Unconsolidated	989.09	12.69	976.40
	BKGmw-015	Sharon	1040.40	49.95	990.45
	BKGmw-016	Unconsolidated	1100.92	8.29	1092.63
	BKGmw-017	Unconsolidated	1135.30	20.85	1114.45
	BKGmw-018	Sharon	1045.56	16.07	1029.49
	BKGmw-019	Unconsolidated	1110.74	20.69	1090.05
	BKGmw-020	Unconsolidated	1067.50	12.47	1055.03
	BKGmw-021	Unconsolidated	974.66	15.34	959.32
Load Line 1	LL1mw-063	Sharon	994.84	30.13	964.71
	LL1mw-064	Unconsolidated	935.10	3.32	931.78
	LL1mw-065	Unconsolidated	944.41	14.02	930.39
	LL1mw-067	Sharon	980.36	17.62	962.74
	LL1mw-078	Sharon	995.84	31.04	964.80
	LL1mw-079	Sharon	997.87	31.26	966.61
	LL1mw-080	Sharon	996.27	14.09	982.18
	LL1mw-081	Sharon	998.92	29.88	969.04
	LL1mw-082	Sharon	1006.45	29.36	977.09
	LL1mw-083	Sharon	995.20	32.06	963.14
	LL1mw-084	Sharon	998.73	30.49	968.24
	LL1mw-085	Sharon	996.84	34.55	962.29
	LL1mw-086	Unconsolidated	940.63	9.92	930.71
	LL1mw-087	Unconsolidated	944.32	16.49	927.83
Load Line 2	LL2mw-059	Sharon	966.67	13.63	953.04
	LL2mw-060	Sharon	961.57	10.79	950.78
	LL2mw-261	Sharon	1011.40	7.88	1003.52
	LL2mw-262	Sharon	1012.62	10.83	1001.79
	LL2mw-263	Sharon	1011.47	11.21	1000.26
	LL2mw-264	Sharon	1011.88	9.92	1001.96
	LL2mw-265	Sharon	961.24	10.31	950.93
	LL2mw-266	Sharon	1016.28	14.12	1002.16
	LL2mw-267	Sharon	1014.81	11.89	1002.92
	LL2mw-268	Sharon	1017.28	16.56	1000.72
	LL2mw-269	Sharon	1011.62	18.58	993.04
	LL2mw-270	Sharon	1010.18	11.59	998.59
Load Line 3	LL3mw-232	Sharon	1000.41	21.43	978.98
	LL3mw-233	Sharon	1004.36	26.71	977.65
	LL3mw-234	Sharon	1006.56	13.09	993.47
	LL3mw-235	Sharon	1009.94	21.44	988.50
	LL3mw-236	Sharon	1011.17	17.96	993.21
	LL3mw-237	Sharon	1005.57	18.86	986.71
	LL3mw-238	Sharon	1006.91	18.95	987.96
	LL3mw-239	Sharon	1003.50	26.14	977.36
	LL3mw-240	Sharon	1007.52	28.84	978.68
	LL3mw-241	Sharon	994.65	15.78	978.87
	LL3mw-242	Sharon	999.32	17.94	981.38
	LL3mw-243	Sharon	991.16	17.21	973.95
	LL3mw-244	Sharon	988.78	14.54	974.24
	LL3mw-245	Sharon	981.24	13.51	967.73

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Load Line 4	LL4mw-193	Unconsolidated	982.92	8.39	974.53
	LL4mw-194	Unconsolidated	983.76	10.73	973.03
	LL4mw-195	Unconsolidated	982.59	12.14	970.45
	LL4mw-196	Unconsolidated	984.55	14.12	970.43
	LL4mw-197	Unconsolidated	985.46	14.94	970.52
	LL4mw-198	Unconsolidated	983.42	10.24	973.18
	LL4mw-199	Unconsolidated	977.28	7.95	969.33
	LL4mw-200	Unconsolidated	987.93	18.13	969.80
	LL4mw-201	Sharon	978.02	9.77	968.25
Load Line 5	LL5mw-001	Homewood	1127.92	21.42	1106.50
	LL5mw-002	Homewood	1128.68	22.17	1106.51
	LL5mw-003	Unconsolidated	1127.70	20.88	1106.82
	LL5mw-004	Homewood	1125.81	19.38	1106.43
	LL5mw-005	Homewood	1129.42	22.92	1106.50
	LL5mw-006	Homewood	1128.00	21.53	1106.47
Load Line 6	LL6mw-001	Unconsolidated	1124.16	16.02	1108.14
	LL6mw-002	Unconsolidated	1129.36	22.38	1106.98
	LL6mw-003	Homewood	1125.38	17.46	1107.92
	LL6mw-004	Homewood	1125.39	18.30	1107.09
	LL6mw-005	Homewood	1120.47	13.23	1107.24
	LL6mw-006	Unconsolidated	1124.37	15.66	1108.71
	LL6mw-007	Homewood	1115.62	8.79	1106.83
	LL6mw-008	Unconsolidated	1124.15	16.76	1107.39
	LL6mw-009	Homewood	1123.75	16.32	1107.43
Load Line 7	LL7mw-001	Homewood	1129.64	21.83	1107.81
	LL7mw-002	Homewood	1129.55	18.15	1111.40
	LL7mw-003	Homewood	1120.84	12.85	1107.99
	LL7mw-004	Homewood	1126.32	15.23	1111.09
	LL7mw-005	Homewood	1135.87	22.99	1112.88
	LL7mw-006	Homewood	1123.56	12.93	1110.63
Load Line 8	LL8mw-001	Unconsolidated	1121.46	13.18	1108.28
	LL8mw-002	Unconsolidated	1124.51	20.23	1104.28
	LL8mw-003	Unconsolidated	1119.05	14.67	1104.38
	LL8mw-004	Unconsolidated	1115.75	13.19	1102.56
	LL8mw-005	Homewood	1115.73	15.06	1100.67
	LL8mw-006	Homewood	1117.17	20.99	1096.18
Load Line 9	LL9mw-001	Homewood	1134.62	16.92	1117.70
	LL9mw-002	Homewood	1127.30	15.19	1112.11
	LL9mw-003	Homewood	1135.76	14.29	1121.47
	LL9mw-004	Homewood	1131.83	21.69	1110.14
	LL9mw-005	Homewood	1130.93	17.98	1112.95
	LL9mw-006	Homewood	1129.88	20.36	1109.52
	LL9mw-007	Homewood	1119.99	10.83	1109.16
Load Line 10	LL10mw-001	Homewood	1132.77	25.23	1107.54
	LL10mw-002	Homewood	1127.13	18.71	1108.42
	LL10mw-003	Homewood	1130.28	21.62	1108.66
	LL10mw-004	Homewood	1122.39	14.61	1107.78
	LL10mw-005	Homewood	1125.67	16.77	1108.90
	LL10mw-006	Unconsolidated	1123.83	14.01	1109.82

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Load Line 11	LL11mw-001	Unconsolidated	1100.16	13.50	1086.66
	L L11mw-002	Unconsolidated	1080.00	5.49	1074.51
	LL11mw-003	Unconsolidated	1088.48	5.09	1083.39
	LL11mw-004	Unconsolidated	1084.72	2.96	1081.76
	LL11mw-005	Unconsolidated	1079.40	10.50	1068.90
	LL11mw-006	Unconsolidated	1086.50	8.64	1077.86
	LL11mw-007	Unconsolidated	1082.00	16.20	1065.80
	LL11mw-008	Unconsolidated	1087.74	5.89	1081.85
	LL11mw-009	Unconsolidated	1091.54	6.70	1084.84
	LL11mw-010	Unconsolidated	1082.68	7.68	1075.00
	LL11mw-011	Unconsolidated	1080.20	9.30	1070.90
	LL11mw-012	Sharon Shale	1080.36	21.38	1058.98
Load Line 12	LL12mw-088	Unconsolidated	981.06	7.36	973.70
	LL12mw-107	Unconsolidated	980.15	9.99	970.16
	LL12mw-113	Sharon Shale	980.18	8.63	971.55
	LL12mw-128	Unconsolidated	978.24	10.13	968.11
	LL12mw-153	Unconsolidated	977.85	7.13	970.72
	LL12mw-154	Unconsolidated	979.06	9.63	969.43
	LL12mw-182	Unconsolidated	984.42	11.41	973.01
	LL12mw-182ss	Unconsolidated	985.02	11.37	973.65
	LL12mw-183	Sharon Shale	982.98	13.25	969.73
	LL12mw-184	Unconsolidated	983.16	13.10	970.06
	LL12mw-185	Unconsolidated	981.31	8.39	972.92
	LL12mw-186	Sharon Shale	978.31	8.89	969.42
	LL12mw-187	Unconsolidated	979.94	11.05	968.89
	LL12mw-188	Unconsolidated	980.63	7.53	973.10
	LL12mw-189	Sharon Shale	978.04	9.34	968.70
	LL12mw-242	Unconsolidated	981.20	10.74	970.46
	LL12mw-243	Unconsolidated	980.79	9.42	971.37
	LL12mw-244	Unconsolidated	980.65	11.30	969.35
	LL12mw-245	Unconsolidated	980.04	8.36	971.68
	LL12mw-246	Unconsolidated	984.83	16.97	967.86
	LL12mw-247	Unconsolidated	984.25	6.79	977.46
Atlas Scrap Yard	ASYmw-001	Sharon	981.13	12.75	968.38
	ASYmw-002	Sharon	985.24	14.64	970.60
	ASYmw-003	Sharon	982.21	13.62	968.59
	ASYmw-004	Sharon	979.66	10.86	968.80
	ASYmw-005	Sharon	979.80	10.26	969.54
	ASYmw-006	Sharon	983.01	14.40	968.61
	ASYmw-007	Unconsolidated	984.16	15.20	968.96
	ASYmw-008	Unconsolidated	978.85	7.69	971.16
	ASYmw-009	Sharon	982.70	13.29	969.41
	ASYmw-010	Unconsolidated	981.05	12.66	968.39
Building 1200	B12mw-010	Sharon	1005.92	18.04	987.88
	B12mw-011	Sharon	1006.70	19.28	987.42
	B12mw-012	Sharon	1006.32	18.48	987.84
	B12mw-013	Sharon	1004.48	18.92	985.56
C-Block Quarry	CBLmw-001	Homewood	1181.08	43.03	1138.05
	CBLmw-002	Homewood	1175.24	37.66	1137.58
	CBLmw-003	Homewood	1175.06	36.17	1138.89
	CBLmw-004	Homewood	1174.84	36.02	1138.82
	CBLmw-005	Homewood	1158.10	24.32	1133.78

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Central Burn Pits	CBPmw-001	Unconsolidated	975.84	13.48	962.36
	CBPmw-002	Unconsolidated	970.04	8.72	961.32
	CBPmw-003	Unconsolidated	974.67	13.52	961.15
	CBPmw-004	Unconsolidated	971.13	11.59	959.54
	CBPmw-005	Unconsolidated	971.59	12.82	958.77
	CBPmw-006	Unconsolidated	967.64	8.65	958.99
	CBPmw-007	Unconsolidated	976.37	16.90	959.47
	CBPmw-008	Unconsolidated	973.19	16.71	956.48
	CBPmw-009	Sharon	972.48	11.13	961.35
Cobbs Pond	CPmw-001	Unconsolidated	975.26	6.94	968.32
	CPmw-002	Unconsolidated	972.31	4.99	967.32
	CPmw-003	Unconsolidated	972.92	5.00	967.92
	CPmw-004	Unconsolidated	981.20	13.38	967.82
	CPmw-005	Unconsolidated	973.58	11.98	961.60
	CPmw-006	Unconsolidated	965.13	9.16	955.97
Demolition Area 2	DETmw-001B	Unconsolidated	1065.85	24.49	1041.36
	DETmw-002	Unconsolidated	1061.24	32.86	1028.38
	DETmw-003	Unconsolidated	1036.81	9.82	1026.99
	DETmw-004	Unconsolidated	1038.68	10.90	1027.78
	DA2mw-104	Unconsolidated	1073.89	21.71	1052.18
	DA2mw-105	Unconsolidated	1045.34	4.42	1040.92
	DA2mw-106	Unconsolidated	1043.79	9.78	1034.01
	DA2mw-107	Unconsolidated	1041.63	9.86	1031.77
	DA2mw-108	Unconsolidated	1032.36	7.01	1025.35
	DA2mw-109	Unconsolidated	1071.29	16.49	1054.80
	DA2mw-110	Unconsolidated	1063.78	11.79	1051.99
	DA2mw-111	Unconsolidated	1042.12	8.37	1033.75
	DA2mw-112	Unconsolidated	1037.44	8.15	1029.29
	DA2mw-113	Unconsolidated	1037.11	8.79	1028.32
	DA2mw-114	Sharon Shale	1031.90	5.79	1026.11
	DA2mw-115	Sharon	1038.08	6.74	1031.34
Erie Burning Grounds	EBGmw-123	Unconsolidated	947.82	10.49	937.33
	EBGmw-124	Unconsolidated	941.39	4.29	937.10
	EBGmw-125	Unconsolidated	949.89	12.98	936.91
	EBGmw-126	Unconsolidated	940.61	2.89	937.72
	EBGmw-127	Unconsolidated	943.07	5.61	937.46
	EBGmw-128	Unconsolidated	945.13	8.15	936.98
	EBGmw-129	Unconsolidated	944.36	7.35	937.01
	EBGmw-130	Unconsolidated	944.00	7.78	936.22
	EBGmw-131	Sharon	950.08	11.69	938.39
Facilitywide	FWGmw-001	Unconsolidated	956.62	10.60	946.02
	FWGmw-002	Unconsolidated	973.10	24.00	949.10
	FWGmw-003	Unconsolidated	1131.96	6.98	1124.98
	FWGmw-004	Unconsolidated	1037.15	16.41	1020.74
	FWGmw-005	Homewood	1170.10	22.35	1147.75
	FWGmw-006	Unconsolidated	1184.33	10.25	1174.08
	FWGmw-007	Unconsolidated	1075.41	24.19	1051.22
	FWGmw-008	Unconsolidated	1111.61	8.97	1102.64
	FWGmw-009	Unconsolidated	1102.14	3.09	1099.05
	FWGmw-010	Unconsolidated	962.15	12.19	949.96
	FWGmw-011	Unconsolidated	941.61	4.48	937.13
	FWGmw-012	Sharon Shale	941.39	2.93	938.46
	FWGmw-013	Sharon	1059.51	21.75	1037.76
	FWGmw-014	Unconsolidated	1137.57	6.18	1131.39
	FWGmw-015	Unconsolidated	1014.51	8.74	1005.77
	FWGmw-016	Sharon	1014.39	18.30	996.09

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Fuze and Booster Quarry	FBQmw-166	Unconsolidated	1108.86	7.05	1101.81
	FBQmw-167	Unconsolidated	1115.90	6.51	1109.39
	FBQmw-168	Homewood	1133.91	12.80	1121.11
	FBQmw-169	Homewood	1120.58	8.87	1111.71
	FBQmw-170	Homewood	1142.26	19.39	1122.87
	FBQmw-171	Homewood	1143.55	20.28	1123.27
	FBQmw-172	Homewood	1150.09	27.52	1122.57
	FBQmw-173	Homewood	1165.94	43.07	1122.87
	FBQmw-174	Homewood	1139.97	17.64	1122.33
	FBQmw-175	Homewood	1140.73	18.43	1122.30
	FBQmw-176	Unconsolidated	1131.91	10.36	1121.55
	FBQmw-177	Homewood	1128.57	15.02	1113.55
Landfill North of Winklepeck	LNWmw-024	Unconsolidated	1038.00	13.98	1024.02
	LNWmw-025	Unconsolidated	1029.13	5.98	1023.15
	LNWmw-026	Unconsolidated	1027.80	12.84	1014.96
	LNWmw-027	Unconsolidated	1027.13	8.75	1018.38
NACA Test Area	NTAmw-107	Unconsolidated	1080.30	12.92	1067.38
	NTAmw-108	Unconsolidated	1085.62	17.92	1067.70
	NTAmw-109	Unconsolidated	1079.84	12.53	1067.31
	NTAmw-110	Unconsolidated	1082.62	14.91	1067.71
	NTAmw-111	Unconsolidated	1080.94	8.16	1072.78
	NTAmw-112	Unconsolidated	1078.33	9.64	1068.69
	NTAmw-113	Unconsolidated	1075.68	7.80	1067.88
	NTAmw-114	Unconsolidated	1078.71	7.74	1070.97
	NTAmw-115	Unconsolidated	1089.65	16.03	1073.62
	NTAmw-116	Unconsolidated	1094.33	8.56	1085.77
	NTAmw-117	Unconsolidated	1094.54	16.65	1077.89
	NTAmw-118	Unconsolidated	1081.44	10.39	1071.05
	NTAmw-119	Unconsolidated	1080.07	12.90	1067.17
Ramsdell Quarry Landfill	RQLmw-006	Sharon	995.39	33.83	961.56
	RQLmw-007	Sharon	965.91	6.24	959.67
	RQLmw-008	Sharon	966.08	6.38	959.70
	RQLmw-009	Sharon	964.58	5.02	959.56
	RQLmw-010	Sharon	982.14	25.45	956.69
	RQLmw-011	Sharon	976.57	22.19	954.38
	RQLmw-012	Sharon	977.65	22.07	955.58
	RQLmw-013	Sharon	980.71	25.64	955.07
	RQLmw-014	Sharon	973.49	20.49	953.00
	RQLmw-015	Sharon	991.26	30.66	960.60
	RQLmw-016	Sharon	996.60	34.09	962.51
	RQLmw-017	Sharon	991.23	29.17	962.06
Sharon Congolmerate	SCFmw-001	Sharon Conglomerate	1120.71	89.51	1031.20
	SCFmw-002	Sharon Conglomerate	984.56	18.28	966.28
	SCFmw-003	Sharon Conglomerate	958.47	8.49	949.98
	SCFmw-004	Sharon Conglomerate	944.17	0.45	943.72
	SCFmw-005	Sharon Conglomerate	960.80	11.81	948.99
	SCFmw-006	Sharon Conglomerate	965.92	18.36	947.56

Table 3-1. Depth to Water and Potentiometric Elevation (July 2012)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	July 2012 Depth to Water (ft, BTOC)	Potentiometric Elevation July 2012 (ft, amsl)
Winklepeck Burning Grounds	WBGmw-005	Unconsolidated	1054.70	7.76	1046.94
	WBGmw-006	Unconsolidated	1014.66	9.99	1004.67
	WBGmw-007	Unconsolidated	1000.59	18.39	982.20
	WBGmw-008	Unconsolidated	1008.21	15.98	992.23
	WBGmw-009	Unconsolidated	1047.53	15.18	1032.35
	WBGmw-010	Unconsolidated	1069.85	9.39	1060.46
	WBGmw-011	Unconsolidated	1072.38	11.95	1060.43
	WBGmw-012	Unconsolidated	1079.11	22.39	1056.72
	WBGmw-013	Unconsolidated	1071.70	11.94	1059.76
	WBGmw-014	Unconsolidated	996.78	17.49	979.29
	WBGmw-015	Unconsolidated	1011.60	14.25	997.35
	WBGmw-016	Unconsolidated	997.03	18.20	978.83
	WBGmw-017	Unconsolidated	1006.62	9.34	997.28
	WBGmw-018	Unconsolidated	991.45	21.70	969.75
	WBGmw-019	Sharon	990.25	18.38	971.87
	WBGmw-020	Sharon	1044.31	14.02	1030.29
	WBGmw-021	Sharon	1010.92	10.65	1000.27
Suspected Mustard Agent Burial Site	MBSmw-001	Unconsolidated	1082.20	17.96	1064.24
	MBSmw-002	Unconsolidated	1083.22	18.49	1064.73
	MBSmw-003	Unconsolidated	1084.45	18.84	1065.61
	MBSmw-004	Unconsolidated	1081.80	16.94	1064.86
	MBSmw-005	Unconsolidated	1082.42	18.19	1064.23
	MBSmw-006	Unconsolidated	1081.83	17.64	1064.19

TOC = top of casing

amsl = above mean sea level

BTOC = below top of casing

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Background	BKGmw-004	2368852.97	569464.76	965.16	19.5	967.66	A	Unconsolidated	9.2	19.2	19.5	2.50	22.0	22.28	-0.28	hard
	BKGmw-005	2340835.86	562288.45	1,149.44	19.0	1,151.94	A	Unconsolidated	8.2	18.2	18.5	2.50	21.0	20.88	0.12	medium
	BKGmw-006	2358643.96	571910.47	1,026.38	35.1	1,028.88	A	Sharon	24.7	34.7	35.1	2.50	37.6	37.67	-0.07	hard
	BKGmw-008	2372741.08	569654.23	970.40	25.0	972.90	A	Sharon	14.7	24.7	25.0	2.50	27.5	27.48	0.02	hard
	BKGmw-010	2371372.86	565540.54	1,003.80	22.0	1,006.18	A	Sharon	8.9	18.9	19.2	2.38	21.6	21.97	-0.37	hard
	BKGmw-012	2367795.23	563918.86	997.57	59.8	1,000.07	A	Sharon	38.6	59.6	59.8	2.50	62.3	63.26	-0.96	hard
	BKGmw-013	2361627.39	558269.16	986.59	25.5	989.09	A	Unconsolidated	15.2	25.2	25.5	2.50	28.0	27.97	0.03	hard
	BKGmw-015	2361482.22	569339.87	1,037.90	51.0	1,040.40	A	Sharon	30.1	50.1	50.4	2.50	52.9	53.10	-0.20	hard
	BKGmw-016	2342407.08	553983.50	1,098.42	19.0	1,100.92	A	Unconsolidated	8.4	18.5	18.6	2.50	21.1	21.13	-0.03	hard
	BKGmw-017	2346115.35	562452.04	1,132.80	34.8	1,135.30	A	Unconsolidated	23.2	33.3	33.6	2.50	36.1	35.90	0.20	medium
	BKGmw-018	2354993.91	570873.35	1,043.06	24.7	1,045.56	A	Sharon	14.5	24.5	24.7	2.50	27.2	26.63	0.57	hard
	BKGmw-019	2349882.14	559864.55	1,108.24	34.0	1,110.74	A	Unconsolidated	23.0	33.0	33.2	2.50	35.7	35.56	0.14	hard
	BKGmw-020	2357856.24	558756.24	1,065.00	30.7	1,067.50	A	Unconsolidated	20.5	30.5	30.7	2.50	33.2	33.31	-0.11	hard
	BKGmw-021	2367622.95	571016.75	972.16	19.0	974.66	A	Unconsolidated	7.7	17.8	18.1	2.50	20.6	21.46	-0.86	hard
Atlas Scrap Yard	ASYmw-001	2366260.85	558404.04	978.40	22.0	981.13	A	Sharon	11.0	21.0	21.0	2.73	23.7	23.15	0.55	hard
	ASYmw-002	2366170.86	557887.86	982.00	20.0	985.24	A	Sharon	10.0	19.5	19.5	3.24	22.7	22.94	-0.24	soft
	ASYmw-003	2366651.49	558015.94	979.70	21.5	982.21	A	Sharon	11.0	21.0	21.0	2.51	23.5	23.50	0.00	hard
	ASYmw-004	2367166.04	557640.81	977.10	27.8	979.66	A	Sharon	17.0	27.0	27.0	2.56	29.6	29.80	-0.20	hard
	ASYmw-005	2367448.16	557783.01	977.60	25.0	979.80	A	Sharon	14.0	24.0	24.0	2.20	26.2	27.20	-1.00	soft
	ASYmw-006	2366746.73	557257.72	980.20	27.0	983.01	A	Sharon	16.0	26.0	26.0	2.81	28.8	28.90	-0.10	hard
	ASYmw-007	2366834.49	556818.08	981.40	28.0	984.16	A	Unconsolidated	16.0	26.0	26.0	2.76	28.8	28.90	-0.10	hard
	ASYmw-008	2367475.07	557087.66	976.20	26.0	978.85	A	Unconsolidated	15.0	25.0	25.0	2.65	27.7	27.25	0.45	soft
	ASYmw-009	2366631.94	557603.68	979.90	22.0	982.70	A	Sharon	11.5	21.5	21.5	2.80	24.3	24.12	0.18	soft
	ASYmw-010	2366985.37	557270.61	978.20	28.0	981.05	A	Unconsolidated	17.0	27.0	27.0	2.85	29.8	30.95	-1.15	hard
Building 1200	B12mw-010	2371292.81	565827.43	1,002.72	21.0	1,005.92	A	Sharon	10.0	20.0	20.0	3.20	23.2	22.82	0.38	hard
	B12mw-011	2371416.15	565687.82	1,003.76	24.7	1,006.70	A	Sharon	14.0	24.0	24.0	2.94	26.9	26.72	0.18	hard
	B12mw-012	2371430.41	565828.01	1,003.43	22.3	1,006.32	A	Sharon	12.0	22.0	22.0	2.89	24.9	24.81	0.09	hard
	B12mw-013	2371221.00	565904.00	1,001.80	22	1,004.48	A	Sharon	11.5	21.5	21.8	2.68	24.25	24.20	0.05	hard
C-Block Quarry	CBLmw-001	2343657.08	559403.12	1,178.50	50.0	1,181.08	A	Homewood	39.0	49.0	49.0	2.58	51.6	50.40	1.20	hard
	CBLmw-002	2343845.22	559044.48	1,172.50	45.3	1,175.24	A	Homewood	34.5	44.5	44.5	2.74	47.2	47.30	-0.10	hard
	CBLmw-003	2343970.00	559695.52	1,172.22	44.0	1,175.06	A	Homewood	33.0	43.0	43.0	2.84	45.8	44.70	1.10	hard
	CBLmw-004	2343688.76	559951.58	1,172.08	45.0	1,174.84	A	Homewood	34.0	44.0	44.0	2.76	46.8	46.92	-0.12	medium
	CBLmw-005	2344572.00	558686.00	1,155.60	31.0	1,158.10	A	Homewood	22.0	30.0	30.3	2.50	32.42	32.40	0.02	hard
Central Burn Pits	CBPmw-001	2367095.37	561616.01	972.71	32.3	975.84	A	Unconsolidated	21.8	31.8	31.8	3.13	34.9	34.11	0.79	hard
	CBPmw-002	2367295.66	561865.83	967.33	30.0	970.04	A	Unconsolidated	19.5	29.5	29.5	2.71	32.2	31.68	0.52	hard
	CBPmw-003	2366768.68	561944.14	972.04	25.0	974.67	A	Unconsolidated	14.5	24.5	24.5	2.63	27.1	30.14	-3.04	hard
	CBPmw-004	2366978.80	562123.80	968.58	27.5	971.13	A	Unconsolidated	17.0	27.0	27.0	2.55	29.5	29.61	-0.11	soft
	CBPmw-005	2366919.66	562311.88	968.83	25.0	971.59	A	Unconsolidated	14.5	24.5	24.5	2.76	27.3	27.33	-0.03	hard
	CBPmw-006	2367243.68	562311.87	965.01	23.0	967.64	A	Unconsolidated	12.5	22.5	22.5	2.63	25.1	25.20	-0.10	soft
	CBPmw-007	2366512.62	562006.41	973.47	30.0	976.37	A	Unconsolidated	19.5	29.5	29.5	2.90	32.4	31.85	0.55	hard
	CBPmw-008	2366757.21	562668.84	970.57	25.5	973.19	A	Unconsolidated	15.0	25.0	25.0	2.62	27.6	27.92	-0.32	hard
	CBPmw-009	2367174.00	561797.00	969.90	65	972.48	A	Sharon	54.0	64.0	64.3	2.58	66.55	66.56	-0.01	hard
Cobbs Pond	CPmw-001	2368948.81	560440.91	975.46	16.0	975.26	F	Unconsolidated	5.5	15.5	15.5	-0.20	15.3	14.69	0.61	hard
	CPmw-002	2368239.23	560311.26	972.72	16.0	972.31	F	Unconsolidated	5.5	15.5	15.5	-0.41	15.1	14.94	0.16	hard
	CPmw-003	2368796.49	560676.30	973.27	18.5	972.92	F	Unconsolidated	8.0	18.0	18.0	-0.35	17.6	17.70	-0.10	hard
	CPmw-004	2368674.31	561843.46	978.51	20.0	981.20	A	Unconsolidated	9.5	19.5	19.5	2.69	22.2	22.52	-0.32	hard
	CPmw-005	2367900.41	561846.78	970.71	40.0	973.58	A	Unconsolidated	29.5	39.5	39.5	2.87	42.4	43.17	-0.77	hard
	CPmw-006	2367727.13	562830.13	962.97	18.5	965.13	A	Unconsolidated	8.0	18.0	18.0	2.16	20.2	20.67	-0.47	hard

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Demolition Area 2	DET-001B	2354959.47	560820.03	1,064.35	39.0	1,065.85	A	Unconsolidated	34.0	39.0	39.0	1.50	40.5	38.50	2.00	hard
	DET-002	2355360.33	560664.71	1,060.24	39.0	1,061.24	A	Unconsolidated	34.0	39.0	39.0	1.00	40.0	42.01	-2.01	hard
	DET-003	2355204.94	560456.10	1,035.81	15.0	1,036.81	A	Unconsolidated	7.0	12.0	12.0	1.00	13.0	16.00	-3.00	hard
	DET-004	2355072.36	560454.22	1,037.68	11.0	1,038.68	A	Unconsolidated	6.0	11.0	11.0	1.00	12.0	13.80	-1.80	hard
	DA2mw-104	2354773.79	561129.59	1,070.82	27.0	1,073.89	A	Unconsolidated	16.3	26.3	26.5	3.07	29.6	29.18	0.42	hard
	DA2mw-105	2354557.62	560572.58	1,042.66	14.0	1,045.34	A	Unconsolidated	8.3	13.3	13.5	2.68	16.2	16.21	-0.01	hard
	DA2mw-106	2354848.85	560560.49	1,041.19	16.0	1,043.79	A	Unconsolidated	8.3	15.3	15.5	2.60	18.1	16.78	1.32	hard
	DA2mw-107	2354924.29	560480.05	1,039.18	15.0	1,041.63	A	Unconsolidated	8.8	13.8	14.0	2.45	16.5	16.81	-0.31	hard
	DA2mw-108	2355604.43	560181.78	1,029.92	15.0	1,032.36	A	Unconsolidated	9.3	14.3	14.5	2.44	16.9	17.13	-0.23	hard
	DA2mw-109	2354793.14	559897.89	1,068.66	24.0	1,071.29	A	Unconsolidated	11.3	21.3	21.5	2.63	24.1	24.31	-0.21	soft
	DA2mw-110	2355195.91	559927.02	1,061.39	20.0	1,063.78	A	Unconsolidated	9.3	19.3	19.5	2.39	21.9	22.33	-0.43	hard
	DA2mw-111	2354728.33	560222.94	1,039.63	12.6	1,042.12	A	Unconsolidated	7.1	12.1	12.3	2.49	14.8	14.77	0.03	hard
	DA2mw-112	2355018.98	560378.36	1,034.87	15.0	1,037.44	A	Unconsolidated	8.8	13.8	14.0	2.57	16.6	17.04	-0.44	hard
	DA2mw-113	2355153.13	560394.81	1,034.51	14.0	1,037.11	A	Unconsolidated	8.3	13.3	13.5	2.60	16.1	16.28	-0.18	hard
	DA2mw-114	2355785.00	560109.00	1,029.50	19.5	1,031.90	A	Sharon Shale	9.16	19.16	19.46	2.40	21.8	21.73	0.07	hard
	DA2mw-115	2355269.00	560459.00	1,035.40	44.0	1,038.08	A	Sharon	33.75	43.75	44.05	2.68	46.8	46.79	0.01	hard
Erie Burning Grounds	EBGmw-123	2380049.21	571747.04	945.59	32.0	947.82	A	Unconsolidated	21.0	31.0	31.5	2.23	33.7	34.75	-1.05	hard
	EBGmw-124	2380030.24	571618.07	939.02	32.0	941.39	A	Unconsolidated	20.0	30.0	30.5	2.37	32.9	32.64	0.26	hard
	EBGmw-125	2379679.20	571655.63	947.55	25.0	949.89	A	Unconsolidated	14.0	24.0	24.5	2.34	26.8	27.43	-0.63	medium
	EBGmw-126	2380307.31	572348.81	938.20	28.0	940.61	A	Unconsolidated	15.2	25.2	25.5	2.41	27.9	27.78	0.12	hard
	EBGmw-127	2380172.16	571083.61	940.21	30.0	943.07	A	Unconsolidated	19.0	29.0	29.5	2.86	32.4	32.82	-0.42	hard
	EBGmw-128	2379892.79	570970.32	942.47	28.0	945.13	A	Unconsolidated	15.0	25.0	25.3	2.66	28.0	28.24	-0.24	hard
	EBGmw-129	2379240.52	572035.68	941.97	29.0	944.36	A	Unconsolidated	16.0	26.0	26.0	2.39	28.4	30.90	-2.50	hard
	EBGmw-130	2379220.69	570695.61	941.18	26.0	944.00	A	Unconsolidated	15.2	25.2	25.5	2.82	28.3	28.39	-0.09	hard
	EBGmw-131	2379666.00	571655.00	947.50	71.0	950.08	A	Sharon	60.5	70.5	70.8	2.58	73.10	73.04	0.06	hard
Fuze and Booster Quarry	FBQmw-166	2349584.33	553123.86	1,104.87	16.0	1,108.86	A	Unconsolidated	5.5	15.5	15.5	3.99	19.5	19.70	-0.20	hard
	FBQmw-167	2349675.45	553556.12	1,112.05	18.0	1,115.90	A	Unconsolidated	5.0	15.0	15.0	3.85	18.9	18.97	-0.07	hard
	FBQmw-168	2350066.87	553620.85	1,131.27	19.5	1,133.91	A	Homewood	9.0	19.0	19.0	2.64	21.6	21.20	0.40	medium
	FBQmw-169	2349730.90	553681.21	1,117.36	16.0	1,120.58	A	Homewood	5.0	15.0	15.0	3.22	18.2	18.08	0.12	hard
	FBQmw-170	2350102.41	553975.40	1,139.67	30.5	1,142.26	A	Homewood	20.0	30.0	30.0	2.59	32.6	32.69	-0.09	medium
	FBQmw-171	2350072.44	554230.93	1,140.49	30.0	1,143.55	A	Homewood	18.0	28.0	28.0	3.06	31.1	31.40	-0.30	hard
	FBQmw-172	2349907.37	554322.17	1,145.71	33.0	1,150.09	A	Homewood	20.0	30.0	30.0	4.38	34.4	34.40	0.00	hard
	FBQmw-173	2350449.01	554491.35	1,162.43	50.0	1,165.94	A	Homewood	29.5	49.5	49.5	3.51	53.0	53.08	-0.08	hard
	FBQmw-174	2350289.81	554142.44	1,135.78	22.5	1,139.97	A	Homewood	12.0	22.0	22.0	4.19	26.2	23.12	3.08	hard
	FBQmw-175	2350297.98	553989.24	1,137.16	22.5	1,140.73	A	Homewood	12.0	22.0	22.0	3.57	25.6	25.89	-0.29	hard
	FBQmw-176	2350219.45	553273.33	1,129.57	21.5	1,131.91	A	Unconsolidated	11.0	21.0	21.0	2.34	23.3	23.61	-0.31	medium
	FBQmw-177	2350112.18	553321.94	1,125.73	22.5	1,128.57	A	Homewood	12.0	22.0	22.0	2.84	24.8	24.75	0.05	soft
Facility-Wide	FWGmw-001	2368321.00	565739.00	953.60	17.5	956.62	A	Unconsolidated	7	17	17.3	3.02	20.05	20.04	0.01	hard
	FWGmw-002	2367606.00	571015.00	970.60	71.0	973.10	A	Unconsolidated	57	67	67.3	2.50	70.05	70.05	0.00	hard
	FWGmw-003	2344042.00	563118.00	1,129.40	19.0	1,131.96	A	Unconsolidated	8.5	18.5	18.8	2.56	21.1	21.08	0.02	medium
	FWGmw-004	2356970.00	549319.00	1,034.50	20.0	1,037.15	A	Unconsolidated	9.5	19.5	19.8	2.65	22.6	22.58	0.02	medium
	FWGmw-005	2338973.00	558510.00	1,167.50	29.5	1,170.10	A	Homewood	19.25	29.25	29.55	2.60	31.9	31.80	0.10	medium
	FWGmw-006	2335421.00	553142.00	1,181.90	18.0	1,184.33	A	Unconsolidated	7.5	17.5	17.8	2.43	19.25	19.21	0.04	medium
	FWGmw-007	2344785.00	548356.00	1,072.80	30.0	1,075.41	A	Unconsolidated	19.5	29.5	29.8	2.61	32.35	32.32	0.03	hard
	FWGmw-008	2341569.00	555735.00	1,109.00	21.0	1,111.61	A	Unconsolidated	10	20	20.3	2.61	22.1	22.09	0.01	soft
	FWGmw-009	2341998.00	556784.00	1,099.50	18.5	1,102.14	A	Unconsolidated	8	18	18.3	2.64	20.4	20.38	0.02	medium
	FWGmw-010	2379060.00	565077.00	959.50	17.3	962.15	A	Unconsolidated	6	16	16.3	2.65	19.1	19.09	0.01	hard
	FWGmw-011	2380390.00	566801.00	939.00	17.5	941.61	A	Unconsolidated	6	16	16.3	2.61	17.8	17.79	0.01	hard
	FWGmw-012	2380389.00	566790.00	938.90	40.0	941.39	A	Sharon Shale	29.5	39.5	39.8	2.49	42.45	42.45	0.00	hard
	FWGmw-013	2357460.00	559483.00	1,057.10	34.5	1,059.51	A	Sharon	24	34	34.3	2.41	36.7	36.69	0.01	hard
	FWGmw-014	2341064.00	560957.00	1,135.00	18.5	1,137.57	A	Unconsolidated	8.25	18.25	18.55	2.57	21.15	21.11	0.04	medium
	FWGmw-015	2358353.00	550179.00	1,012.10	26.0	1,014.51	A	Unconsolidated	13.5	23.5	23.8	2.41	26.35	26.31	0.04	medium
	FWGmw-016	2358364.00	550171.00	1,011.90	65.0	1,014.39	A	Sharon	54.5	64.5	64.8	2.49	67.5	67.47	0.03	soft

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Load Line 1	LL1mw-063	2376841.36	563650.53	992.20	27.4	994.84	A	Sharon	17.1	27.1	27.4	2.64	30.0	30.13	-0.13	hard
	LL1mw-064	2380286.97	563118.74	932.32	18.4	935.10	A	Unconsolidated	8.0	18.0	18.4	2.78	21.1	21.05	0.05	hard
	LL1mw-065	2380452.00	560916.92	941.53	20.5	944.41	A	Unconsolidated	10.2	20.2	20.5	2.88	23.4	23.09	0.31	medium
	LL1mw-067	2376545.30	565201.14	977.55	22.8	980.36	A	Sharon	12.8	22.5	22.8	2.81	25.6	25.69	-0.09	soft
	LL1mw-078	2376275.85	564623.87	993.40	38.7	995.84	A	Sharon	28.7	38.2	38.7	2.44	41.1	41.15	-0.05	hard
	LL1mw-079	2376228.31	563739.63	995.30	29.5	997.87	A	Sharon	29.5	38.9	39.5	2.57	42.0	41.95	0.05	hard
	LL1mw-080	2376845.07	562479.73	993.70	19.5	996.27	A	Sharon	9.5	19.0	19.5	2.57	22.0	22.40	-0.40	medium
	LL1mw-081	2376672.66	563462.73	996.40	39.4	998.92	A	Sharon	29.4	38.9	39.4	2.52	41.9	41.88	0.02	medium
	LL1mw-082	2376977.38	562956.86	1,003.70	39.0	1,006.45	A	Sharon	28.9	38.5	39.0	2.75	41.8	42.44	-0.64	medium
	LL1mw-083	2377074.80	563612.75	992.80	39.3	995.20	A	Sharon	29.1	38.6	39.3	2.40	41.7	41.45	0.25	medium
	LL1mw-084	2377316.02	563160.44	996.40	37.0	998.73	A	Sharon	26.7	36.3	37.0	2.33	39.3	39.10	0.20	hard
	LL1mw-085	2377246.94	562046.25	994.30	42.1	996.84	A	Sharon	32.2	41.6	42.1	2.54	44.7	45.30	-0.60	soft
	LL1mw-086	2380437.00	561714.00	938.00	75.0	940.63	A	Unconsolidated	64.5	74.5	74.8	2.63	77.38	77.15	0.23	medium
	LL1mw-087	2378732.00	560375.00	941.80	17.5	944.32	A	Unconsolidated	7	17	17.3	2.52	18.55	18.55	0.00	hard
Load Line 2	LL2mw-059	2375453.00	558020.00	964.33	19.5	966.67	A	Sharon	9.3	19.1	19.5	2.34	21.8	21.78	0.02	hard
	LL2mw-060	2375978.00	558022.00	958.93	18.3	961.57	A	Sharon	8.1	17.9	18.3	2.64	20.9	20.79	0.11	hard
	LL2mw-261	2373317.81	561898.25	1,009.55	22.5	1,011.40	A	Sharon	9.8	19.8	20.0	1.85	21.9	22.52	-0.62	hard
	LL2mw-262	2373970.79	562219.87	1,011.12	21.2	1,012.62	A	Sharon	10.6	20.6	20.8	1.50	22.3	22.70	-0.40	hard
	LL2mw-263	2374289.51	561591.19	1,009.42	22.2	1,011.47	A	Sharon	10.8	20.8	21.0	2.05	23.0	23.45	-0.45	hard
	LL2mw-264	2374532.00	561173.60	1,010.10	20.5	1,011.88	A	Sharon	9.8	19.8	20.0	1.78	21.7	22.42	-0.72	hard
	LL2mw-265	2375594.06	557972.91	959.47	22.5	961.24	A	Sharon	11.8	21.8	22.0	1.77	23.8	24.45	-0.65	hard
	LL2mw-266	2373744.03	561981.86	1,014.09	20.5	1,016.28	A	Sharon	9.8	19.8	20.0	2.19	22.2	22.75	-0.55	hard
	LL2mw-267	2373715.04	561393.22	1,012.81	20.5	1,014.81	A	Sharon	9.8	19.8	20.0	2.00	22.0	22.05	-0.05	hard
	LL2mw-268	2374157.30	560831.04	1,015.47	28.8	1,017.28	A	Sharon	17.3	27.3	27.5	1.81	29.3	29.95	-0.65	soft
	LL2mw-269	2374756.07	559484.12	1,009.49	28.0	1,011.62	A	Sharon	17.1	27.1	27.3	2.13	29.4	30.32	-0.92	hard
	LL2mw-270	2372858.41	562655.93	1,009.93	20.5	1,010.18	A	Sharon	9.8	19.8	20.0	0.25	20.3	22.45	-2.15	hard
Load Line 3	LL3mw-232	2369862.96	561365.91	998.59	37.8	1,000.41	A	Sharon	26.8	36.8	37.0	1.82	38.8	39.78	-0.98	medium
	LL3mw-233	2369934.52	560750.41	1,002.47	31.1	1,004.36	A	Sharon	20.1	30.1	30.3	1.89	32.2	31.76	0.44	soft
	LL3mw-234	2370297.47	560058.89	1,004.47	20.5	1,006.56	A	Sharon	9.8	19.8	20.0	2.09	22.1	22.61	-0.51	soft
	LL3mw-235	2370642.47	559812.63	1,008.05	21.2	1,009.94	A	Sharon	10.1	20.1	20.3	1.89	22.2	22.93	-0.73	hard
	LL3mw-236	2371178.58	559866.75	1,008.94	25.5	1,011.17	A	Sharon	13.8	23.8	24.0	2.23	26.2	26.57	-0.37	hard
	LL3mw-237	2371475.00	559328.09	1,003.57	23.9	1,005.57	A	Sharon	12.7	22.7	22.9	2.00	24.9	25.51	-0.61	hard
	LL3mw-238	2370625.34	559569.06	1,004.75	20.7	1,006.91	A	Sharon	10.5	20.5	20.7	2.16	22.9	23.33	-0.43	hard
	LL3mw-239	2370895.01	559101.39	1,001.70	35.7	1,003.50	A	Sharon	24.9	34.9	35.0	1.80	36.8	36.90	-0.10	soft
	LL3mw-240	2371309.57	558204.34	1,005.60	35.5	1,007.52	A	Sharon	24.4	34.4	34.6	1.92	36.5	36.65	-0.15	medium
	LL3mw-241	2370332.80	559298.09	992.41	23.8	994.65	A	Sharon	12.7	22.7	22.9	2.24	25.1	25.53	-0.43	hard
	LL3mw-242	2371993.30	557034.21	997.39	20.5	999.32	A	Sharon	9.8	19.8	20.0	1.93	21.9	22.54	-0.64	hard
	LL3mw-243	2371532.61	556688.92	989.36	24.5	991.16	A	Sharon	13.8	23.8	24.0	1.80	25.8	26.33	-0.53	hard
	LL3mw-244	2371456.00	556033.00	986.20	45	988.78	A	Sharon	34.5	44.5	44.8	2.58	47.25	47.10	0.15	hard
	LL3mw-245	2369249.00	558573.00	978.70	47	981.24	A	Sharon	36.5	46.5	46.8	2.54	48.9	48.80	0.10	hard
	LL4mw-193	2364237.44	554959.74	980.88	21.9	982.92	A	Unconsolidated	11.3	21.3	21.5	2.04	23.5	24.18	-0.68	medium
	LL4mw-194	2364584.76	555088.18	981.87	22.0	983.76	A	Unconsolidated	11.3	21.3	21.5	1.89	23.4	23.42	-0.02	hard
	LL4mw-195	2365198.84	555045.69	980.83	21.0	982.59	A	Unconsolidated	10.3	20.3	20.5	1.76	22.3	22.74	-0.44	soft
	LL4mw-196	2365297.28	555212.59	982.56	20.0	984.55	A	Unconsolidated	9.2	19.2	19.4	1.99	21.4	21.70	-0.30	hard
	LL4mw-197	2365385.95	555396.55	983.79	21.7	985.46	A	Unconsolidated	10.8	20.8	21.0	1.67	22.7	23.58	-0.88	hard
	LL4mw-198	2364991.12	555440.99	981.61	22.0	983.42	A	Unconsolidated	10.3	20.3	20.5	1.81	22.3	21.68	0.62	hard
	LL4mw-199	2365421.66	554621.06	975.20	22.0	977.28	A	Unconsolidated	10.3	20.3	20.5	2.08	22.6	23.14	-0.54	hard
	LL4mw-200	2365904.12	554579.72	985.97	23.5	987.93	A	Unconsolidated	12.6	22.6	23.0	1.96	25.0	25.08	-0.08	hard
	LL4mw-201	2365417.00	554607.00	975.90	67	978.02	A	Sharon	56.5	66.5	66.8		70.15	70.72	-0.57	hard
Load Line 5	LL5mw-001	2354625.07	554319.25	1,125.00	24.0	1,127.92	A	Homewood	14.0	24.0	24.0	2.92	26.9	27.10	-0.20	medium
	LL5mw-002	2354571.52	554604.01	1,125.80	25.0	1,128.68	A	Homewood	15.0	25.0	25.0	2.88	27.9	27.56	0.34	hard
	LL5mw-003	2354964.47	554535.41	1,124.70	21.0	1,127.70	A	Unconsolidated	11.0	21.0	21.0	3.00	24.0	24.40	-0.40	hard
	LL5mw-004	2355006.44	554073.73	1,122.90	22.4	1,125.81	A	Homewood	12.0	22.0	22.0	2.91	24.9	25.39	-0.49	soft
	LL5mw-005	2354422.02	554152.73	1,126.50	27.8	1,129.42	A	Homewood	17.0	27.0	27.0	2.92	29.9	29.74	0.16	soft
	LL5mw-006	2354730.78	553984.82	1,125.10	24.5	1,128.00	A	Homewood	14.0	24.0	24.0	2.90	26.9	27.10	-0.20	hard

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Load Line 6	LL6mw-001	2353153.23	554214.84	NA	18.0	1,124.16	F	Unconsolidated	7.0	17.0	17.0	0.00	17.0	17.54	-0.54	hard
	LL6mw-002	2353820.09	553589.88	NA	23.0	1,129.36	F	Unconsolidated	12.5	22.5	22.5	0.00	22.5	24.43	-1.93	hard
	LL6mw-003	2353048.68	553544.34	NA	23.4	1,125.38	A	Homewood	12.5	22.5	22.5	3.35	25.9	25.60	0.30	soft
	LL6mw-004	2353368.79	553431.82	NA	23.0	1,125.39	A	Homewood	12.5	22.5	22.5	2.58	25.1	24.48	0.62	hard
	LL6mw-005	2353194.52	553170.76	NA	19.9	1,120.47	A	Homewood	9.5	19.5	19.5	2.96	22.5	22.03	0.47	soft
	LL6mw-006	2352419.15	553165.28	NA	20.0	1,124.37	A	Unconsolidated	7.0	17.0	17.0	0.00	17.0	17.72	-0.72	hard
	LL6mw-007	2353354.89	552677.17	NA	20.0	1,115.62	F	Homewood	9.5	19.5	19.5	0.00	19.5	19.36	0.14	medium
	LL6mw-008	2353616.00	553154.00	1,121.30	17.8	1,124.15	A	Unconsolidated	7.2	17.2	17.5	2.85	20.20	20.20	0.00	medium
	LL6mw-009	2353604.00	553149.00	1,121.40	39.5	1,123.75	A	Homewood	29	39	39.3	2.35	41.40	41.34	0.06	soft
Load Line 7	LL7mw-001	2352192.91	554925.77	1,126.90	30.0	1,129.64	A	Homewood	19.5	29.5	29.5	2.74	32.2	33.02	-0.82	hard
	LL7mw-002	2351918.23	555126.55	1,126.70	26.5	1,129.55	A	Homewood	15.0	25.0	25.0	2.85	27.8	27.18	0.62	hard
	LL7mw-003	2352351.04	555417.04	1,118.23	31.5	1,120.84	A	Homewood	21.0	31.0	31.0	2.61	33.6	33.49	0.11	hard
	LL7mw-004	2352035.20	555581.14	1,123.30	29.5	1,126.32	A	Homewood	19.5	29.5	29.5	3.02	32.5	32.18	0.32	hard
	LL7mw-005	2351741.47	555581.80	1,133.30	28.2	1,135.87	A	Homewood	18.0	28.0	28.0	2.57	30.6	30.31	0.29	hard
	LL7mw-006	2351879.92	555990.59	1,120.70	28.0	1,123.56	A	Homewood	17.5	27.5	27.5	2.86	30.4	30.27	0.13	hard
Load Line 8	LL8mw-001	2351666.10	552607.06	1,118.69	24.0	1,121.46	A	Unconsolidated	14.0	24.0	24.0	2.77	26.8	27.47	-0.67	soft
	LL8mw-002	2351010.33	552408.18	1,121.67	30.4	1,124.51	A	Unconsolidated	20.0	30.0	30.0	2.84	32.8	32.55	0.25	hard
	LL8mw-003	2351359.25	552231.14	1,116.30	21.0	1,119.05	A	Unconsolidated	10.5	20.5	20.5	2.75	23.3	23.00	0.30	hard
	LL8mw-004	2351261.83	551807.58	1,112.73	20.5	1,115.75	A	Unconsolidated	10.0	20.0	20.0	3.02	23.0	22.70	0.30	hard
	LL8mw-005	2351748.32	551522.48	1,112.51	24.0	1,115.73	A	Homewood	14.0	24.0	24.0	3.22	27.2	27.74	-0.54	soft
	LL8mw-006	2351483.58	551296.77	1,114.33	24.2	1,117.17	A	Homewood	14.0	24.0	24.0	2.84	26.8	27.05	-0.25	soft
Load Line 9	LL9mw-001	2355817.04	556125.81	NA	21.6	1,134.62	A	Homewood	10.5	20.5	20.5	2.78	23.3	23.38	-0.08	hard
	LL9mw-002	2355907.76	556755.11	NA	21.0	1,127.30	A	Homewood	10.0	20.0	20.0	2.42	22.4	22.79	-0.39	hard
	LL9mw-003	2356635.21	556445.31	NA	22.0	1,135.76	A	Homewood	11.5	21.5	21.5	2.30	23.8	24.26	-0.46	hard
	LL9mw-004	2357338.76	556002.00	NA	33.0	1,131.83	A	Homewood	22.0	32.0	32.0	2.91	34.9	34.73	0.17	hard
	LL9mw-005	2356505.95	557063.36	NA	20.6	1,130.93	A	Homewood	10.0	20.0	20.0	3.30	23.3	23.55	-0.25	hard
	LL9mw-006	2357446.67	556434.79	NA	26.8	1,129.88	A	Homewood	16.0	26.0	26.0	2.90	28.9	28.88	0.02	hard
	LL9mw-007	2357024.34	557000.56	NA	19.0	1,119.99	F	Homewood	8.5	18.5	18.5	0.00	18.5	18.20	0.30	hard
Load Line 10	LL10mw-001	2355272.22	555816.25	1,130.00	28.0	1,132.77	A	Homewood	17.0	27.0	27.0	2.77	29.8	29.63	0.17	hard
	LL10mw-002	2355710.51	555523.36	1,124.40	28.0	1,127.13	A	Homewood	17.0	27.0	27.0	2.73	29.7	29.84	-0.14	hard
	LL10mw-003	2355389.92	555494.71	1,127.40	26.4	1,130.28	A	Homewood	16.0	26.0	26.0	2.88	28.9	28.59	0.31	hard
	LL10mw-004	2355438.20	555236.59	1,119.60	31.2	1,122.39	A	Homewood	21.0	31.0	31.0	2.79	33.8	33.57	0.23	hard
	LL10mw-005	2355943.55	555380.53	1,122.90	27.0	1,125.67	A	Homewood	16.5	26.5	26.5	2.77	29.3	24.29	5.01	hard
	LL10mw-006	2355654.80	554995.25	1,121.20	24.0	1,123.83	A	Unconsolidated	13.5	23.5	23.5	2.63	26.1	26.52	-0.42	medium
Load Line 11	LL11mw-001	2352778.89	557505.03	1,097.46	23.0	1,100.16	A	Unconsolidated	11.4	21.4	21.4	2.70	24.1	23.45	0.65	hard
	LL11mw-002	2353354.28	558310.52	1,080.29	20.0	1,080.00	F	Unconsolidated	6.3	16.3	16.3	-0.29	16.0	16.51	-0.51	hard
	LL11mw-003	2352737.87	557999.62	1,088.45	17.0	1,088.48	F	Unconsolidated	5.9	15.9	15.9	0.03	15.9	16.09	-0.19	soft
	LL11mw-004	2352737.24	558164.36	1,084.60	17.0	1,084.72	F	Unconsolidated	6.1	16.1	16.1	0.12	16.2	16.24	-0.04	hard
	LL11mw-005	2352847.56	558501.02	1,079.60	17.0	1,079.40	F	Unconsolidated	6.2	16.2	16.2	-0.20	16.0	16.48	-0.48	hard
	LL11mw-006	2352521.36	558263.28	1,086.61	17.0	1,086.50	F	Unconsolidated	5.6	15.6	15.6	-0.11	15.5	15.58	-0.08	hard
	LL11mw-007	2352094.81	558189.71	1,079.22	23.0	1,082.00	A	Unconsolidated	12.4	22.4	22.4	2.78	25.2	25.40	-0.20	hard
	LL11mw-008	2352388.60	557981.17	1,087.90	17.0	1,087.74	F	Unconsolidated	5.6	15.6	15.6	-0.16	15.4	15.78	-0.38	hard
	LL11mw-009	2352577.18	557901.18	1,088.38	17.0	1,091.54	F	Unconsolidated	6.7	16.7	16.7	-0.10	16.6	19.58	-2.98	hard
	LL11mw-010	2352039.00	557675.43	1,080.22	22.0	1,082.68	A	Unconsolidated	10.9	20.9	20.9	2.46	23.4	23.52	-0.12	hard
	LL11mw-011	2351119.00	558680.00	1,077.40	18.5	1,080.20	A	Unconsolidated	7.8	17.8	18.1	2.80	20.45	20.44	0.01	medium
	LL11mw-012	2351125.00	558691.00	1,077.90	115.0	1,080.36	A	Sharon Shale	104.5	114.5	114.8	2.46	119.45	119.45	0.00	hard

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Load Line 12	LL12mw-088	2368667.75	556393.79	978.94	29.0	981.06	A	Unconsolidated	14.8	24.8	25.0	2.12	27.1	27.45	-0.35	hard
	LL12mw-107	2368595.67	556759.02	978.03	33.0	980.15	A	Unconsolidated	20.7	30.7	31.0	2.12	33.1	33.75	-0.65	hard
	LL12mw-113	2368223.73	558345.37	977.67	23.0	980.18	A	Sharon Shale	12.3	22.3	22.5	2.51	25.0	19.80	5.20	soft
	LL12mw-128	2368293.20	557371.54	976.21	34.0	978.24	A	Unconsolidated	21.1	31.1	31.3	2.03	33.3	34.03	-0.73	hard
	LL12mw-153	2368138.87	557823.23	975.34	26.0	977.85	A	Unconsolidated	12.3	22.3	22.5	2.51	25.0	24.80	0.20	hard
	LL12mw-154	2368183.88	557754.56	977.00	29.0	979.06	A	Unconsolidated	16.4	26.4	26.6	2.06	28.7	28.65	0.05	hard
	LL12mw-182	2368853.20	555890.35	982.20	36.1	984.42	A	Unconsolidated	25.2	35.2	35.5	2.22	37.7	38.02	-0.32	hard
	LL12mw-182ss	2368867.00	555897.00	982.30	36	985.02	A	Unconsolidated	25.25	35.25	35.55	2.72	38.5	38.50	0.00	hard
	LL12mw-183	2369224.36	556068.15	980.59	36.0	982.98	A	Sharon Shale	23.3	33.3	33.6	2.39	36.0	36.35	-0.35	hard
	LL12mw-184	2368997.48	556399.46	980.96	29.5	983.16	A	Unconsolidated	18.8	28.8	29.0	2.20	31.2	31.10	0.10	hard
	LL12mw-185	2368829.86	556946.75	979.09	24.0	981.31	A	Unconsolidated	10.8	20.8	21.0	2.22	23.2	23.30	-0.10	hard
	LL12mw-186	2367912.39	559065.95	976.34	23.0	978.31	A	Sharon Shale	8.8	18.8	19.0	1.97	21.0	21.05	-0.05	hard
	LL12mw-187	2368524.14	557633.10	977.90	29.0	979.94	A	Unconsolidated	17.2	27.2	27.4	2.04	29.4	29.95	-0.55	hard
	LL12mw-188	2367908.82	558132.59	978.46	20.5	980.63	A	Unconsolidated	9.8	19.8	20.0	2.17	22.2	22.10	0.10	soft
	LL12mw-189	2367945.92	558569.27	976.17	18.5	978.04	A	Sharon Shale	7.5	17.5	17.7	1.87	19.6	19.64	-0.04	hard
	LL12mw-242	2368545.29	558020.51	978.40	26.3	981.20	A	Unconsolidated	15.5	25.5	25.5	2.80	28.3	28.80	-0.50	soft
	LL12mw-243	2368190.04	557376.32	978.10	24.0	980.79	A	Unconsolidated	13.0	23.0	23.0	2.69	25.7	24.40	1.30	hard
	LL12mw-244	2368751.42	557377.17	978.10	30.0	980.65	A	Unconsolidated	19.5	29.5	29.5	2.55	32.1	30.70	1.40	soft
	LL12mw-245	2368370.74	557044.55	977.50	29.0	980.04	A	Unconsolidated	18.0	28.0	28.0	2.54	30.5	30.44	0.06	medium
	LL12mw-246	2369432.17	556658.89	982.00	32.0	984.83	A	Unconsolidated	21.5	31.5	31.5	2.83	34.3	35.05	-0.75	hard
	LL12mw-247	2368932.00	555141.00	981.30	20.5	984.25	A	Unconsolidated	10	20	20.3	2.95	22.6	22.58	0.02	hard
Landfill North of Winklepeck	LNWmw-024	2358403.21	564825.89	1,035.30	24.0	1,038.00	A	Unconsolidated	10.0	20.0	20.0	2.70	22.7	22.50	0.20	hard
	LNWmw-025	2358417.06	565071.92	1,027.20	19.0	1,029.13	A	Unconsolidated	8.0	18.0	18.0	1.93	19.9	20.34	-0.44	hard
	LNWmw-026	2358952.24	564658.16	1,025.00	24.0	1,027.80	A	Unconsolidated	13.0	23.0	23.0	2.80	25.8	25.93	-0.13	hard
	LNWmw-027	2358628.75	564517.41	1,024.40	25.0	1,027.13	A	Unconsolidated	14.0	24.0	24.0	2.73	26.7	26.84	-0.14	hard
NACA Test Area	NTAmw-107	2345433.40	551697.29	1,077.65	23.0	1,080.30	A	Unconsolidated	12.0	22.0	22.0	2.65	24.6	24.10	0.50	soft
	NTAmw-108	2345781.60	551916.22	1,083.22	23.0	1,085.62	A	Unconsolidated	12.0	22.0	22.0	2.40	24.4	24.41	-0.01	medium
	NTAmw-109	2345997.72	551293.25	1,076.89	19.0	1,079.84	A	Unconsolidated	8.0	18.0	18.0	2.95	20.9	20.38	0.52	soft
	NTAmw-110	2346438.94	551351.46	1,080.03	28.0	1,082.62	A	Unconsolidated	17.0	27.0	27.0	2.59	29.6	29.74	-0.14	hard
	NTAmw-111	2346638.01	551538.60	1,078.07	20.0	1,080.94	A	Unconsolidated	9.5	19.5	19.5	2.87	22.4	22.02	0.38	hard
	NTAmw-112	2346889.48	551712.14	1,075.36	23.9	1,078.33	A	Unconsolidated	13.9	23.9	23.9	2.97	26.9	26.56	0.34	medium
	NTAmw-113	2347082.83	551488.52	1,072.61	27.5	1,075.68	A	Unconsolidated	17.0	27.0	27.5	3.07	30.6	29.60	1.00	hard
	NTAmw-114	2347301.57	551592.94	1,075.61	20.0	1,078.71	A	Unconsolidated	9.5	19.5	19.5	3.10	22.6	22.65	-0.05	hard
	NTAmw-115	2347581.16	551791.78	1,086.91	24.0	1,089.65	A	Unconsolidated	12.5	22.5	22.5	2.74	25.2	25.29	-0.09	hard
	NTAmw-116	2348196.39	551748.00	1,091.68	22.0	1,094.33	A	Unconsolidated	10.0	20.0	20.0	2.65	22.6	22.54	0.06	hard
	NTAmw-117	2347994.83	551584.57	1,091.67	25.0	1,094.54	A	Unconsolidated	14.5	24.5	24.5	2.87	27.4	27.50	-0.10	medium
	NTAmw-118	2347609.41	551335.04	1,078.86	22.5	1,081.44	A	Unconsolidated	12.0	22.0	22.0	2.58	24.6	24.62	-0.02	medium
	NTAmw-119	2346013.00	551286.00	1,077.40	130	1,080.07	A	Unconsolidated	90.0	100.0	100.3	2.67	104.6	104.68	-0.08	hard
Ramsdell Quarry Landfill	RQLmw-006	2375927.71	566091.26	993.52	42.1	995.39	A	Sharon	19.4	39.4	39.6	1.87	41.4	42.05	-0.65	hard
	RQLmw-007	2375872.56	566544.36	963.86	18.7	965.91	A	Sharon	6.0	16.0	16.2	2.05	18.2	18.60	-0.40	hard
	RQLmw-008	2376011.08	566327.94	963.82	18.7	966.08	A	Sharon	6.0	16.0	16.2	2.26	18.5	18.68	-0.18	hard
	RQLmw-009	2376253.65	566351.20	962.60	18.8	964.58	A	Sharon	5.9	15.9	16.4	1.98	18.4	18.85	-0.45	hard
	RQLmw-010	2376048.58	566857.39	980.04	35.4	982.14	A	Sharon	12.5	32.5	33.0	2.10	35.1	35.26	-0.16	hard
	RQLmw-011	2376398.19	566819.66	974.60	35.4	976.57	A	Sharon	12.4	32.4	32.6	1.97	34.6	35.36	-0.76	hard
	RQLmw-012	2376558.19	566551.95	975.12	30.5	977.65	A	Sharon	19.8	29.8	30.0	2.53	32.5	32.70	-0.20	hard
	RQLmw-013	2376204.93	566928.09	978.04	34.4	980.71	A	Sharon	23.7	33.7	33.9	2.67	36.6	36.40	0.20	hard
	RQLmw-014	2376519.38	566941.29	970.83	29.4	973.49	A	Sharon	18.6	28.6	28.9	2.66	31.6	31.48	0.12	hard
	RQLmw-015	2375490.96	566560.90	989.19	40.1	991.26	A	Sharon	29.2	39.2	39.5	2.07	41.6	42.05	-0.45	hard
	RQLmw-016	2375649.55	566177.68	994.02	39.5	996.60	A	Sharon	28.5	38.5	39.0	2.58	41.6	41.70	-0.10	hard
	RQLmw-017	2376124.18	565931.38	988.69	30.5	991.23	A	Sharon	19.8	29.8	30.0	2.54	32.5	32.70	-0.20	hard
Sharon Conglomerate	SCFmw-001	2353178.98	554768.62	1,118.53	230	1,120.71	A	Sharon Cong.	201	211	NA	2.18	213.61	214.50	-0.89	medium
	SCFmw-002	2368927.36	555152.38	982.28	153	984.56	A	Sharon Cong.	137	147	NA	2.28	149.65	150.30	-0.65	medium
	SCFmw-003	2375843.20	557957.67	956.14	140	958.47	A	Sharon Cong.	125.5	135.5	NA	2.33	139.65	139.65	0.00	medium
	SCFmw-004	2378730.23	560361.03	941.87	120	944.17	A	Sharon Cong.	100	110	NA	2.30	112.47	112.50	-0.03	medium
	SCFmw-005	2377014.05	567302.35	958.43	160	960.80	A	Sharon Cong.	139	154	NA	2.37	156.41	156.40	0.01	medium
	SCFmw-006	2369394.54	569583.41	963.69	90	965.92	A	Sharon Cong.	76	86	NA	2.23	88.32	87.89	0.43	hard

Table 3-2. Well Construction Details, Including July 2012 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	July 2012 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Winklepeck Burning Grounds	WBGmw-005	2357163.55	563037.18	1,052.20	19.0	1,054.70	A	Unconsolidated	8.3	18.3	18.6	2.50	21.1	21.14	-0.04	hard
	WBGmw-006	2359087.79	563008.87	1,012.16	19.0	1,014.66	A	Unconsolidated	7.6	17.6	17.9	2.50	20.4	20.14	0.26	hard
	WBGmw-007	2360420.44	562479.87	998.09	24.0	1,000.59	A	Unconsolidated	13.5	23.5	23.8	2.50	26.3	26.38	-0.08	hard
	WBGmw-008	2359700.57	562010.35	1,005.71	18.5	1,008.21	A	Unconsolidated	8.1	18.2	18.5	2.50	21.0	20.82	0.18	hard
	WBGmw-009	2357159.20	561603.54	1,045.03	24.0	1,047.53	A	Unconsolidated	11.4	21.4	21.5	2.50	24.0	24.26	-0.26	hard
	WBGmw-010	2356051.96	562893.20	1,067.10	21.0	1,069.85	A	Unconsolidated	10.5	20.5	20.8	2.75	23.6	23.24	0.36	hard
	WBGmw-011	2356187.29	562609.18	1,069.70	22.0	1,072.38	A	Unconsolidated	11.0	21.0	21.3	2.68	24.0	23.84	0.16	hard
	WBGmw-012	2354810.65	562240.90	1,076.50	30.0	1,079.11	A	Unconsolidated	19.0	29.0	29.4	2.61	32.0	31.68	0.32	hard
	WBGmw-013	2355223.25	561518.27	1,069.10	22.0	1,071.70	A	Unconsolidated	11.0	21.0	21.3	2.60	23.9	24.04	-0.14	hard
	WBGmw-014	2360439.22	562061.26	994.10	23.0	996.78	A	Unconsolidated	12.0	22.0	22.3	2.68	25.0	24.98	0.02	hard
	WBGmw-015	2359182.41	562340.12	1,009.10	22.0	1,011.60	A	Unconsolidated	11.0	21.0	21.3	2.50	23.8	23.48	0.32	hard
	WBGmw-016	2360645.88	562709.13	994.90	24.0	997.03	A	Unconsolidated	13.0	23.0	23.3	2.13	25.4	25.21	0.19	hard
	WBGmw-017	2359603.84	562913.24	1,004.00	22.0	1,006.62	A	Unconsolidated	11.0	21.0	21.3	2.62	23.9	23.35	0.55	hard
	WBGmw-018	2361302.00	562659.00	990.50	24.0	991.45	A	Unconsolidated	13.5	23.5	23.8	0.95	24.8	24.81	-0.01	hard
	WBGmw-019	2361304.00	562645.00	989.30	50.0	990.25	A	Sharon	39.55	49.55	49.85	0.95	50.5	50.44	0.06	hard
	WBGmw-020	2357161.00	561623.00	1,043.40	43.3	1,044.31	A	Sharon	32.9	42.9	43.2	0.91	43.8	43.80	0.00	hard
	WBGmw-021	2359106.00	563009.00	1,010.00	42.5	1,010.92	A	Sharon	32	42	42.3	0.92	43.1	43.12	-0.02	hard
Suspected Mustard Agent Burial Site	MBS-001	2345323.00	550759.50	1,079.68	30.0	1,082.20	A	Unconsolidated	19	28.7	29	2.52	31.5	31.08	0.42	hard
	MBS-002	2345322.30	550886.20	1,080.50	30.0	1,083.22	A	Unconsolidated	18	27.3	28	2.72	30.7	31.24	-0.54	hard
	MBS-003	2345172.40	550922.80	1,082.45	30.0	1,084.45	A	Unconsolidated	18.5	28.2	28.5	2.00	30.5	30.80	-0.30	hard
	MBS-004	2345134.20	550767.90	1,079.55	26.0	1,081.80	A	Unconsolidated	14.7	24.4	24.7	2.25	27.0	27.24	-0.24	hard
	MBS-005	2345354.10	550800.70	1,080.50	30.0	1,082.42	A	Unconsolidated	18	28	28.08	1.92	30.2	30.00	0.20	hard
	MBS-006	2345282.30	550726.10	1,080.29	28.0	1,081.83	A	Unconsolidated	16.5	26.5	26.56	1.54	28.2	28.20	0.00	hard

a elevations are in feet above mean sea level (amsl)
b total drilled well borehole depth relative to ground surface.
c A = above grade completion; F = flush-mount completion
NA = Not available
AGS = above ground surface
BGS = below ground surface
BTOC = below top of casing

Table 3-3. Groundwater Elevations

Well	Monitoring Zone	Top of Casing (TOC) Elevation[a] (ft)	2012 Quarterly Groundwater Elevation (Oct/2011) (ft)	2012 Semi-Annual Groundwater Elevation (Jan/2012) (ft)	2012 Quarterly Groundwater Elevation (Apr/2012) (ft)	2012 Semi-Annual Groundwater Elevation (Jul/2012) (ft)
Building 1200						
B12mw-012	Sharon	1006.32	986.35	989.73	NM	987.84
B12mw-013	Sharon	1004.48	NM	NM	987.47	985.56
Background						
BKGmw-005	Unconsolidated	1151.94	1139.60	1142.03	NM	1137.27
BKGmw-021	Unconsolidated	974.66	959.34	962.47	NM	959.32
C Block						
CBLmw-002	Homewood	1175.24	1136.99	1140.26	NM	1137.58
CBLmw-005	Homewood	1158.10	NM	NM	1134.71	1133.78
Central Burn Pit						
CBPmw-002	Unconsolidated	970.04	960.94	962.96	NM	961.32
CBPmw-009	Sharon	972.48	NM	NM	966.49	961.35
Detonation Area 2						
DA2mw-108	Unconsolidated	1032.36	1025.41	1026.18	NM	1025.35
DA2mw-114	Sharon Shale	1031.90	NM	NM	NM	1026.11
DA2mw-115	Sharon	1038.08	NM	NM	NM	1031.34
DETmw-003	Unconsolidated	1036.81	1027.16	1027.74	NM	1026.99
DETmw-004	Unconsolidated	1038.68	1027.94	1029.09	NM	1027.78
Erie Burning Grounds						
EBGmw-125	Unconsolidated	949.89	942.46	948.76	NM	936.91
EBGmw-131	Sharon	950.08	NM	NM	NM	938.39
Facility-Wide						
FWGmw-001	Unconsolidated	956.62	NM	NM	947.78	946.02
FWGmw-002	Unconsolidated	973.10	NM	NM	949.95	949.10
FWGmw-003	Unconsolidated	1131.96	NM	NM	1126.92	1124.98
FWGmw-004	Unconsolidated	1037.15	NM	NM	1022.56	1020.74
FWGmw-005	Homewood	1170.10	NM	NM	1149.00	1147.75
FWGmw-006	Unconsolidated	1184.33	NM	NM	1179.95	1174.08
FWGmw-007	Unconsolidated	1075.41	NM	NM	1052.09	1051.22
FWGmw-008	Unconsolidated	1111.61	NM	NM	1105.51	1102.64
FWGmw-009	Unconsolidated	1102.14	NM	NM	1100.29	1099.05
FWGmw-010	Unconsolidated	962.15	NM	NM	952.03	949.96
FWGmw-011	Unconsolidated	941.61	NM	NM	939.42	937.13
FWGmw-012	Sharon Shale	941.39	NM	NM	940.69	938.46
FWGmw-013	Sharon	1059.51	NM	NM	1041.55	1037.76
FWGmw-014	Unconsolidated	1137.57	NM	NM	1133.69	1131.39
FWGmw-015	Unconsolidated	1014.51	NM	NM	1008.02	1005.77
FWGmw-016	Sharon	1014.39	NM	NM	997.61	996.09
Load Line 1						
LL1mw-064	Unconsolidated	935.10	933.38	935.10	NM	931.78
LL1mw-065	Unconsolidated	944.41	932.79	934.92	NM	930.39
LL1mw-086	Unconsolidated	940.63	NM	NM	933.14	930.71
LL1mw-087	Unconsolidated	944.32	NM	NM	938.89	927.83
Load Line 2						
LL2mw-059	Sharon	966.67	952.43	954.27	NM	953.04
LL2mw-265	Sharon	961.24	950.62	952.46	NM	950.93
Load Line 3						
LL3mw-241	Sharon	994.65	985.12	987.54	NM	978.87
LL3mw-242	Sharon	999.32	982.54	986.10	NM	981.38
LL3mw-244	Sharon	988.78	NM	NM	976.19	974.24
LL3mw-245	Sharon	981.24	NM	NM	969.68	967.73
Load Line 4						
LL4mw-199	Unconsolidated	977.28	969.37	971.10	NM	969.33
LL4mw-201	Sharon	978.02	NM	NM	969.14	968.25

Table 3-3. Groundwater Elevations

Well	Monitoring Zone	Top of Casing (TOC) Elevation[a] (ft)	2012 Quarterly Groundwater Elevation (Oct/2011) (ft)	2012 Semi-Annual Groundwater Elevation (Jan/2012) (ft)	2012 Quarterly Groundwater Elevation (Apr/2012) (ft)	2012 Semi-Annual Groundwater Elevation (Jul/2012) (ft)
Load Line 6						
LL6mw-002	Unconsolidated	1129.36	1107.10	1116.41	NM	1106.98
LL6mw-005	Homewood	1120.47	1107.27	1109.99	NM	1107.24
LL6mw-008	Unconsolidated	1124.15	NM	NM	1109.38	1107.39
LL6mw-009	Homewood	1123.75	NM	NM	1109.39	1107.43
Load Line 10						
LL10mw-003	Homewood	1130.28	1108.84	1112.90	NM	1108.66
Load Line 11						
LL11mw-007	Unconsolidated	1082.00	1067.87	1068.87	NM	1065.80
LL11mw-011	Unconsolidated	1080.20	NM	NM	1072.10	1070.90
LL11mw-012	Sharon Shale	1080.36	NM	NM	1060.72	1058.98
Load Line 12						
LL12mw-182	Unconsolidated	984.42	973.22	976.13	975.90	973.01
LL12mw-182ss	Unconsolidated	985.02	NM	NM	976.46	973.65
LL12mw-185	Unconsolidated	981.31	971.91	974.46	974.99	972.92
LL12mw-187	Unconsolidated	979.94	970.13	972.25	971.89	968.89
LL12mw-242	Unconsolidated	981.20	972.40	975.05	973.30	970.46
LL12mw-245	Unconsolidated	980.04	967.67	972.60	973.06	971.68
LL12mw-246	Unconsolidated	984.83	968.74	970.29	970.32	967.86
LL12mw-247	Unconsolidated	984.25	NM	NM	978.87	977.46
NACA Test Area						
NTAmw-109	Unconsolidated	1079.84	1067.29	1069.45	NM	1067.31
NTAmw-119	Unconsolidated	1080.07	NM	NM	1068.32	1067.17
Ramsdell Quarry Landfill						
RQLmw-007	Sharon	965.91	959.60	961.59	NM	959.67
RQLmw-008	Sharon	966.08	959.44	961.58	NM	959.70
RQLmw-009	Sharon	964.58	959.63	960.89	NM	959.56
Sharon Congolmerate						
SCFmw-002	Sharon Conglom.	984.56	964.58	966.96	NM	949.98
SCFmw-004	Sharon Conglom.	944.17	944.17	944.42	NM	943.72
Winklepeck Burning Grounds						
WBGmw-006	Unconsolidated	1014.66	1008.06	1009.65	NM	1004.67
WBGmw-007	Unconsolidated	1000.59	982.86	984.50	NM	982.20
WBGmw-009	Unconsolidated	1047.53	1034.13	1036.65	NM	1032.35
WBGmw-018	Unconsolidated	991.45	NM	NM	NM	969.75
WBGmw-019	Sharon	990.25	NM	NM	NM	971.87
WBGmw-020	Sharon	1044.31	NM	NM	NM	1030.29
WBGmw-021	Sharon	1010.92	NM	NM	NM	1000.27

a = Elevations are in feet above mean sea level
NM = not measured

Potentiometric maps created from groundwater measurements from the RVAAP monitoring wells in July 2012 are presented on Plates 2, 3, 4, and 5. The potentiometric maps were generated from the July 2012 water-level measurements taken from the 275 new and existing facility wells and the six deep Sharon Conglomerate wells. These maps are updated on a yearly basis. The water levels from the individual events are not included in these plates. Additionally, the groundwater elevations from the Sharon Conglomerate wells were evaluated and determined not to be representative of either the Homewood aquifer or the upper portion of the Sharon aquifer. These wells were installed with their screened intervals positioned at the basal portion of the Sharon Conglomerate. Therefore, the groundwater elevations collected from the basal Sharon Conglomerate wells were used to determine the potentiometric contours for these deep wells as presented in Plate 4. To determine if groundwater elevations of basal Sharon Conglomerate wells (as determined from the July 2012 water-level measurements) are representative of the Sharon or Homewood aquifers, the groundwater elevation data were compared.

The groundwater elevation of water in the Homewood Aquifer (well LL10mw-003) is more than 77 feet higher than the nearest basal Sharon Conglomerate well (well SCFmw-001). This demonstrates that the Homewood Aquifer and Sharon Conglomerate are not representative of the same hydraulic unit. If they were in the same hydraulic unit, the water levels would be expected to be much the same.

There are five Sharon Conglomerate wells that are located through the basal portion of the Sharon Aquifer. The groundwater elevations of the five wells from the upper portion of the Sharon Aquifer are 0.80 to 18.57 feet higher than the five basal Sharon Conglomerate groundwater elevations at the same locations. The average elevation difference is nearly 8 feet. Again, this groundwater elevation difference indicates that the basal Sharon Conglomerate and the upper portion of the Sharon are separate hydraulic units. The potentiometric map for the basal Sharon Conglomerate wells is included as Plate 5.

Plate 2 shows the potentiometric surface of unconsolidated soil at the facility from July 2012. Groundwater in the unconsolidated aquifer predominantly flows in an eastward direction; however, the unconsolidated zone shows numerous local flow variations influenced by topography and drainage patterns. The local variations in flow direction suggest: (1) groundwater in the unconsolidated deposits is generally in direct hydraulic communication with surface water; and (2) surface water drainage ways may also act as groundwater discharge locations. In addition, topographic ridges between surface water drainage features act as groundwater divides in the unconsolidated deposits. A groundwater mound is evident in the south-central portion of RVAAP, thereby creating localized radial flow. This feature is the result of a bedrock high associated with the underlying Homewood.

Plate 3 shows the potentiometric surface of the Homewood formation at the facility from July 2012. The Homewood is only found in the western portion of RVAAP and generally occurs as cap rock. It appears from the limited number of wells that have

penetrated this formation that the general flow is to the east-southeast. However, a groundwater mound is present in the vicinity of the Fuze and Booster wells, which produces a localized radial flow pattern in this area of RVAAP that is at least partially influenced by a buried valley to the north and west.

Plate 4 shows the potentiometric surface of the upper Sharon formation at the facility from July 2012. The bedrock potentiometric map shows a regional eastward flow direction. However, a groundwater mound is evident in the vicinity of Load Line 2 on Plate 4, thereby creating localized radial flow. In addition, the upper portion of the Sharon is in direct communication with surface water at Sand Creek in the vicinity of Demolition Area #2.

Plate 5 shows the potentiometric surface of the basal Sharon formation from July 2012. Groundwater flow in the conglomeratic sandstone facies is to the east beneath RVAAP. The groundwater elevations from the deep Sharon Conglomerate wells were evaluated and determined not to be representative of the water table aquifer. These wells were installed with their screened intervals positioned at the basal portion of the Sharon Conglomerate sandstone.

To determine if groundwater elevations of basal Sharon Conglomerate wells (as determined in July 2012) are representative of the Sharon or Homewood Aquifers, the groundwater elevation data are compared as indicated on Table 3-4. As the table indicates the groundwater elevation of water in the Homewood Aquifer (well LL10mw-003) is more than 77 feet higher than the nearest basal Sharon Conglomerate well (well SCFmw-001). This demonstrates that the Homewood Aquifer and Sharon Conglomerate are not representative of the same hydraulic unit. If they were in the same hydraulic unit, the water levels would be expected to be much the same.

Table 3-4. Comparison of Groundwater Elevation
Basal Sharon Conglomerate Wells

Well ID	Monitored Zone Groundwater Elevation (ft amsl)			Difference (ft)
	Sharon Conglomerate (basal)	Sharon (upper portion)	Homewood	
SCFmw-001	1,031.20	-	1108.66	+ 77.46
SCFmw-002	966.28	974.24	-	+ 7.96
SCFmw-003	949.98	950.78	-	+ 0.80
SCFmw-004	943.72	962.29	-	+ 18.57
SCFmw-005	948.99	953.00	-	+ 4.01
SCFmw-006	947.56	955.24	-	+ 7.68

All water-level elevations (ft amsl) are from July 2012. Sharon (upper portion) and Homewood water-level elevations were taken from the nearest well to the basal Sharon Conglomerate well. Elevation is from potentiometric map (Plate 3).
" + " indicates that Sharon (upper portion) or Homewood elevation is higher and thus a separate hydraulic unit.

The groundwater elevations of the five wells from the upper portion of the Sharon Aquifer are 0.80 to 18.57 feet higher than the five basal Sharon Conglomerate groundwater elevations at the same locations. The average elevation difference is nearly 8 feet. Again, this groundwater elevation difference indicates that the basal Sharon Conglomerate and the upper portion of the Sharon are separate hydraulic units.

3.2 Monitoring Well Inspection/Repair Results

3.2.1 Inspection Results – July 2012

All FWGWMP monitoring wells at RVAAP were inspected during the period of July 16, 17, 20, 23, and 24, 2012. Inspection of the physical condition of all existing facility monitoring wells was conducted at the same time potentiometric surface measurements were collected. The well inspection survey consisted of the following elements:

- Following collection of water-level measurements at each well, the total depth of each monitoring well was sounded using the water-level indicator. This data allows a determination of the degree of siltation and comparison of the constructed depths recorded in the well construction logs.
- Visual examination of the condition of the above-ground components of each well was performed. The examination included the condition of access roads to the well, well identification tags or markings, protective casing condition, traffic guard posts, protective covers and locks, protective pads, weep holes, and watertight inner casing caps.
- Well inspection data and any maintenance needs were recorded using a well inspection/maintenance checklist.

The well inspections did not reveal irreparable damage to any specific monitoring wells. General well conditions include:

- Many of the outer well casings and guard posts are showing signs of rust and peeling paint. The following areas had a majority of the wells in need of painting:
    - Background Wells (BKGmw-005, BKGmw-013, BKGmw-016, and BKGmw-017)
    - Load Line 1 (LL1mw-064 and LL1mw-065)
    - Load Line 6 (LL6mw-001 through LL6mw-004, LL6mw-006, and LL6mw-007)
    - Load Line 7 (LL7mw-001 through LL7mw-006)
    - Load Line 8 (LL8mw-001 through LL8mw-006)
    - Load Line 9 (LL9mw-001, LL9mw-004, LL9mw-005, and LL9mw-006)
    - Load Line 10 (LL10mw-001)
    - Load Line 12 (LL12mw-242 through and LL12mw-246)
    - Atlas Scrap Yard (ASYmw-001 through ASYmw-010)

  - Building 812 (B12mw-010, B12mw-011, and B12mw-012)
  - C-Block (CBLmw-001 through CBLmw-004)
  - Landfill North of Winklepeck (LNWmw-024 and LNWmw-026)
  - NACA Test Area (NTAmw-107 through NTAmw-118)
  - Winklepeck Burning Grounds (WBGmw-016)

- All of the FWGWMP wells (with the exception of the new RI wells) should be considered for repainting. However, while a majority of the wells require repainting, the most recent inspection (July 2012) revealed no issues related to the paint that would affect the integrity of the wells (i.e., excessive rusting of the outer casing). Consequently, we suggest that repainting of the wells be delayed until the Record of Decision is completed. At that time it is anticipated that decisions may be made to close certain wells that will not be used for long-term monitoring. Only wells used for continued monitoring would then be repainted. Conversely, the condition of the paint at several of the wells was in good condition; however, the painted well identification number was fading (e.g., wells at Demolition Area 2). These wells should have the well identification repainted in 2012.
- The vegetation around the wells was cleared in late June through July of 2012, although small trees are encroaching on WBGmw-010. Access roads were passable from a vegetation standpoint during the inspection, although there are some low overhanging branches along the access road to FWGmw-009 that do scrape vehicles.
- At many of the wells (e.g., BKGmw-20, Central Burn Pits wells, Building 1200 wells, and Winklepeck Burning Grounds wells) the guard posts were missing the concrete plugs at the top of the post. This does not appear to affect the integrity or life of the posts. Additionally, as presented in Table 3-5, several well posts were loose but stable.
- Overall, the locks associated with the wells were in good condition with the few exceptions noted on Table 3-5. Lock caps on some of the wells were missing. The lock cap is the small rubber covering at the bottom of the lock over the locking mechanism where the key is inserted. Over time some of these covers have broken off. There is no way to replace the cover without replacing the lock. There is no structural or operating damage to the locks without covers. Since there is no damage to the lock as a result of the missing lock caps, no action is planned at this time to replace the missing lock caps. The working condition of all locks at the facility is closely monitored and any locks not in good working condition will be replaced.
- As detailed in Table 3-5, several wells had pads that were either cracked or had stability issues (wobbling). The integrity of the wells did not appear to be compromised and will be monitored during future inspections. These wells will be repaired in the spring of 2013.

- Several wells have outer casing tops that need to be replaced. As detailed in Table 3-5 it has been recommended to replace the outer casing tops for these wells.

Table 3-5 presents a list of specific wells that had conditions potentially requiring attention. Note that the conditions requiring repair from the July 2012 inspection are ongoing and will continue in to the spring of 2013 as weather permits.

3.2.2 Well Repair and Maintenance – 2012

The following well maintenance/repair activities were conducted in 2012:

- Locks for several wells were replaced because they were becoming difficult to open.
- Well caps for several of the wells were replaced.
- Trees or brush was cleared from near or around several wells.
- The painted well identification numbers were repainted for the majority of DA2 wells.

The pads at three wells have been noted as being consistently under water. These wells (EBGmw-126, MBSmw-001, and MBSmw-002) are monitored for signs of deterioration. The pads for the wells that are underwater will be visually inspected during sampling/ well inspection events to confirm that they are still intact and that the integrity of the wells is not compromised. Additionally, the water levels in the wells will be closely monitored. If the water level is found to be at ground surface it may be indicative of water entering the casing. Currently, the water levels in these wells range between 2 and 19 feet below ground surface. It should also be noted that none of these wells are flush-mounts, and the risers are well above the water level.

Table 3-5. Well Inspection Summary (July 2012)

Area	Well Number	Well Condition/Issue	Recommendation
Background	BKGmw-004	Lock cap is missing.	Lock is in good working condition. No action at this time.
	BKGmw-008	Outer casing cap is rusted and hard to close.	Replace outer casing lid.
	BKGmw-016	Pad has raised due to frost heave.	Continue to monitor well pad. No action at this time.
Load Line 1	LL1mw-080	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL1mw-082	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL1mw-083	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL1mw-084	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL1mw-085	Lock cap is missing.	Lock is in good working condition. No action at this time.
Load Line 2	LL2mw-269	Lock cap is missing.	Lock is in good working condition. No action at this time.
Load Line 3	LL3mw-233	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL3mw-238	Lock cap is missing.	Lock is in good working condition. No action at this time.
Load Line 4	LL4mw-194	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL4mw-197	Concrete around one of the guard posts is broken. Post is leaning but stable.	Monitor post during subsequent inspections.
Load Line 5	LL5mw-003	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL5mw-006	Lock cap is missing.	Lock is in good working condition. No action at this time.
Load Line 6	LL6mw-003	1. Lock cap is missing. 2. Insufficient packing (sand) between inner and outer casings.	1. Lock is in good working condition. No action at this time. 2. Replace the packing.
	LL6mw-004	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL6mw-005	Insufficient packing (sand) between inner and outer casings.	Replace the packing.
Load Line 8	LL8mw-003	The steel outer casing is dented but does not appear to be damaged. One of the guard posts has damaged concrete. The concrete is cracked and wobbles but is still stable.	There does not appear to be any structural damage to the inner casing or well - no action at this time.
	LL8mw-005	Concrete around one of the guard posts is broken. Post is stable.	Monitor post during subsequent inspections.
	LL8mw-006	Cracks in concrete pad.	Crack was repaired in October 2010. Pad is secure. Pad will be reevaluated annually.

Table 3-5. Well Inspection Summary (July 2012)

Area	Well Number	Well Condition/Issue	Recommendation
Load Line 9	LL9mw-001	Insufficient packing (sand) between inner and outer casings.	Replace the packing.
	LL9mw-004	Insufficient packing (sand) between inner and outer casings.	Replace the packing.
	LL9mw-005	1. Guard post is bent. 2. Insufficient packing (sand) between inner and outer casings.	1. Monitor post during subsequent inspections. 2. Replace the packing.
Load Line 10	LL10mw-004	Lock cap is missing.	Lock is in good working condition. No action at this time.
	LL10mw-006	Concrete pad cracked.	Crack was repaired in October 2010. Pad is secure. Pad will be reevaluated annually.
Load Line 11	LL11mw-001	No packing (sand) between inner and outer casings.	Replace the packing.
	LL11mw-004	1. Cracked well cap; still seals. 2. Missing manhole bolt.	1. Monitor during future inspections. Replace as needed. 2. Replace bolt.
	LL11mw-010	1. Lock cap is missing. 2. No packing (sand) between inner and outer casings.	1. Lock is in good working condition. No action at this time. 2. Replace the packing.
Load Line 12	LL12mw-246	Lock cap is missing.	Lock is in good working condition. No action at this time.
Atlas Scrap Yard	ASYmw-004	Lock cap is missing.	Lock is in good working condition. No action at this time.
Central Burn Pits	CBPmw-002	Lock cap is missing.	Lock is in good working condition. No action at this time.
	CBPmw-005	Lock cap is missing.	Lock is in good working condition. No action at this time.
Cobbs Ponds	CPmw-006	Lock cap is missing.	Lock is in good working condition. No action at this time.
Demolition Area 2	DETmw-001	Well number on casing has worn away.	Repaint well number on the well casing.
	DA2mw-110	Under pad erosion.	Pad secure. Monitor during future inspections.
Erie Burning Grounds	EBGmw-126	This well is consistently under water due to low topography and marshy conditions. The integrity of the pad and casing do not appear to be compromised.	Monitor the water during subsequent inspections for signs of deterioration of the pad. Additionally, monitor water levels inside the casing for evidence of infiltration of surface water.
Facility-Wide Wells	FWGmw-003	No well number.	Add well number.
	FWGmw-005	No well number.	Add well number.
	FWGmw-006	No well number.	Add well number.
	FWGmw-008	No well number.	Add well number.
	FWGmw-009	No well number.	Add well number.
	FWGmw-014	No well number.	Add well number.
Fuze and Booster Quarry	FBQmw-176	Concrete around one of the guard posts is broken. Post is stable.	Monitor post during subsequent inspections.

Table 3-5. Well Inspection Summary (July 2012)

Area	Well Number	Well Condition/Issue	Recommendation
NACA Test Area	NTAmw-118	Lock cap is missing.	Lock is in good working condition. No action at this time.
	NTAmw-119	No well number.	Add well number.
Winklepeck Burning Grounds	WBGmw-012	One of the guard posts is leaning and appears to have been hit.	Post is secure. Monitor during future inspections.
Ramsdell Quarry Landfill	RQLmw-006	Lock cap is missing.	Lock is in good working condition. No action at this time.
	RQLmw-007	Lock cap is missing.	Lock is in good working condition. No action at this time.
	RQLmw-008	Lock cap is missing.	Lock is in good working condition. No action at this time.
	RQLmw-009	Lock cap is missing.	Lock is in good working condition. No action at this time.
	RQLmw-010	Outer casing lid replaced.	Monitor during future inspections.
	RQLmw-011	Concrete pad wobbles.	Monitor during future inspections.
Mustard Agent Burial Site	MBSmw-001	This well is consistently under water due to low topography and marshy conditions. The integrity of the pad and casing do not appear to be compromised.	Monitor the water during subsequent inspections for signs of deterioration of the pad. Additionally, monitor water levels inside the casing for evidence of infiltration of surface water.
	MBSmw-006	Well number on casing has worn away.	Repaint well number on the well casing.

3.3 Load Line 12 Groundwater Elevations

Depth-to-groundwater measurements for the Load Line 12 wells were obtained during the January, April, and July 2012 monitoring events. The potentiometric maps generated from the water level measurements for the Load Line 12 wells are presented in Appendix F. In general, the potentiometric maps show seasonal reversal in groundwater flow, there by indicating seasonal recharge and discharge to and from the drainage ditch along the eastern edge of Load Line 12. Four Load Line 12 wells (LL12mw-113, LL12mw-183, LL12mw-186, and LL12mw-189) are listed as bedrock wells because they were completed at the soil / bedrock interface. The static water levels in all of the Load Line 12 wells are found to be representative of the water table.

Topographically, the Load Line 12 area is relatively flat. During periods of higher precipitation, the water level in the drainage ditch rises and then discharges to the water table to achieve equilibrium as seen during the April 2012 event. During drier periods, formation water recharges the drainage ditch as evidenced during the January and July 2012 sampling events. The groundwater flow in January 2012 was generally to the east toward the ditch. Based on these data, this alternating flow regime is controlled by the drainage ditch and precipitation events. Consequently, fluctuating conditions are expected to occur on a seasonal basis in the Load Line 12 area. Groundwater flow may also be partially influenced by preferential flow paths in the unconsolidated sediment.

3.4 Sedimentation/Turbidity and pH

3.4.1 Sedimentation/Turbidity

EQM has reviewed the historical sediment accumulation footages and the description of well bottoms for the wells currently being sampled. Most wells have less than 0.20 feet of accumulated sediment and have a hard well bottom. However, some wells were found to have greater than 0.20 feet of sediment accumulation and/or soft well bottoms. Several wells (e.g., LL12mw-243, LL12mw-244, and CBLmw-001) have been identified as wells that the depth of the well will be monitored during future monitoring events. Redevelopment of these wells will be conducted as necessary.

During the 2012 annual reporting period, only 11% of the 178 sampled locations had turbidity levels below 10 nephelometric turbidity units (NTU). These were all single occurrences (i.e., no well had multiple occurrences of low NTU values during the 2012 reporting period). In addition, high turbidity values (>500 NTU) were noted at some of the wells during the quarterly sampling events as follows:

October 2011: High turbidity values (>500 NTU) were noted at four wells (MBSmw-002, DA2mw-104, LL6mw-002, and LL6mw-005) in October 2011. Wells MBSmw-002 and LL6mw-002 did not exhibit elevated sediment levels during the sampling event.

January 2012: High turbidity values (i.e., >500 NTU) were noted at four wells (CBPmw-002, LL12mw-242, LL6mw-002, and LL6mw-005) in January 2012. Wells LL12mw-242 and LL6mw-002 did not exhibit elevated sediment levels during this sampling event.

Several wells exhibited elevated sediment levels in the well casing during the January 2012 event. Wells LL12mw-113, LL12mw-243, and LL12mw-244 are currently not being sampled (they are being monitored for water levels only). Should any of these wells be targeted for future sampling they will be redeveloped prior to sampling. LL12mw-245 is currently being sampled as part of the FWGWMP network. Based on the observed sediment accumulation in this well, it was redeveloped prior to the July 2012 sampling event. The measured depth of well WBGmw-007 appears to be a field measurement error. The measured depth was compared to the October 2011 reading, which gave a well depth of 26.52 feet with a sediment accumulation of -0.22-feet. This was confirmed on June 19, 2012, with a well depth of 26.36 feet (sediment accumulation of -0.06-feet).

April 2012: High turbidity values (i.e., >700 NTU) were noted at eight wells (FWGmw-002, FWGmw-005, FWGmw-008, FWGmw-009, FWGmw-014, LL6mw-006, LL1mw-086, LL12mw-182ss) in April 2012. Since these were newly installed wells they were not monitored for elevated sediment levels during this sampling event.

July 2012: High turbidity values (i.e., >800 or -5 NTU) were noted at fourteen wells (DETmw-004, FWGmw-003, FWGmw-002, FWGmw-004, FWGmw-005, FWGmw-007, FWGmw-008, FWGmw-014, LL1mw-087, LL4mw-199, LL6mw-008, LL6mw-002, LL6mw-005, and LL11mw-011) in July 2012. None of these wells exhibited significant elevated sediment levels (>0.5 ft) during this sampling event.

In order to minimize turbid samples, low-flow purging and sampling techniques are used. Additionally, wells purged with high turbidity readings are purged for additional minutes to attempt to lower or stabilize the turbidity of the sample. The pumps are suspended at least 1 foot above the bottom of the well to avoid agitation of the sediment potentially accumulating in the well sump. EQM will continue to monitor any high turbidity readings and make a determination for future redevelopment and other evaluation of any affected wells.

It should be noted that high turbidity readings are not necessarily an indicator of nonrepresentative (i.e., formation) groundwater as stated in the Ohio EPA Technical Guidance Manual for groundwater ***"Turbidity****, which is the visible presence of suspended mineral and organic particles in a ground water sample, also is not an indicator of ground water chemical stabilization and does not distinguish between stagnant casing water and formation water*." During the purging of these wells, EQM continued purging after the normal stabilization parameters stabilized (turbidity is not a stabilization parameter). Purging was continued in an attempt to reach turbidity values that are within 10 percent of each other. Additionally, the groundwater samples for metals analysis are

filtered as part of the FWGWMP sampling, thereby reducing the effect of suspended particles in the groundwater.

The Ohio EPA's general recommendations on whether and how to filter are as follows:

- The samples are collected from monitoring wells that are properly designed, installed, and developed.
- The samples are collected using procedures that minimize disturbance.
- Turbidity is demonstrated to stabilize above 10 NTU, trying to reach +/-10%.
- Professional judgment indicates that the formations sampled do not exhibit a high degree of particle mobility, making it reasonable to assume that a portion of the sediment in the samples may be attributable to immobile particles. Note that professional judgment is exercised when applying this approach since deviations may be necessary if the practices would cause undesirable problems in data interpretation. Additionally, if the historical data for metals has been based on analyses of filtered samples, filtration could be continued to ensure data consistency and comparability. Recommendations state "if a single zone is monitored both by wells that are capable of providing samples that meet the turbidity criterion and wells that are not capable of meeting it, it may be prudent to filter all of the samples to ensure spatial consistency and valid statistical comparisons."

Based on the February 4, 2013 meeting between the Army, the Ohio EPA the use of filtered metals has been approved for use in future risk evaluations. Appendix G presents the rationale for the use of filtered metals.

3.4.2 pH

April: A groundwater pH value of more than 10 s.u. has been noted at LL1mw-086. LLmw-086 is a new well with a limited data set for pH readings. The pH readings from well development activities in March 2012 started at 10.8 s.u. and dropped to 7.49 s.u. during development. Note that the purge rates during well development are much higher than the micropurge rates during sampling. A comparison was also made to the July 2012 pH values for this well, and this well will be redeveloped.

Additionally during the April 2012 event, a groundwater pH value of less than 4 s.u. was noted at LL12mw-182. EQM has reviewed the historical purge records for this well. The low pH in the well could be indicative of groundwater contamination; however, the historical trend of 6.7 to 7.7 s.u. indicates that this reading is potentially an anomaly or equipment error. EQM will monitor the pH at this well in the future.

July: A groundwater pH value of more than 9 s.u. was noted at LL1mw-086 for the past two quarters. This well was redeveloped prior to the October 2012 event and the pH readings dropped from a high of 10.06 to 7.31 s.u. The well had a pH reading ranging from 7.84 to 6.91 s.u. during purging and sampling.

Additionally, a groundwater pH value of less than 4 s.u. had been noted at LL12mw-182 in April however was around 7 s.u. EQM has reviewed the historical purge records for this well. The historical trend of 6.7 to 7.7 indicates that this reading is potentially an anomaly. EQM will monitor the pH at this well in the future.

3.5 Summary of Groundwater Sampling Results

Section 1.5.1 of this report addresses the wells sampled during this reporting period. The list of FWGWMP wells monitored for the October 2011 through July 2012 events are presented in Appendix B.

3.5.1 October 2011

The October 2011 FWGWMP sampling event was performed on October 11-14, 2011. Thirty-two wells, including the five RCRA wells, were sampled for this event. The results of this sampling event are reported in the Final *Facility-Wide Groundwater Monitoring Program, Report on the October 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio,* dated May 10, 2012 (EQM). The results of this sampling event are summarized in Section 4.0 of this report.

Additionally, depth to water from the top of the inner casing was measured in the 243 FWGWMP wells during the October event. The depth to the bottom of the well from the top of the inner casing was also measured with the electronic water-level indicator. The associated water level measurements and potentiometric maps are included in this report as Appendix D.

3.5.2 January 2012

The January 2012 FWGWMP sampling event was performed on January 30 to February 1, 2012. Thirty-five wells, including the five RCRA wells, were sampled for this event. The results of this sampling event are reported in the Final *Facility-Wide Groundwater Monitoring Program, Report on the January 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio,* dated July 18, 2012 (EQM). The results of this sampling event are summarized in Section 4.0 of this report.

3.5.3 April 2012

The April 2012 FWGWMP sampling event was performed on April 30 to May 2, 2012. Thirty-two wells were sampled for this event. The results of this sampling event are reported in the Final *Facility-Wide Groundwater Monitoring Program, Report on the April 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio,* dated October 24, 2012 (EQM) and are summarized in Section 4.0 of this report.

3.5.4 July 2012

The July 2012 FWGWMP sampling event was performed on July 23-26, 2012. Seventy-three wells were sampled for this event. The results of this sampling event are reported in the Draft *Facility-Wide Groundwater Monitoring Program, Report on the July 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*, dated February 14, 2013 (EQM). The results of this sampling event are summarized in Section 4.0 of this report.

Additionally, depth to water from the top of the inner casing was measured in the 281 FWGWMP wells during July 16, 17, 20, 23, and 24, 2012. The depth to the bottom of the well from the top of the inner casing was also measured with the electronic water-level indicator. The results of the well inspections and the associated potentiometric map are included in this report as discussed in Section 3.2.

SECTION 4

SUMMARY/ASSESSMENT OF ANNUAL FWGWMP ANALYTICAL RESULTS

4.1 Introduction

A summary of the constituents detected above background levels or above reporting limits (RLs) at each of the FWGWMP wells during the 2011-12 monitoring period is discussed in the following subsections. Table 4-1 presents the COPCs at the RVAAP Facility as presented in the *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, March 2010) and updated based on the results of the sampling conducted over the past year.

As part of the ongoing RI for the facility-wide groundwater, detected and validated analytes from the monitoring wells will be subjected to a risk screening process that will be detailed in the *FWGWMP Remedial Investigation/Feasibility Study Work Plan*. Note that negotiations concerning the risk assessment methodologies including the existing background criteria are ongoing and the results of the negotiations will result in revisions to the risk process. The background criteria and discussion remain as part of the text of this report, however the Army understands that the results of the background evaluation will result in changes to future background evaluations.

Samples were collected on the following dates:

- October 11 through 14, 2011
- January 30 through February 1, 2012
- April 30 through May 2, 2012
- July 23 through 26, 2012

A summary of all compounds detected in 2011 and 2012 are presented in Tables 4-2 through 4-4. Table 4-5 presents the facility-wide background levels. The MCLs are provided, where applicable, in the following sections. Maximum Contaminant Levels, RSLs, and RVAAP facility-wide background levels are also provided where applicable in Tables 4-2 through 4-5.

Table 4-6 presents those constituents detected in any of the October 2011, January 2012, April 2012, or July 2012 sampling events that exceeded RSLs, primary MCLs, or secondary MCLs. Section 4.20 presents a summary discussion of the MCL and RSL exceedances.

Several analytical methods used to analyze a number of Polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), inorganics, semivolatile organic compounds (SVOCs), and pesticides currently do not meet the RVAAP QAPP reporting limits or RSLs. Tables listing the reporting limits that currently do not meet the RVAAP QAPP PQLs and/or RSL levels are presented in Appendix H.

Table 4-1. Facility-Wide Chemicals of Potential Concern in Groundwater

Metals	**Pesticides/Herbicides**	**Explosives/Propellants**
Aluminum	4,4'-DDD	1,3-Dinitrobenzene
Antimony	4,4'-DDE	2,4,6-Trinitrotoluene
Arsenic	4,4'-DDT	2,4-Dinitrotoluene
Barium	Aldrin	2,6-Dinitrotoluene
Beryllium	Dieldrin	2-Amino-4,6-Dinitrotoluene
Cadmium	Heptachlor	2-Nitrotoluene
Calcium	Heptachlor epoxide	4-Amino-2,6-Dinitrotoluene
Chromium	Lindane	4-Nitrotoluene
Cobalt	Toxaphene	Nitrobenzene
Hexavalent Chromium	alpha-BHC	Nitrocellulose
Iron	beta-BHC	Nitroglycerin
Lead	delta-BHC	Nitrate/Nitrite
Manganese	**Semivolatile Organic Compounds**	PETN
Mercury	2,4-Dinitrotoluene	RDX
Thallium	2,6-Dinitrotoluene	**Volatile Organic Compounds**
Vanadium	4-Nitrobenzenamine	1,1,2,2-Tetrachloroethane
Zinc	Benzo(a)anthracene	1,2-Dichloroethane
Polychlorinated Biphenyls	Benzo(a)pyrene	Benzene
Aroclor 1242	Benzo(b)fluoranthene	Carbon tetrachloride
Aroclor 1254	Benzo(g,h,i)perylene	Chloroform
Aroclor 1260	Bis(2-ethylhexyl)phthalate	Methylene chloride
	Dibenzo(a,h)anthracene	Tetrachloroethene
	Indeno(1,2,3-cd)pyrene	Trichloroethene
	Pentachlorophenol	
	Phenanthrene	
	Phenols	

Notes:

1) The original *Facility-Wide Groundwater Monitoring Program Plan* (2004) (Table 3-1) identified HMX as a COPC. The new *Facility-Wide Sampling and Analysis Plan for Environmental Investigations* (2011) also identifies HMX as a COPC. The Facility-Wide Human Health Cleanup Goals for the RVVAP (2010) does not identify HMX as a COPC and there have been no detections for HMX elevated above the identified clean levels (e.g., RSLs), which was why it has not been included as a COPC on Table 4-1.
2) Perchlorates have been analyzed for in all 236 of the 281 facility-wide wells but never detected at concentrations elevated above the identified clean levels. (The additional newly installed wells will be sampled for perchlorates during the January 2013 sampling event).

Sections 4.1 through 4.19 present a discussion of the time trends for COPCs identified in groundwater samples collected during this reporting period at the Background wells, Building 1200, C Block, Central Burn Pits, Demolition Area 2, Erie Burning Grounds, Fuze and Booster, Load Line 1, Load Line 2, Load Line 3, Load Line 4, Load Line 6, Load Line 10, Load Line 11, Load Line 12, NACA Test Area, Ramsdell Quarry Landfill, and Winklepeck Burning Grounds, and the basal Sharon Conglomerate wells under the FWGWMP.

To facilitate the discussion of concentration changes over time, concentration versus time graphs (i.e., time-trend graphs) were prepared. The following guidelines were applied to produce the graphs:

1. Only wells sampled during this reporting period with at least one detection of an organic, explosive, or inorganic above the MCL or RSL and that have been sampled a minimum of three times since 2006 were graphed.

2. Values reported as “non-detect” are shown as one-half the reporting limit.
3. Essential nutrients (i.e., calcium, magnesium, potassium, and sodium) were not graphed.

THIS PAGE LEFT INTENTIONALLY BLANK

Table 4-2. Summary of Constituents Detected (October 2011)

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Demolition Area # 2	DA2mw-104	Unconsolidated	2,6-DINITROTOLUENE	0.082 J	NS	15	NS
			ALUMINUM	*110*	200	16000	0
			BARIUM	*17*	200	2900	82.1
			CALCIUM	*53000*	NS	NS	115000
			IRON	*210*	300	11000	279
			MAGNESIUM	*15000*	NS	NS	43300
			MANGANESE	*4.3 JB*	50	320	1020
			SODIUM	*4400*	NS	NS	45700
			ZINC	*4.8 JB*	5000	4700	60.9
	DA2mw-106	Unconsolidated	BARIUM	*49*	2000	2900	82.1
			CALCIUM	140000	NS	NS	115000
			COBALT	9.4	NS	4.7	0
			IRON	6300	300	11000	279
			MAGNESIUM	50000	NS	NS	43300
			MANGANESE	5900	50	320	1020
			NICKEL	*5.1 J*	NS	760	0
			POTASSIUM	*1300*	NS	NS	2890
			SODIUM	*17000*	NS	NS	45700
			ZINC	*4.1 JB*	5000	4700	60.9
	DA2mw-107	Unconsolidated	ARSENIC	*3.2 J*	10	0.045	11.7
			BARIUM	*33*	2000	2900	82.1
			BIS(2-ETHYLHEXYL) PHTHALATE	0.85 B	6.0	0.071	NS
			CALCIUM	*83000*	NS	NS	115000
			IRON	1700	300	11000	279
			MAGNESIUM	*28000*	NS	NS	43300
			MANGANESE	*200*	50	320	1020
			POTASSIUM	*1600*	NS	NS	2890
			SODIUM	*9100*	NS	NS	45700
	DA2mw-108	Unconsolidated	BARIUM	*36*	2000	2900	82.1
			CALCIUM	*51000*	NS	NS	115000
			IRON	3800	300	11000	279
			MAGNESIUM	*19000*	NS	NS	43300
			MANGANESE	*440*	50	320	1020
			POTASSIUM	*2200*	NS	NS	2890
			SODIUM	*9900*	NS	NS	45700
			ZINC	*5.7 JB*	5000	4700	60.9
	DETmw-002	Unconsolidated	ARSENIC	*3.6 J*	10	0.045	11.7
			BARIUM	*44*	2000	2900	82.1
			CALCIUM	*90000*	NS	NS	115000
			IRON	*210*	300	11000	279
			MAGNESIUM	*32000*	NS	NS	43300
			MANGANESE	*78*	50	320	1020
			POTASSIUM	*2300*	NS	NS	2890
			SODIUM	*13000*	NS	NS	45700
			ZINC	*3.5 B*	5000	4700	60.9
Demolition Area # 2	DETmw-003	Unconsolidated	ARSENIC	*11*	10	0.045	11.7
			BARIUM	*48*	2000	2900	82.1
			CALCIUM	*85000*	NS	NS	115000
			IRON	1600	300	11000	279
			MAGNESIUM	*31000*	NS	NS	43300
			MANGANESE	*250*	50	320	1020
			POTASSIUM	*1700*	NS	NS	2890
			SODIUM	*11000*	NS	NS	45700
	DETmw-004	Unconsolidated	BARIUM	86	2000	2900	82.1
			BIS(2-ETHYLHEXYL) PHTHALATE	1.1 B	6.0	0.071	NS
			CALCIUM	170000	NS	NS	115000
			HMX	2.5	NS	780	NS
			MAGNESIUM	*35000*	NS	NS	43300
			MANGANESE	*20*	50	320	1020
			POTASSIUM	*1600*	NS	NS	2890
			RDX	1.5	NS	0.61	NS
			SODIUM	*4700*	NS	NS	45700
			ZINC	*20*	5000	4700	60.9

Table 4-2. Summary of Constituents Detected (October 2011)

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Fuze & Booster Quarry	FBQmw-169	Bedrock	BARIUM	*41*	2000	2900	256
			BIS(2-ETHYLHEXYL) PHTHALATE	0.79 B	6.0	0.071	NS
			CADMIUM	0.65	5	6.9	0
			CALCIUM	*21000*	NS	NS	53100
			COBALT	8.4	NS	4.7	0
			IRON	*480*	300	11000	1430
			MAGNESIUM	*14000*	NS	NS	15000
			MANGANESE	4600	50	320	1340
			NICKEL	*12*	NS	760	83.4
			POTASSIUM	*1900*	NS	NS	5770
			SODIUM	*29000*	NS	NS	51400
			ZINC	*10*	5000	4700	52.3
	FBQmw-170	Bedrock	ALUMINUM	30 J	200	16000	0
			BARIUM	*44*	2000	2900	256
			CADMIUM	0.13 J	5	6.9	0
			CALCIUM	*8600*	NS	NS	53100
			IRON	*59*	300	11000	1430
			MAGNESIUM	*3100*	NS	NS	15000
			MANGANESE	*64*	50	320	1340
			NICKEL	*5.2 J*	NS	760	83.4
			POTASSIUM	*1600*	NS	NS	5770
			SODIUM	*6600*	NS	NS	51400
			ZINC	*17*	5000	4700	52.3
	FBQmw-171	Bedrock	BARIUM	*25*	2000	2900	256
			CALCIUM	*18000*	NS	NS	53100
			MAGNESIUM	*5100*	NS	NS	15000
			MANGANESE	*12*	50	320	1340
			NICKEL	*3.5 J*	NS	760	83.4
			POTASSIUM	*850 J*	NS	NS	5770
			SODIUM	*1400*	NS	NS	51400
			ZINC	*11*	5000	4700	52.3
Fuze & Booster Quarry	FBQmw-174	Bedrock	2,4,6-TNT	9.6	NS	2.2	NS
			2,4-DINITROTOLUENE	0.057 J	NS	0.2	NS
			2,6-DINITROTOLUENE	0.085 J	NS	15	NS
			2-AMINO-4,6-DINITROTOLUENE	9.3	NS	30	NS
			4-Amino-2,6-Dinitrotoluene	24	NS	30	NS
			ALUMINUM	*36 J*	200	16000	0
			BARIUM	*17*	2000	2900	256
			BIS(2-ETHYLHEXYL) PHTHALATE	0.88 B	6.0	0.071	NS
			CALCIUM	*7800*	NS	NS	53100
			CHROMIUM	*2.2 J*	100	16000	0
			DIETHYL PHTHALATE	1.2	NS	11000	NS
			IRON	*150*	300	11000	1430
			MAGNESIUM	*2600*	NS	NS	15000
			MANGANESE	*11*	50	320	1340
			POTASSIUM	*1000*	NS	NS	5770
			RDX	0.21	NS	0.61	NS
			SODIUM	*810 J*	NS	NS	51400
			ZINC	*7.4 J*	5000	4700	52.3
	FBQmw-175	Bedrock	BARIUM	*6.6 J*	2000	2900	256
			BIS(2-ETHYLHEXYL) PHTHALATE	1.1 B	6.0	0.071	NS
			CALCIUM	*7900*	NS	NS	53100
			DIETHYL PHTHALATE	3.1	NS	11000	NS
			MAGNESIUM	*4200*	NS	NS	15000
			MANGANESE	*5.4 B*	50	320	1340
			NICKEL	*11*	NS	760	83.4
			SODIUM	*2300*	NS	NS	51400
			ZINC	*8.3 J*	5000	4700	52.3
	FBQmw-177	Bedrock	BARIUM	*11*	2000	2900	256
			CALCIUM	*46000*	NS	NS	53100
			DIETHYL PHTHALATE	1.4	NS	11000	NS
			MAGNESIUM	*13000*	NS	NS	15000
			MANGANESE	*1100*	50	320	1340
			POTASSIUM	*1300*	NS	NS	5770
			SODIUM	*3200*	NS	NS	51400
			ZINC	*3.9 J*	5000	4700	52.3

Table 4-2. Summary of Constituents Detected (October 2011)

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 6	LL6mw-002	Unconsolidated	ALUMINUM	1300	200	16000	0
			BARIUM	*31*	2000	2900	82.1
			CALCIUM	140000	NS	NS	115000
			CHROMIUM	*3.5 J*	100	16000	7.3
			IRON	2100	300	11000	279
			MAGNESIUM	*33000*	NS	NS	43300
			MANGANESE	*26*	50	320	1020
			POTASSIUM	*1400*	NS	NS	2890
			SELENIUM	5.7 B	50	78	0
			SODIUM	*2000*	NS	NS	45700
			VANADIUM	2.4 J	NS	78	0
			ZINC	*9.3 B*	5000	4700	60.9
	LL6mw-005	Bedrock	ARSENIC	33	10	0.045	0
			BARIUM	*68*	2000	2900	82.1
			CALCIUM	81000	NS	NS	53100
			IRON	1800	300	11000	1430
			MAGNESIUM	26000	NS	NS	15000
			MANGANESE	*440*	50	320	1340
			POTASSIUM	*1100*	NS	NS	5770
			SODIUM	*8900*	NS	NS	51400
			ZINC	*4.2 B*	5000	4700	52.3
	LL6mw-007	Bedrock	ALUMINUM	220	200	16000	0
			BARIUM	*15*	2000	2900	256
			CALCIUM	59000	NS	NS	53100
			IRON	*440*	300	11000	1430
			MAGNESIUM	24000	NS	NS	15000
			MANGANESE	*400*	50	320	1340
			POTASSIUM	*960 J*	NS	NS	5770
			SODIUM	*7700*	NS	NS	51400
			ZINC	*3.1 B*	5000	4700	52.3
Ramsdell Quarry Landfill	RQLmw-006	Bedrock	ACETONE	4.2 JB	NS	12000	NS
			ALUMINUM	67	200	16000	0
			ARSENIC	19	10	0.045	0
			BARIUM	*16*	2000	2900	256
			BERYLLIUM	0.20 J	4	16	0
			BETA-BHC	0.063 J	NS	0.022	NS
			CALCIUM	120000	NS	NS	53100
			COBALT	39	NS	4.7	0
			DELTA-BHC	0.042 J	NS	NS	NS
			IRON	120000	300	11000	1430
			MAGNESIUM	54000	NS	NS	15000
			MANGANESE	11000	50	320	1340
			NICKEL	100	NS	760	83.4
			POTASSIUM	*1200*	NS	NS	5770
			SODIUM	*1600*	NS	NS	51400
			VANADIUM	1.0 J	NS	78	0
			ZINC	6.5 J	5000	4700	52.3
Ramsdell Quarry Landfill	RQLmw-007	Bedrock	ANTHRACENE	0.16 J	NS	1300	NS
			ARSENIC	9.8	10	0.045	0
			BARIUM	*44*	2000	2900	256
			BENZO(G,H,I)PERYLENE	0.21	NS	NS	NS
			CALCIUM	120000	NS	NS	53100
			COBALT	13	NS	4.7	0
			DIBENZO(A,H)ANTHRACENE	0.14 J	NS	0.0029	NS
			INDENO(1,2,3-CD)PYRENE	0.14 J	NS	0.0029	NS
			IRON	2500	300	11000	1430
			MAGNESIUM	47000	NS	NS	15000
			MANGANESE	1500	50	320	1340
			NICKEL	*35*	NS	760	83.4
			POTASSIUM	*3900*	NS	NS	5770
			SODIUM	*4100*	NS	NS	51400
			ZINC	*6.5 B*	5000	4700	52.3
	RQLmw-008	Bedrock	4,4'-DDE	0.014 J	NS	0.2	NS
			ARSENIC	41	10	0.045	0
			BARIUM	*79*	2000	2900	256
			CALCIUM	54000	NS	NS	53100
			IRON	56000	300	11000	1430
			MAGNESIUM	94000	NS	NS	15000
			MANGANESE	*520*	50	320	1340
			POTASSIUM	*3700*	NS	NS	5770
			SODIUM	*3600*	NS	NS	51400
			ZINC	5.8 J	5000	4700	52.3

Table 4-2. Summary of Constituents Detected (October 2011)

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Ramsdell Quarry Landfill	RQLmw-009	Bedrock	ALUMINUM	20 J	200	16000	0
			ARSENIC	18	10	0.045	0
			BARIUM	*49*	2000	2900	256
			CALCIUM	*35000*	NS	NS	53100
			COBALT	4.9 J	NS	4.7	0
			IRON	9000	300	11000	1430
			MAGNESIUM	33000	NS	NS	15000
			MANGANESE	1900	50	320	1340
			NICKEL	*7.2 J*	NS	760	83.4
			POTASSIUM	*3300*	NS	NS	5770
			SODIUM	*1400*	NS	NS	51400
			ZINC	*3.3 B*	5000	4700	52.3
	RQLmw-011	Bedrock	ALUMINUM	1100	200	16000	0
			BARIUM	*24*	2000	2900	256
			BERYLLIUM	0.38 J	4	16	0
			CADMIUM	0.13 J	5	6.9	0
			CALCIUM	*33000*	NS	NS	53100
			COBALT	22	NS	4.7	0
			IRON	4000	300	11000	1430
			MAGNESIUM	*13000*	NS	NS	15000
			MANGANESE	2600	50	320	1340
			NICKEL	*62*	NS	760	83.4
			POTASSIUM	*3500*	NS	NS	5770
			SODIUM	*1600*	NS	NS	51400
			ZINC	*47*	5000	4700	52.3
	RQLmw-012	Bedrock	ALUMINUM	860	200	16000	0
			BARIUM	*15*	2000	2900	256
			BIS(2-ETHYLHEXYL) PHTHALATE	1.0 B	6.0	0.071	NS
			CADMIUM	0.44 J	5	6.9	0
			CALCIUM	78000	NS	NS	53100
			COBALT	5.4	NS	4.7	0
			MAGNESIUM	20000	NS	NS	15000
			MANGANESE	*240*	50	320	1340
			NICKEL	*17*	NS	760	83.4
			POTASSIUM	*4800*	NS	NS	5770
			RDX	0.20	NS	0.61	NS
			SODIUM	*4400*	NS	NS	51400
			ZINC	*41*	5000	4700	52.3
	RQLmw-014	Bedrock	BARIUM	*26*	2000	2900	256
			CALCIUM	*24000*	NS	NS	53100
			COBALT	*7.2*	NS	4.7	0
			IRON	2800	300	11000	1430
			MAGNESIUM	*12000*	NS	NS	15000
			MANGANESE	2000	50	320	1340
			NICKEL	*20*	NS	760	83.4
			POTASSIUM	*2700*	NS	NS	5770
			SODIUM	*4700*	NS	NS	51400
			ZINC	*25*	5000	4700	52.3
	RQLmw-015	Bedrock	BIS(2-ETHYLHEXYL) PHTHALATE	1.3 B	6.0	0.071	NS
			CALCIUM	*20000*	NS	NS	53100
			IRON	*110*	300	11000	1430
			MAGNESIUM	*9700*	NS	NS	15000
			MANGANESE	*160*	50	320	1340
			NICKEL	*3.6 J*	NS	760	83.4
			POTASSIUM	*1400*	NS	NS	5770
			SODIUM	*860 J*	NS	NS	51400
			ZINC	*8.5 B*	5000	4700	52.3

Table 4-2. Summary of Constituents Detected (October 2011)

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Ramsdell Quarry Landfill	RQLmw-016	Bedrock	BARIUM	10	2000	2900	256
			BIS(2-ETHYLHEXYL) PHTHALATE	1.2 B	6.0	0.071	NS
			CALCIUM	420000	NS	NS	53100
			COBALT	5.6	NS	4.7	0
			IRON	24000	300	11000	1430
			MAGNESIUM	65000	NS	NS	15000
			MANGANESE	6800	50	320	1340
			NICKEL	*20*	NS	760	83.4
			POTASSIUM	*2700*	NS	NS	5770
			SODIUM	*7300*	NS	NS	51400
			ZINC	*5.0 J*	5000	4700	52.3
	RQLmw-017	Bedrock	ALUMINUM	180	200	16000	0
			BARIUM	*2.0 J*	2000	2900	256
			CALCIUM	81000	NS	NS	53100
			COBALT	7.1	NS	4.7	0
			MAGNESIUM	27000	NS	NS	15000
			MANGANESE	3000	50	320	1340
			NICKEL	*35*	NS	760	83.4
			POTASSIUM	*1700*	NS	NS	5770
			SODIUM	*4200*	NS	NS	51400
			ZINC	90	5000	4700	52.3

Notes:
All inorganics are filtered; all organics are not filtered.
* There are no background levels for organic constituents
1 = mg/L
NS = no standard
J = Results have been qualified "J" estimated result. For more details refer to Data Verification/Validation Reports in the FWGWMP October 2011 Sampling
B = organic or inorganic analysis when the analyte is found in the method blank or any of the field blanks.
Bold = inorganic constituent detected above Facility-Wide background levels.
Italics = inorganic constituent detected below the Facility-Wide background levels.
Shaded boxes indicate any contituent that does not have a background value but is detected above the reporting limit.

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Building 1200	B12mw-012	Bedrock	ALUMINUM	270		130		200	16000	0
			ANTHRACENE	10	U	0.57		NS	1300	NS
			ANTIMONY	*0.5*	*U*	0.25	J	6	6	0
			BARIUM	6.4		*5*	*U*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.0	B	1.3		6	0.071	NS
			CALCIUM	29000		45000		NS	NS	53100
			DI-N-OCTYL PHTHALATE	0.83	U	25		NS	NS	NS
			IRON	730		790		300	11000	1430
			MAGNESIUM	19000		33000		NS	NS	15000
			MANGANESE	30		70		50	320	1340
			NICKEL	3.1	J	2.4	J	NS	760	83.4
			PHENANTHRENE	0.1	U	0.58		NS	NS	NS
			POTASSIUM	2000		2600		NS	NS	5770
			SODIUM	15000		14000		NS	NS	51400
			ZINC	9.7	J	10	J	5000	4700	52.3
Background	BKGmw-005	Unconsolidated	BARIUM	14		13		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	0.87		6	0.071	NS
			CALCIUM	78000		85000		NS	NS	115000
			CHROMIUM	*4*	*U*	1.8	JB	100	16000	7.3
			MAGNESIUM	19000		19000		NS	NS	43300
			POTASSIUM	420	J	1200		NS	NS	2890
			SODIUM	2500		7300		NS	NS	45700
	BKGmw-021	Unconsolidated	ALUMINUM	*60*	*U*	60		200	16000	0
			BARIUM	29		31		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	1.4	B	1.1		6	0.071	NS
			CALCIUM	79000		75000		NS	NS	115000
			CHROMIUM	*4*	*U*	1.7	J	100	16000	7.3
			IRON	*100*	*U*	64	J	300	11000	279
			MAGNESIUM	43000		33000		NS	NS	43300
			MANGANESE	*5*	*U*	2.4	J	50	320	1020
			POTASSIUM	720	J	850	B	NS	NS	2890
			SODIUM	12000		6600		NS	NS	45700
C Block	CBLmw-002	Bedrock	BIS(2-ETHYLHEXYL)PHTHALATE	0.92		1.2		6	0.071	NS
Central Burn Pits	CBPmw-002	Unconsolidated	ALUMINUM	63		*60*	*U*	200	16000	0
			ARSENIC	9.8	J	15		10	0.045	11.7
			BARIUM	11		9.1		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	1.9	B	0.91		6	0.071	NS
			CADMIUM	0.033	J	*0.07*	*U*	5	6.9	0
			CALCIUM	170000		170000		NS	NS	115000
			CHROMIUM	*4*	*U*	2.1	JB	100	16000	7.3
			COBALT	*4*	*U*	2.0	J	NS	4.7	0
			IRON	770		930		300	11000	279
			MAGNESIUM	100000		100000		NS	NS	43300
			MANGANESE	66		140		50	320	1020
			POTASSIUM	3700	J	3800		NS	NS	2890
			SODIUM	49000		53000		NS	NS	45700

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Demolition Area # 2	DA2mw-108	Bedrock	BARIUM	31		36		2000	2900	256
			CALCIUM	56000		98000		NS	NS	53100
			CHROMIUM	*4*	*U*	3.0	JB	100	16000	0
			IRON	1800		2500		300	11000	1430
			MAGNESIUM	19000		36000		NS	NS	15000
			MANGANESE	310		290	J	50	320	1340
			MERCURY	0.13	J	*0.2*	*U*	2	0.63	0
			POTASSIUM	2500		3300		NS	NS	5770
			POTASSIUM	2500		3300		NS	NS	5770
			SODIUM	9300		9300		NS	NS	51400
	DETmw-003	Unconsolidated	ARSENIC	6.9	J	9.8	J	10	0.045	11.7
			BARIUM	47		42		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	1.3		6	0.071	NS
			CALCIUM	84000		83000		NS	NS	115000
			IRON	1700		1300		300	11000	279
			MAGNESIUM	29000		30000		NS	NS	43300
			MANGANESE	250		230	J	50	320	1020
			POTASSIUM	1700		1800		NS	NS	2890
			SODIUM	10000		10000		NS	NS	45700
	DETmw-004	Unconsolidated	ACETONE	1.1	U	1.2	JB	NS	12000	NS
			ANTIMONY	*0.5*	*U*	0.95		6	6	0
			BARIUM	52		64		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	0.97	J	6	0.071	NS
			CALCIUM	120000		140000		NS	NS	115000
			Hexavalent Chromium	NT		0.028		NS	0.031	NS
			HMX	2.0		1.9		NS	780	NS
			MAGNESIUM	24000		30000		NS	NS	43300
			MANGANESE	*5*	*U*	4.7	J	50	320	1020
			POTASSIUM	1200		1800		NS	NS	2890
			RDX	2.8		0.50	J	NS	0.61	NS
			SODIUM	1900		5400		NS	NS	45700
			ZINC	11	J	18	J	5000	4700	60.9
Erie Burning Grounds	EBGmw-125	Unconsolidated	ALUMINUM	*60*	*U*	51	J	200	16000	0
			ARSENIC	11		20		10	0.045	11.7
			BARIUM	57		70		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	1.1	B	0.76	UJ	6	0.071	NS
			CALCIUM	58000		64000		NS	NS	115000
			DI-N-OCTYL PHTHALATE	2.2		0.76	UJ	NS	NS	NS
			IRON	2800		7000	J	300	11000	279
			MAGNESIUM	8500		9200		NS	NS	43300
			MANGANESE	250		690		50	320	1020
			POTASSIUM	1200		1000		NS	NS	2890
			SODIUM	3800		3900		NS	NS	45700
Load line 1	LL1mw-064	Unconsolidated	ANTIMONY	*0.5*	*U*	0.79		6	6	0
			ARSENIC	*10*	*U*	3.5	J	10	0.045	11.7
			BARIUM	50		44		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	0.92		6	0.071	NS
			CALCIUM	57000		57000		NS	NS	115000
			IRON	660		490	J	300	11000	279
			MAGNESIUM	8800		9600		NS	NS	43300
			MANGANESE	120		110		50	320	1020
			POTASSIUM	860	J	780	J	NS	NS	2890
			SODIUM	4600		4400		NS	NS	45700
	LL1mw-065	Unconsolidated	BARIUM	64		47		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.99	B	2	UJ	6	0.071	NS
			CALCIUM	80000		77000		NS	NS	115000
			DI-N-BUTYL PHTHALATE	0.76	U	0.75	J	NS	670	NS
			MAGNESIUM	21000		19000		NS	NS	43300
			MANGANESE	140		180		50	320	1020
			POTASSIUM	1300	J	1000		NS	NS	2890
			SODIUM	12000		9200		NS	NS	45700

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 2	LL2mw-059	Bedrock	1,3,5-TRINITROBENZENE	1.6		1.6		NS	460	NS
			1,3-DINITROBENZENE	0.073		0.086	J	NS	1.5	NS
			2,4-DINITROTOLUENE	0.39		0.49		NS	0.2	NS
			2-AMINO-4,6-DINITROTOLUENE	0.60		0.62		NS	30	NS
			4-AMINO-2,6-DINITROTOLUENE	0.58		0.57		NS	30	NS
			ARSENIC	4.1	J	4.6	J	10	0.045	0
			BARIUM	62		59		2000	2900	256
			BERYLLIUM	*0.1*	*U*	0.048	J	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	1.3	B	0.76	UJ	6	0.071	NS
			CALCIUM	31000		30000		NS	NS	53100
			COBALT	13	J	8.4		NS	4.7	0
			HMX	0.064		0.099		NS	780	NS
			IRON	5400		3000	J	300	11000	1430
			MAGNESIUM	9900		11000		NS	NS	15000
			MANGANESE	1100		1000		50	320	1340
			NICKEL	6.7	J	4.3	J	NS	760	83.4
			POTASSIUM	920		820	J	NS	NS	5770
			SODIUM	4200		3400		NS	NS	51400
	LL2mw-265	Bedrock	4-AMINO-2,6-DINITROTOLUENE	0.097		10	U	NS	30	NS
			BARIUM	5.7		9.8		2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	5.7	U	0.80	JB	6	0.071	NS
			CALCIUM	51000		78000		NS	NS	53100
			COBALT	*4*	*UJ*	4.6		NS	4.7	0
			DIETHYLPHTHALATE	2.9		0.76	UJ	NS	11000	NS
			HMX	0.049	J	0.05	U	NS	780	NS
			IRON	110	J	3500	J	300	11000	1430
			MAGNESIUM	9500		24000		NS	NS	15000
			MANGANESE	70		660		50	320	1340
			NICKEL	3.1	J	12		NS	760	83.4
			POTASSIUM	720	J	760	J	NS	NS	5770
			SODIUM	3300		10000		NS	NS	51400
Load Line 3	LL3mw-241	Bedrock	1,3,5-TRINITROBENZENE	21	J	4.0		NS	460	NS
			2,4,6-TRINITROTOLUENE	10	J	3.5		NS	2.2	NS
			2,4-DINITROTOLUENE	0.053	J	0.11	J	NS	0.2	NS
			2,6-DINITROTOLUENE	0.19	J	0.10	J	NS	15	NS
			2-AMINO-4,6-DINITROTOLUENE	4.8	J	3.1		NS	30	NS
			4-AMINO-2,6-DINITROTOLUENE	4.8	J	3.2		NS	30	NS
			BARIUM	*5*	*U*	3.3	J	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.88	B	0.92		6	0.071	NS
			CALCIUM	19000		20000		NS	NS	53100
			CARBON TETRACHLORIDE	0.27		0.25	U	5	0.39	NS
			HMX	0.43	J	0.36	J	NS	780	NS
			IRON	47	J	79	J	300	11000	1430
			MAGNESIUM	6800		8200		NS	NS	15000
			MANGANESE	*5*	*U*	7.7	B	50	320	1340
			POTASSIUM	800	J	960		NS	NS	5770
			RDX	1.6	J	1.3	J	NS	0.61	NS
			SODIUM	2400		3600		NS	NS	51400
	LL3mw-242	Bedrock	BARIUM	6.9		6.9		2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.3	B	0.80		6	0.071	NS
			CALCIUM	11000		14000		NS	NS	53100
			MAGNESIUM	4800		6100		NS	NS	15000
			POTASSIUM	780	J	1000	B	NS	NS	5770
			SODIUM	9500		11000		NS	NS	51400
Load Line 4	LL4mw-199	Unconsolidated	ALUMINUM	37	J	98		200	16000	0
			ANTIMONY	0.63		0.30	J	6	6	0
			ARSENIC	12		11		10	0.045	11.7
			BARIUM	110		100		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	0.95		6	0.071	NS
			CALCIUM	90000		89000		NS	NS	115000
			IRON	3800		3400	J	300	11000	279
			MAGNESIUM	21000		22000		NS	NS	43300
			MANGANESE	430		300		50	320	1020
			POTASSIUM	1500	J	1300		NS	NS	2890
			SODIUM	7800		7700		NS	NS	45700

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 6	LL6mw-002	Unconsolidated	ALUMINUM	*60*	*U*	5100		200	16000	0
			ANTIMONY	*0.5*	*U*	0.23	J	6	6	0
			ARSENIC	*10*	*U*	6.3	J	10	0.045	11.7
			BARIUM	24		43		2000	2900	82.1
			BERYLLIUM	*0.1*	*U*	0.27		4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.84	U	22		6	0.071	NS
			CALCIUM	140000		130000	J	NS	NS	115000
			CALCIUM	140000		130000	J	NS	NS	115000
			COBALT	*4*	*U*	2.5	J	NS	4.7	0
			COPPER	*10*	*U*	6.4	J	1300	620	0
			IRON	*100*	*U*	8000		300	11000	279
			LEAD	*5*	*U*	3.2	J	15	NS	0
			MAGNESIUM	26000		27000		NS	NS	43300
			MANGANESE	*5*	*U*	100		50	320	1020
			POTASSIUM	800	J	2500		NS	NS	2890
			SODIUM	2300		2400		NS	NS	45700
			ZINC	*20*	*U*	28		5000	4700	60.9
	LL6mw-005	Unconsolidated	ANTIMONY	0.5	U	0.75		6	6	0
			ARSENIC	17		20		10	0.045	11.7
			BARIUM	66		63		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	1.8		6	0.071	NS
			CALCIUM	80000		83000	J	NS	NS	115000
			IRON	1200		1100		300	11000	279
			MAGNESIUM	24000		26000		NS	NS	43300
			MANGANESE	480		490		50	320	1020
			POTASSIUM	1200	J	1200		NS	NS	2890
			SODIUM	8100		8800		NS	NS	45700
Load Line 10	LL10mw-003	Bedrock	ANTIMONY	*0.5*	*U*	0.28	J	6	6	0
			BARIUM	4.9	J	*5*	*U*	2000	2900	256
			CALCIUM	69000		53000		NS	NS	53100
			CARBON TETRACHLORIDE	0.47		2.1		5	0.39	NS
			CHLOROFORM	0.25	U	0.25	B	NS	0.19	NS
			MAGNESIUM	21000		16000		NS	NS	15000
			POTASSIUM	710	J	700	J	NS	NS	5770
			SODIUM	4300		9300		NS	NS	51400
Load Line 11	LL11mw-007	Unconsolidated	ACETONE	1.1	U	1.5	JB	NS	12000	NS
			ARSENIC	20		20		10	0.045	11.7
			BARIUM	83		70		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.81	U	1.2		6	0.071	NS
			CALCIUM	89000		79000		NS	NS	115000
			IRON	1100		990		300	11000	279
			MAGNESIUM	30000		28000		NS	NS	43300
			MANGANESE	210		180		50	320	1020
			POTASSIUM	1500		1400	B	NS	NS	2890
			SODIUM	12000		13000		NS	NS	45700
Load Line 12	LL12mw-182	Unconsolidated	BIS(2-ETHYLHEXYL)PHTHALATE	1.3		2.7	J	6	0.071	NS
	LL12mw-185	Unconsolidated	ALUMINUM	*60*	*U*	64		200	16000	0
			ANTIMONY	0.23	J	0.39	J	6	6	0
			ARSENIC	*10*	*U*	3.5	J	10	0.045	11.7
			BARIUM	51		43		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	1.1	B			6	0.071	NS
			CADMIUM	0.27		*0.27*	*U*	5	6.9	0
			CALCIUM	680000		680000		NS	NS	115000
			COBALT	*4*	*UJ*	2.5	J	NS	4.7	0
			MAGNESIUM	280000		280000		NS	NS	43300
			MANGANESE	1900		1700		50	320	1020
			NICKEL	7.0	J	9.6		NS	760	0
			Nitrate-Nitrite*	119	J	145	J	1	1.6	NS
			POTASSIUM	11000		8600		NS	NS	2890
			SODIUM	52000		55000		NS	NS	45700
			ZINC	*20*	*U*	9.5	J	5000	4700	60.9

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 12	LL12mw-187	Unconsolidated	ANTIMONY	0.86		*0.5*	*U*	6	6	0
			ARSENIC	*10*	*U*	4.8	J	10	0.045	11.7
			BARIUM	320		240		2000	2900	82.1
			CADMIUM	0.092		*0.073*	*UJ*	5	6.9	0
			CALCIUM	990000		940000		NS	NS	115000
			COBALT	9.9		10		NS	4.7	0
			COPPER	*10*	*U*	12	J	1300	620	0
			MAGNESIUM	290000		280000		NS	NS	43300
			MANGANESE	2100		2000	J	50	320	1020
			NICKEL	15		21		NS	760	0
			Nitrate-Nitrite*	NT		1310	J	1	1.6	NS
			Nitrocellulose*	2.8		3.5				NS
			POTASSIUM	51000	J	48000		NS	NS	2890
			SODIUM	32000		31000		NS	NS	45700
			THALLIUM	0.39	J	*0.77*	*UB*	2	0.16	0
			VANADIUM	*4*	*U*	2.1	J	NS	78	0
	LL12mw-242	Unconsolidated	ACETONE	1.1	U	1.4	JB	NS	12000	NS
			ALUMINUM	600		30	J	200	16000	0
			ANTIMONY	0.29	J	*0.5*	*U*	6	6	0
			ARSENIC	22		21		10	0.045	11.7
			BARIUM	25		21		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.77	B	0.76	U	6	0.071	NS
			CALCIUM	66000		73000		NS	NS	115000
			IRON	1700		850		300	11000	279
			MAGNESIUM	41000		47000		NS	NS	43300
			MANGANESE	80		60		50	320	1020
			Nitrate-Nitrite*	0.019	JB	0.036	J	1	1.6	NS
			POTASSIUM	2000	J	1900		NS	NS	2890
			SODIUM	28000		33000		NS	NS	45700
			ZINC	10	J	28		5000	4700	60.9
			ZINC	10	J	28		5000	4700	60.9
	LL12mw-245	Unconsolidated	ACETONE	1.1	U	1.6	JB	NS	12000	NS
			ALUMINUM	*60*	*UJ*	4000		200	16000	0
			ANTIMONY	*0.5*	*U*	0.73		6	6	0
			ARSENIC	*10*	*UJ*	9.9	J	10	0.045	11.7
			BARIUM	29		43		2000	2900	82.1
			BERYLLIUM	*0.1*	*U*	0.19		4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	UJ	1.9		6	0.071	NS
			CADMIUM	0.033	J	*0.099*	*U*	5	6.9	0
			CALCIUM	150000		150000		NS	NS	115000
			CHROMIUM	*4*	*U*	7.6	JB	100	16000	7.3
			COBALT	*4*	*U*	5.0		NS	4.7	0
			COPPER	*10*	*U*	8.7	J	1300	620	0
			IRON	*100*	*U*	7800		300	11000	279
			LEAD	*5*	*U*	3.3	J	15	NS	0
			MAGNESIUM	71000		70000		NS	NS	43300
			MANGANESE	110		180		50	320	1020
			MANGANESE	110		12		50	320	1020
			Nitrate-Nitrite*	0.074	J	0.050	J	1	1.6	NS
			POTASSIUM	4000		5000		NS	NS	2890
			SODIUM	22000		23000		NS	NS	45700
			VANADIUM	*4*	*U*	6.4	B	NS	78	0
			ZINC	*20*	*U*	29		5000	4700	60.9
	LL12mw-246	Unconsolidated	ACETONE	1.1	U	1.1	JB	NS	12000	NS
			ARSENIC	31		33		10	0.045	11.7
			BARIUM	42		37		2000	2900	82.1
			CALCIUM	110000		110000		NS	NS	115000
			IRON	1300		1300		300	11000	279
			MAGNESIUM	51000		54000		NS	NS	43300
			MANGANESE	66		64	J	50	320	1020
			NICKEL	*5*	*U*	3.3	B	NS	760	0
			Nitrate-Nitrite*	0.017	JB	0.014	JB	1	1.6	NS
			POTASSIUM	3900	J	4200		NS	NS	2890
			SODIUM	23000		22000		NS	NS	45700

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
NACA Test Area	NTAmw-109	Unconsolidated	ALUMINUM	*60*	*U*	38	J	200	16000	0
			BARIUM	25		26		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	1.2		6	0.071	NS
			CALCIUM	7600		6400		NS	NS	115000
			IRON	290		880		300	11000	279
			MAGNESIUM	3900		3500		NS	NS	43300
			MANGANESE	19		32		50	320	1020
			POTASSIUM	1200		1300	B	NS	NS	2890
			SODIUM	1700		1400		NS	NS	45700
Ramsdell Quarry Landfill	RQLmw-007	Bedrock	ANTIMONY	0.67		*0.5*	*U*	6	6	0
			ARSENIC	14		43		10	0.045	0
			BARIUM	57		50		2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.94	JB	0.76	UJ	6	0.071	NS
			CALCIUM	130000		140000		NS	NS	53100
			CARBON DISULFIDE	0.25	U	0.17	J	NS	720	NS
			COBALT	20	J	5.3		NS	4.7	0
			CYANIDE-	*0.01*	*U*	0.0091	J	0.2	0.0093	0
			IRON	8000		11000	J	300	11000	1430
			MAGNESIUM	52000	U	91000		NS	NS	15000
			MANGANESE	2000		1700		50	320	1340
			NICKEL	28	J	8.8		NS	760	83.4
			POTASSIUM	5100		8400		NS	NS	5770
			SODIUM	6100		5900		NS	NS	51400
			ZINC	13	J	*20*	*U*	5000	4700	52.3
	RQLmw-008	Bedrock	ARSENIC	15		45		10	0.045	0
			BARIUM	94		140		2000	2900	256
			BERYLLIUM	*0.1*	*U*	0.050	J	4	16	0
			BETA-BHC	0.0097	U	0.075	J	NS	0.022	NS
			BIS(2-ETHYLHEXYL)PHTHALATE	1.3	JB	0.87	U	6	0.071	NS
			CALCIUM	56000		80000		NS	NS	53100
			COBALT	4.4	J	*4*	*U*	NS	4.7	0
			DELTA-BHC	0.0097	U	0.018	J	NS	NS	NS
			FLUORENE	0.095	U	0.15		NS	220	NS
			IRON	61000		110000	J	300	11000	1430
			MAGNESIUM	75000		62000		NS	NS	15000
			MANGANESE	670		760		50	320	1340
			NICKEL	6.5	J	2.4	J	NS	760	83.4
			NITROBENZENE	0.052	U	0.24	J	NS	0.12	NS
			POTASSIUM	3100		5300		NS	NS	5770
			SILVER	1.8	J	*5*	*U*	100	71	0
			SODIUM	3700		14000		NS	NS	51400
			Tetryl	0.052	U	0.38		NS	63	NS
			ZINC	14	J	*20*	*U*	5000	4700	52.3
	RQLmw-009	Bedrock	ANTIMONY	0.22	J	0.50		6	6	0
			ARSENIC	12		33		10	0.045	0
			BARIUM	31		49		2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.77	JB	0.76	U	6	0.071	NS
			CALCIUM	21000		36000		NS	NS	53100
			COBALT	2.6	J	5.3		NS	4.7	0
			IRON	5600		13000	J	300	11000	1430
			MAGNESIUM	16000		47000		NS	NS	15000
			MANGANESE	940		2400		50	320	1340
			NICKEL	3.0	J	5.3		NS	760	83.4
			POTASSIUM	2600		4200		NS	NS	5770
			SODIUM	1200		1200		NS	NS	51400

Table 4-3. Summary of Constituents Detected (Semi Annual wells 2012)

Area	Well Number	Monitored Zone	Analyte	Jan-2012 (µg/L)		July-2012 (µg/L)		MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Sharon Conglomerate	SCFmw-002	Bedrock	ARSENIC	14		15		10	0.045	0
			BARIUM	42		41		2000	2900	256
			BERYLLIUM	*0.1*	*U*	0.12		4	16	0
			CADMIUM	0.027	J	*0.07*	*U*	5	6.9	0
			CALCIUM	86000		85000		NS	NS	53100
			CARBON DISULFIDE	0.25	U	0.18	J	NS	720	NS
			Hexavalent Chromium	NT		0.031		NS	0.031	NS
			IRON	430		350		300	11000	1430
			MAGNESIUM	26000		28000		NS	NS	15000
			MANGANESE	73		69		50	320	1340
			Nitrate-Nitrite[1]	0.0069	JB	0.012	UJ	1	1.6	NS
			POTASSIUM	2300	J	2500		NS	NS	5770
			SODIUM	20000		21000		NS	NS	51400
	SCFmw-004	Bedrock	BARIUM	110		82		2000	2900	256
			CADMIUM	0.035	J	*0.07*	*U*	5	6.9	0
			CALCIUM	130000		150000		NS	NS	53100
			IRON	110		*100*	*UJ*	300	11000	1430
			LEAD	3.3	J	*5*	*U*	15	NS	0
			MAGNESIUM	50000		60000		NS	NS	15000
			MANGANESE	710		690		50	320	1340
			POTASSIUM	2400	J	2700		NS	NS	5770
			SODIUM	7700		10000		NS	NS	51400
Winklepeck Burning Grounds	WBGmw-006	Unconsolidated	BARIUM	20		19		2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76	U	0.96	B	6	0.071	NS
			CALCIUM	70000		71000		NS	NS	115000
			CHROMIUM	*4*	*U*	1.7	JB	100	16000	7.3
			HMX	6.6		6.8		NS	780	NS
			MAGNESIUM	22000		23000		NS	NS	43300
			MANGANESE	27		100		50	320	1020
			POTASSIUM	900		890	J	NS	NS	2890
			RDX	21		25		NS	0.61	NS
			SODIUM	5600		5700		NS	NS	45700
	WBGmw-007	Unconsolidated	ARSENIC	*10*	*U*	7.9	J	10	0.045	11.7
			BARIUM	24		36		2000	2900	82.1
			CALCIUM	63000		69000		NS	NS	115000
			CHROMIUM	*4*	*U*	6.0	JB	100	16000	7.3
			IRON	120		360		300	11000	279
			MAGNESIUM	14000		19000		NS	NS	43300
			MANGANESE	62		130		50	320	1020
			NICKEL	*5*	*U*	2.2	J	NS	760	0
			POTASSIUM	1200		1300		NS	NS	2890
			SODIUM	3200		4700		NS	NS	45700
	WBGmw-009	Unconsolidated	BARIUM	9.8		13		2000	2900	82.1
			CALCIUM	44000		92000		NS	NS	115000
			CHROMIUM	*4*	*U*	2.7	JB	100	16000	7.3
			HMX	1.0		2.1		NS	780	NS
			MAGNESIUM	12000		28000		NS	NS	43300
			MANGANESE	57		130		50	320	1020
			MERCURY	*0.2*	*U*	0.13	J	2	0.63	0
			POTASSIUM	580	J	1000		NS	NS	2890
			RDX	3.1		6.6	J	NS	0.61	NS
			SODIUM	3800		4200		NS	NS	45700

Notes:

All inorganics are filtered; all organics are not filtered.

* There are no background levels for organic constituents

1 = mg/L

NT = not tested

NS = no standard

U = The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.

J = Results have been qualified "J" estimated result. For more details refer to Data Verification/Validation Reports in the FWGWMP 2012 Sampling Reports.

B = organic or inorganic analysis when the analyte is found in the method blank or any of the field blanks.

Bold = inorganic constituent detected above Facility-Wide background levels.

Italics = inorganic constituent detected below the Facility-Wide background levels.

Shaded boxes indicate any contituent that does not have a background value but is detected above the reporting limit.

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Building 1200	B12mw-013	Bedrock	ACETONE	1.1 U	1.1 JB	NS	12000	NS
			ALUMINUM	170	120	200	16000	0
			BARIUM	*16*	*3.9 J*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.5 JB	1.7	6	0.071	NS
			CALCIUM	*24000*	*28000*	NS	NS	53100
			IRON	*290*	*630*	300	11000	1430
			MAGNESIUM	*11000*	17000	NS	NS	15000
			MANGANESE	*21*	*160*	50	320	1340
			NICKEL	*3.3 J*	*3.5 J*	NS	760	83.4
			POTASSIUM	*1700*	*2200*	NS	NS	5770
			SODIUM	*10000*	*8200*	NS	NS	51400
			ZINC	*15 J*	*20 U*	5000	4700	52.3
C Block	CBLmw-005	Bedrock	ALUMINUM	20 J	53 J	200	16000	0
			BARIUM	*52*	*55*	2000	2900	256
			BERYLLIUM	0.069 J	0.12	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.82 UJ	1.1 B	6	0.071	NS
			CALCIUM	*13000*	*14000*	NS	NS	53100
			CHROMIUM	*4.0 U*	2.2 JB	100	16000	0
			COBALT	6.9	*4 U*	NS	4.7	0
			IRON	*44 J*	*100 U*	300	11000	1430
			MAGNESIUM	*4400*	*5500*	NS	NS	15000
			MANGANESE	*110*	*18*	50	320	1340
			NICKEL	*20*	*9.3*	NS	760	83.4
			POTASSIUM	*1500*	*1000*	NS	NS	5770
			SODIUM	*3300*	*3700*	NS	NS	51400
			ZINC	*11 J*	*12 J*	5000	4700	52.3
Central Burn Pits	CBPmw-009	Bedrock	BARIUM	*76*	*74*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	32 J	0.88	6	0.071	NS
			CALCIUM	77000	79000	NS	NS	53100
			IRON	*320*	*520*	300	11000	1430
			MAGNESIUM	24000	26000	NS	NS	15000
			MANGANESE	*100*	*100*	50	320	1340
			POTASSIUM	*2100*	*1900*	NS	NS	5770
			SODIUM	*13000*	*13000*	NS	NS	51400
Demolition Area # 2	DA2mw-114	Bedrock	BARIUM	NT	*26*	2000	2900	256
			CALCIUM	NT	110000	NS	NS	53100
			IRON	NT	*860*	300	11000	1430
			MAGNESIUM	NT	36000	NS	NS	15000
			MANGANESE	NT	*78 J*	50	320	1340
			MERCURY	NT	0.14 J	2	0.63	0
			POTASSIUM	NT	*3900*	NS	NS	5770
			SODIUM	NT	*12000*	NS	NS	51400
	DA2mw-115	Bedrock	ALUMINUM	NT	22 J	200	16000	0
			ANTIMONY	NT	0.23 J	6	6	0
			BARIUM	NT	*20*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	NT	1.6 J	6	0.071	NS
			CALCIUM	NT	100000	NS	NS	53100
			CARBON DISULFIDE	NT	0.26 J	NS	720	NS
			IRON	NT	*300*	300	11000	1430
			MAGNESIUM	NT	28000	NS	NS	15000
			MANGANESE	NT	*92 J*	50	320	1340
			POTASSIUM	NT	*4000*	NS	NS	5770
			RDX	NT	0.34 J	NS	0.61	NS
			SODIUM	NT	*11000*	NS	NS	51400
Erie Burning Grounds	EBGmw-131	Bedrock	BARIUM	NT	*98*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	NT	0.80	6	0.071	NS
			CALCIUM	NT	72000	NS	NS	53100
			IRON	NT	*510 J*	300	11000	1430
			MAGNESIUM	NT	27000	NS	NS	15000
			MANGANESE	NT	*120*	50	320	1340
			POTASSIUM	NT	*1500*	NS	NS	5770
			SODIUM	NT	*2300*	NS	NS	51400

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Facility-Wide	FWGmw-001	Unconsolidated	ALUMINUM	*60 U*	510	200	16000	0
			BARIUM	*19*	*17*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.8 U	2.9	6	0.071	NS
			CADMIUM	0.023 JB	*0.052 U*	5	6.9	0
			CALCIUM	*21000*	*22000*	NS	NS	115000
			IRON	5.0 U	600	300	11000	279
			MAGNESIUM	*6000*	*7100*	NS	NS	43300
			MANGANESE	*11*	*17*	50	320	1020
			NICKEL	4.0 J	2.7 J	NS	760	0
			POTASSIUM	*1400*	*1400 B*	NS	NS	2890
			SODIUM	*2700*	*3200*	NS	NS	45700
	FWGmw-002	Unconsolidated	2-BUTANONE	0.64	0.57 U	NS	4900	NS
			ACETONE	2.3 B	1.1 JB	NS	12000	NS
			ALUMINUM	310	*60 U*	200	16000	0
			BARIUM	89	87	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.83 UJ	1.5	6	0.071	NS
			CALCIUM	*46000*	*46000*	NS	NS	115000
			CARBON DISULFIDE	0.15 J	1.9 J	NS	720	NS
			IRON	1200	820	300	11000	279
			MAGNESIUM	*12000*	*14000*	NS	NS	43300
			MANGANESE	*180*	*140*	50	320	1020
			POTASSIUM	7900	7700	NS	NS	2890
			SODIUM	*20000*	*21000*	NS	NS	45700
			ZINC	*10 J*	*20 U*	5000	4700	60.9
	FWGmw-003	Unconsolidated	ACETONE	1.1 U	2.1 JB	NS	12000	NS
			ALUMINUM	760	320	200	16000	0
			ARSENIC	*10 U*	*3.3 J*	10	0.045	11.7
			BARIUM	85	*59*	2000	2900	82.1
			BERYLLIUM	0.036 J	*0.1 U*	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.84 B	2.2	6	0.071	NS
			CALCIUM	*75000*	*77000*	NS	NS	115000
			CHROMIUM	*1.4 J*	*4 U*	100	16000	7.3
			IRON	1900	490	300	11000	279
			MAGNESIUM	*18000*	*19000*	NS	NS	43300
			MANGANESE	*700*	*540*	50	320	1020
			NAPHTHALENE	0.095 U	0.27	NS	0.14	NS
			NICKEL	3.2 J	*5 U*	NS	760	0
			POTASSIUM	3000	2200	NS	NS	2890
			SODIUM	*5400*	*5000*	NS	NS	45700
			VANADIUM	1.4 J	2.2 U	NS	78	0
			ZINC	*14 J*	*20 U*	5000	4700	60.9
	FWGmw-004	Unconsolidated	ACETONE	1.1 U	1.3 JB	NS	12000	NS
			ALUMINUM	*60 U*	14000	200	16000	0
			ANTIMONY	*0.5 U*	0.29 J	6	6	0
			ARSENIC	*10 U*	*9.1 J*	10	0.045	11.7
			BARIUM	*25*	99	2000	2900	82.1
			BERYLLIUM	*0.1 U*	0.71	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	1.1 JB	1.3	6	0.071	NS
			CALCIUM	*96000*	*81000 J*	NS	NS	115000
			CHROMIUM	*4 U*	23 J	100	16000	7.3
			COBALT	*4 U*	7.8	NS	4.7	0
			COPPER	*10 U*	17	1300	620	0
			IRON	*100 U*	22000	300	11000	279
			LEAD	*5 U*	8.9	15	NS	0
			MAGNESIUM	49000	*41000*	NS	NS	43300
			MANGANESE	*150*	*320*	50	320	1020
			NICKEL	*5 U*	20	NS	760	0
			POTASSIUM	*930*	5500	NS	NS	2890
			SODIUM	*4000*	*4000*	NS	NS	45700
			VANADIUM	*4 U*	27	NS	78	0
			ZINC	*20 U*	*55*	5000	4700	60.9

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Facility-Wide	FWGmw-005	Bedrock	ACETONE	1.1 U	1.1 JB	NS	12000	NS
			ALUMINUM	*60 U*	26 J	200	16000	0
			BARIUM	*56*	*50*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.1 B	11 J	6	0.071	NS
			CALCIUM	*46000*	*46000 J*	NS	NS	53100
			COBALT	7.4	2.0 J	NS	4.7	0
			IRON	4200	3300	300	11000	1430
			MAGNESIUM	*14000*	15000	NS	NS	15000
			MANGANESE	*1000*	*340*	50	320	1340
			NICKEL	*4.5 J*	*2.5 UB*	NS	760	83.4
			POTASSIUM	*2600*	*1800*	NS	NS	5770
			SODIUM	*6400*	*5800*	NS	NS	51400
	FWGmw-006	Unconsolidated	2-BUTANONE	2.7	0.57 U	NS	4900	NS
			3-methylphenol/4-methylphenol	1.2	0.76 U	NS	72	NS
			ACETONE	5.9 B	2.0 B	NS	12000	NS
			ARSENIC	*5.2 J*	*10 U*	10	0.045	11.7
			BARIUM	*57*	*27*	2000	2900	82.1
			BENZENE	1.5	0.67	5	0.39	NS
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 UJ	1.0	6	0.071	NS
			CALCIUM	*110000*	*43000*	NS	NS	115000
			IRON	630	12000	300	11000	279
			MAGNESIUM	*27000*	*20000*	NS	NS	43300
			MANGANESE	*210*	2700	50	320	1020
			NAPHTHALENE	0.13	0.095 U	NS	0.14	NS
			POTASSIUM	*2200*	*1500 U*	NS	NS	2890
			SODIUM	*11000*	*7400*	NS	NS	45700
			TOLUENE	0.65 B	0.32	1000	860	NS
	FWGmw-007	Unconsolidated	ACETONE	1.1 U	1.4 B	NS	12000	NS
			BARIUM	*18*	*27*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.8 UJ	1.3	6	0.071	NS
			CALCIUM	120000	160000	NS	NS	115000
			MAGNESIUM	57000	97000	NS	NS	43300
			MANGANESE	*210*	*130*	50	320	1020
			NICKEL	2.5 J	*5 U*	NS	760	0
			POTASSIUM	*2300*	2300	NS	NS	2890
			SODIUM	*7100*	*12000*	NS	NS	45700
	FWGmw-008	Unconsolidated	ACETONE	1.1 U	1.3 JB	NS	12000	NS
			ALUMINUM	*60 U*	24 J	200	16000	0
			ARSENIC	*5.2 J*	*7.4 J*	10	0.045	11.7
			BARIUM	*39*	*34*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.82 UJ	0.84	6	0.071	NS
			CALCIUM	*110000*	*100000 J*	NS	NS	115000
			IRON	670	620	300	11000	279
			MAGNESIUM	*26000*	*25000*	NS	NS	43300
			MANGANESE	*760*	*660*	50	320	1020
			POTASSIUM	*2200*	*1800*	NS	NS	2890
			SODIUM	*5200*	*5600*	NS	NS	45700
	FWGmw-009	Unconsolidated	ALUMINUM	55 J	*60 U*	200	16000	0
			ARSENIC	*8.4 J*	*8.5 J*	10	0.045	11.7
			BARIUM	*55*	*46*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.86 UJ	1.1	6	0.071	NS
			CALCIUM	*90000*	*83000 J*	NS	NS	115000
			IRON	1000	810	300	11000	279
			MAGNESIUM	*23000*	*23000*	NS	NS	43300
			MANGANESE	*170*	*150*	50	320	1020
			POTASSIUM	*1300*	*1200*	NS	NS	2890
			SODIUM	*7500*	*6800*	NS	NS	45700
	FWGmw-010	Unconsolidated	ACETONE	1.1 U	1.5 B	NS	12000	NS
			ARSENIC	*10 U*	*7.2 J*	10	0.045	11.7
			BARIUM	*45*	*47*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.82 JB	0.76 U	6	0.071	NS
			CADMIUM	*0.07 U*	0.046 J	5	6.9	0
			CALCIUM	*14000*	*9000*	NS	NS	115000
			CARBON DISULFIDE	*0.25 U*	0.15 J	NS	720	NS
			COBALT	28	27	NS	4.7	0
			IRON	13000	24000 J	300	11000	279
			MAGNESIUM	*3800*	*3600*	NS	NS	43300
			MANGANESE	2100	1700	50	320	1020
			NICKEL	34	48	NS	760	0
			POTASSIUM	*3000*	3100	NS	NS	2890
			SODIUM	*3000*	*2400*	NS	NS	45700
			ZINC	*20 U*	*10 B*	5000	4700	60.9

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Facility-Wide	FWGmw-011	Unconsolidated	ALUMINUM	220	190	200	16000	0
			ANTIMONY	*0.5 U*	0.25 J	6	6	0
			ARSENIC	*10 U*	*3.3 J*	10	0.045	11.7
			BARIUM	*41*	*47*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 U	0.86	6	0.071	NS
			CALCIUM	*76000*	*79000*	NS	NS	115000
			IRON	440	940 J	300	11000	279
			MAGNESIUM	*14000*	*15000*	NS	NS	43300
			MANGANESE	*410*	*260*	50	320	1020
			POTASSIUM	*1600*	*960*	NS	NS	2890
			SODIUM	*5900*	*5500*	NS	NS	45700
			ZINC	*9.6 J*	*20 U*	5000	4700	60.9
	FWGmw-012	Bedrock	1,3,5-TRINITROBENZENE	0.05 U	0.097	NS	460	NS
			BARIUM	*18*	*15*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.6 JB	1.0	6	0.071	NS
			CALCIUM	*24000*	*23000*	NS	NS	53100
			COBALT	1.6 J	*4 U*	NS	4.7	0
			IRON	1200	1800 J	300	11000	1430
			MAGNESIUM	*5100*	*5400*	NS	NS	15000
			MANGANESE	*110*	*95*	50	320	1340
			POTASSIUM	*1100*	*840 J*	NS	NS	5770
			SODIUM	*5900*	*5500*	NS	NS	51400
	FWGmw-013	Bedrock	ACETONE	1.1 U	1.2 JB	NS	12000	NS
			BARIUM	*34*	*23*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 U	1.6	6	0.071	NS
			CALCIUM	57000	55000 J	NS	NS	53100
			CARBON DISULFIDE	0.25 U	0.49 J	NS	720	NS
			MAGNESIUM	25000	25000	NS	NS	15000
			MANGANESE	*580*	*480*	50	320	1340
			MERCURY	*0.20 U*	0.12 J	2	0.63	0
			POTASSIUM	*2800*	*2900*	NS	NS	5770
			SODIUM	*7900*	*7000*	NS	NS	51400
	FWGmw-014	Unconsolidated	ACETONE	1.1 U	1.6 B	NS	12000	NS
			BARIUM	*38*	*30*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 U	0.92 J	6	0.071	NS
			CALCIUM	*81000*	*81000*	NS	NS	115000
			CHROMIUM	*1.5 J*	*6.7 JB*	100	16000	7.3
			MAGNESIUM	*19000*	*20000*	NS	NS	43300
			MANGANESE	*210*	*200*	50	320	1020
			NICKEL	5.8	2.7 J	NS	760	0
			POTASSIUM	*2000*	*2100*	NS	NS	2890
			SODIUM	*5400*	*5000*	NS	NS	45700
	FWGmw-015	Unconsolidated	ALUMINUM	*60 U*	310	200	16000	0
			BARIUM	*29*	*22*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 U	1.1	6	0.071	NS
			CALCIUM	320000	280000	NS	NS	115000
			CHROMIUM	*4 U*	*1.7 J*	100	16000	7.3
			COBALT	1.8 J	2.6 J	NS	4.7	0
			IRON	330	490	300	11000	279
			MAGNESIUM	270000	230000	NS	NS	43300
			MANGANESE	*660*	*730*	50	320	1020
			NICKEL	4.2 J	5.0	NS	760	0
			POTASSIUM	5500	4500	NS	NS	2890
			SODIUM	43000	41000	NS	NS	45700
			ZINC	*20 U*	*19 J*	5000	4700	60.9
	FWGmw-016	Bedrock	ARSENIC	*10 U*	4.8 J	10	0.045	0
			BARIUM	*28*	*52*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.80 JB	1.2	6	0.071	NS
			CALCIUM	*49000*	100000	NS	NS	53100
			IRON	9800	*610*	300	11000	1430
			MAGNESIUM	22000	27000	NS	NS	15000
			MANGANESE	3000	*190*	50	320	1340
			POTASSIUM	*1900*	*2000*	NS	NS	5770
			SODIUM	*7700*	*11000*	NS	NS	51400

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 1	LL1mw-086	Unconsolidated	2-BUTANONE	0.76	0.57 U	NS	4900	NS
			ACETONE	2.6 B	1.3 B	NS	12000	NS
			ALUMINUM	1900	*60 U*	200	16000	0
			ANTIMONY	0.47 JB	*0.5 U*	6	6	0
			ARSENIC	*5.5 J*	*10 U*	10	0.045	11.7
			BARIUM	90	*46*	2000	2900	82.1
			BERYLLIUM	0.062 B	*0.1 U*	4	16	0
			BETA-BHC	0.0095 UJ	0.027 J	NS	0.022	NS
			BIS(2-ETHYLHEXYL)PHTHALATE	0.95 J	1.0 J	6	0.071	NS
			CALCIUM	*27000*	*59000*	NS	NS	115000
			CHROMIUM	*2.7 J*	*4 U*	100	16000	7.3
			IRON	2700	1100 J	300	11000	279
			MAGNESIUM	*13000*	*26000*	NS	NS	43300
			MANGANESE	*69*	*540*	50	320	1020
			NICKEL	5.6 J	*5 U*	NS	760	0
			PHENOL	0.75 J	0.76 U	NS	4500	NS
			POTASSIUM	78000	12000	NS	NS	2890
			SODIUM	*26000*	*7900*	NS	NS	45700
			TOLUENE	0.20 B	0.25 U	1000	860	NS
			VANADIUM	3.5 J	*4 U*	NS	78	0
			ZINC	*16 J*	*20 U*	5000	4700	60.9
	LL1mw-087	Unconsolidated	ALUMINUM	*60 U*	120000	200	16000	0
			ANTIMONY	0.97 JB	1.0	6	6	0
			ARSENIC	*7.3 J*	170	10	0.045	11.7
			BARIUM	*59*	330	2000	2900	82.1
			BERYLLIUM	0.15 B	5.6	4	16	0
			CADMIUM	0.14 JB	*0.53 U*	5	6.9	0
			CALCIUM	*87000*	200000	NS	NS	115000
			CHROMIUM	*4.0 U*	160	100	16000	7.3
			COBALT	*4.0 U*	120	NS	4.7	0
			COPPER	*10 U*	200	1300	620	0
			IRON	*180*	340000 J	300	11000	279
			LEAD	*5 U*	93	15	NS	0
			MAGNESIUM	*27000*	100000	NS	NS	43300
			MANGANESE	*190*	4800	50	320	1020
			NICKEL	3.0 J	300	NS	760	0
			POTASSIUM	*1500*	19000	NS	NS	2890
			SODIUM	*7700*	*6900*	NS	NS	45700
			THALLIUM	0.39 J	1.4 U	2	0.16	0
			VANADIUM	*4 U*	180	NS	78	0
			ZINC	*20 U*	670	5000	4700	60.9
Load Line 3	LL3mw-244	Bedrock	2-AMINO-4,6-DINITROTOLUENE	0.72	0.66	NS	30	NS
			4-AMINO-2,6-DINITROTOLUENE	0.69	0.63	NS	30	NS
			ANTIMONY	0.30 JB	0.34 J	6	6	0
			BARIUM	*18*	*16*	2000	2900	256
			CALCIUM	*25000*	*24000*	NS	NS	53100
			Hexavalent Chromium	NT	0.184 J	NS	0.031	NS
			HMX	0.070 B	0.051 U	NS	780	NS
			MAGNESIUM	*7500*	*8000*	NS	NS	15000
			MANGANESE	*5 U*	*2.7 J*	50	320	1340
			POTASSIUM	*1400*	*1300*	NS	NS	5770
			RDX	0.37 B	0.32 J	NS	0.61	NS
			SODIUM	*3800*	*3200*	NS	NS	51400
	LL3mw-245	Bedrock	ACETONE	1.1 U	1.1 JB	NS	12000	NS
			ARSENIC	0.33 JB	*10 U*	10	0.045	0
			BARIUM	*54*	*47*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.83 J	1.2	6	0.071	NS
			CALCIUM	110000	110000	NS	NS	53100
			CARBON DISULFIDE	0.25 U	0.23 J	NS	720	NS
			IRON	*460*	*460*	300	11000	1430
			MAGNESIUM	37000	37000	NS	NS	15000
			MANGANESE	*22*	*26*	50	320	1340
			POTASSIUM	7700	7100	NS	NS	5770
			SODIUM	*24000*	*23000*	NS	NS	51400
Load Line 4	LL4mw-201	Bedrock	ALUMINUM	*60 U*	42 J	200	16000	0
			ANTIMONY	*0.5 UJ*	0.89	6	6	0
			ARSENIC	28 J	30	10	0.045	0
			BARIUM	*86*	*82*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	2.0	1.0	6	0.071	NS
			CALCIUM	98000	96000	NS	NS	53100
			IRON	*540*	*890 J*	300	11000	1430
			MAGNESIUM	28000	29000	NS	NS	15000
			MANGANESE	*160*	*150*	50	320	1340
			POTASSIUM	*2300*	*1900*	NS	NS	5770
			SODIUM	*13000*	*11000*	NS	NS	51400

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
Load Line 6	LL6mw-008	Unconsolidated	BARIUM	*23*	*26*	2000	2900	82.1
			BERYLLIUM	*0.1 U*	0.14	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.76 JB	1.1	6	0.071	NS
			CADMIUM	0.028 J	*0.061 U*	5	6.9	0
			CALCIUM	120000	120000 J	NS	NS	115000
			COBALT	1.8 J	1.8 J	NS	4.7	0
			Hexavalent Chromium	NT	0.022	NS	0.031	NS
			MAGNESIUM	*39000*	*43000*	NS	NS	43300
			MANGANESE	1500	1500	50	320	1020
			NICKEL	5.6	*5 U*	NS	760	0
			POTASSIUM	*2200*	*1600*	NS	NS	2890
			SODIUM	*3100*	*3100*	NS	NS	45700
	LL6mw-009	Bedrock	ARSENIC	*10 U*	7.7 J	10	0.045	0
			BARIUM	*33*	*30*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	1.2 J	0.92	6	0.071	NS
			CALCIUM	97000	92000	NS	NS	53100
			COBALT	3.1 J	3.1 J	NS	4.7	0
			IRON	*100 U*	2900	300	11000	1430
			MAGNESIUM	32000	31000	NS	NS	15000
			MANGANESE	*630*	*600*	50	320	1340
			NICKEL	*2.7 J*	*5 U*	NS	760	83.4
			POTASSIUM	*2300*	*1900*	NS	NS	5770
			SODIUM	*13000*	*13000*	NS	NS	51400
			ZINC	*9.9 J*	*18 J*	5000	4700	52.3
Load Line 11	LL11mw-011	Unconsolidated	ALUMINUM	*60 U*	2400	200	16000	0
			ANTIMONY	0.32 J	*0.5 U*	6	6	0
			ARSENIC	*10 U*	*6.9 J*	10	0.045	11.7
			BARIUM	*44*	*54*	2000	2900	82.1
			BERYLLIUM	*0.1 U*	0.11	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	2.1 B	1.2 JB	6	0.071	NS
			CALCIUM	*83000*	*61000*	NS	NS	115000
			CHROMIUM	*4.9*	*3.9 JB*	100	16000	7.3
			COBALT	*4 U*	1.6 J	NS	4.7	0
			COPPER	*10 U*	5.4 J	1300	620	0
			IRON	*100 U*	4300	300	11000	279
			LEAD	*5 U*	1.8 J	15	NS	0
			MAGNESIUM	*20000*	*17000*	NS	NS	43300
			MANGANESE	*71*	*420*	50	320	1020
			NICKEL	1400	4.5 J	NS	760	0
			POTASSIUM	14000	1800	NS	NS	2890
			SODIUM	*15000*	*8600*	NS	NS	45700
			VANADIUM	*4 U*	5.2 B	NS	78	0
			ZINC	*20 U*	*20*	5000	4700	60.9
	LL11mw-012	Bedrock	ACETONE	1.1 U	1.3 B	NS	12000	NS
			ANTIMONY	0.21 J	*0.5 U*	6	6	0
			BARIUM	*47*	*43*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	0.8 UJ	1.3 B	6	0.071	NS
			CALCIUM	85000	87000	NS	NS	53100
			CARBON DISULFIDE	0.25 U	0.14 J	NS	720	NS
			CHROMIUM	9.2	3.9 JB	100	16000	0
			COPPER	15	*10 U*	1300	620	0
			IRON	*100 U*	*190*	300	11000	1430
			MAGNESIUM	20000	21000	NS	NS	15000
			MANGANESE	*73*	*83*	50	320	1340
			NICKEL	*35*	*5 U*	NS	760	83.4
			POTASSIUM	13000	*3500*	NS	NS	5770
			SODIUM	*15000*	*12000*	NS	NS	51400
Load Line 12	LL12mw-182ss	Unconsolidated	BIS(2-ETHYLHEXYL)PHTHALATE	1.6	1.9	6	0.071	NS
	LL12mw-247	Unconsolidated	ACETONE	1.1 U	1.2 B	NS	12000	NS
			ALUMINUM	*60 U*	25 J	200	16000	0
			ANTIMONY	*0.50 UJ*	1.0	6	6	0
			ARSENIC	*8.6 J*	*7.6 J*	10	0.045	11.7
			BARIUM	*36*	*30*	2000	2900	82.1
			BIS(2-ETHYLHEXYL)PHTHALATE	1.2	1.0 JB	6	0.071	NS
			CALCIUM	*100000*	*100000*	NS	NS	115000
			COBALT	1.6 J	*4 U*	NS	4.7	0
			Hexavalent Chromium	NT	0.265 J	NS	0.031	NS
			IRON	360	430	300	11000	279
			MAGNESIUM	*56000*	*55000*	NS	NS	43300
			MANGANESE	*160*	*180*	50	320	1020
			MERCURY	0.2 U	0.18 J	2	0.63	0
			Nitrate-Nitrite	0.039 JB	0.027 J	1	1.6	NS
			POTASSIUM	3400	3200	NS	NS	2890
			SODIUM	*25000*	*24000*	NS	NS	45700
			VANADIUM	1.5 J	*4 U*	NS	78	0

Table 4-4. Summary of Constituents Detected (Quarterly New wells 2012)

Area	Well Number	Monitored Zone	Analyte	Apr-12 Level (µg/L)	Jul-12 Level (µg/L)	MCL (µg/L)	USEPA RSLs (µg/L)	Facility-Wide Back-ground* (µg/L)
NACA Test Area	NTAmw-119	Unconsolidated	ACETONE	1.4 B	1.1 UJ	NS	12000	NS
			ALUMINUM	35 J	*60 U*	200	16000	0
			ANTIMONY	0.31 J	*0.5 U*	6	6	0
			BARIUM	*86*	*82*	2000	2900	82.1
			BERYLLIUM	0.17	*0.1 U*	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	0.98 JB	1.1	6	0.071	NS
			CALCIUM	*76000*	*81000*	NS	NS	115000
			CARBON DISULFIDE	*0.25 U*	1.0 J	NS	720	NS
			DI-N-BUTYL PHTHALATE	0.93	0.76 U	NS	670	NS
			IRON	340	3100	300	11000	279
			MAGNESIUM	*22000*	*21000*	NS	NS	43300
			MANGANESE	*200*	*330*	50	320	1020
			NAPHTHALENE	0.11	0.24	NS	0.14	NS
			POTASSIUM	4500	*2000*	NS	NS	2890
			SODIUM	*15000*	*7800*	NS	NS	45700
			TETRACHLOROETHENE	0.88	0.5 U	5	0.44	NS
			ZINC	*20 U*	*11 J*	5000	4700	60.9
Winklepeck Burning Grounds	WBGmw-018	Unconsolidated	ANTIMONY	NT	0.77	6	6	0
			BARIUM	NT	*21*	2000	2900	82.1
			BENZYL ALCOHOL	NT	0.59 J	NS	1500	NS
			CALCIUM	NT	*14000*	NS	NS	115000
			HMX	NT	0.28	NS	780	NS
			MAGNESIUM	NT	3200	NS	NS	43300
			MANGANESE	NT	*9.9 B*	50	320	1020
			POTASSIUM	NT	*950 B*	NS	NS	2890
			RDX	NT	0.44 J	NS	0.61	NS
			SODIUM	NT	*1600*	NS	NS	45700
	WBGmw-019	Bedrock	BARIUM	NT	*53*	2000	2900	256
			BERYLLIUM	NT	0.12	4	16	0
			BIS(2-ETHYLHEXYL)PHTHALATE	NT	0.94	6	0.071	NS
			CALCIUM	NT	72000	NS	NS	53100
			IRON	NT	*460*	300	11000	1430
			MAGNESIUM	NT	20000	NS	NS	15000
			MANGANESE	NT	*220*	50	320	1340
			POTASSIUM	NT	*1800*	NS	NS	5770
			SODIUM	NT	*7700*	NS	NS	51400
	WBGmw-020	Bedrock	BARIUM	NT	*15*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	NT	1.5	6	0.071	NS
			CALCIUM	NT	*30000*	NS	NS	53100
			IRON	NT	*3900*	300	11000	1430
			MAGNESIUM	NT	*10000*	NS	NS	15000
			MANGANESE	NT	*340*	50	320	1340
			NICKEL	NT	*3.1 J*	NS	760	83.4
			POTASSIUM	NT	*630 J*	NS	NS	5770
			SODIUM	NT	*3500*	NS	NS	51400
	WBGmw-021	Bedrock	ARSENIC	NT	7.2 J	10	0.045	0
			BARIUM	NT	*51*	2000	2900	256
			BIS(2-ETHYLHEXYL)PHTHALATE	NT	1.5 B	6	0.071	NS
			CALCIUM	NT	73000	NS	NS	53100
			CARBON DISULFIDE	NT	0.13 J	NS	720	NS
			IRON	NT	*350*	300	11000	1430
			MAGNESIUM	NT	19000	NS	NS	15000
			MANGANESE	NT	*230*	50	320	1340
			POTASSIUM	NT	*1400*	NS	NS	5770
			SODIUM	NT	*4900*	NS	NS	51400

Notes:
All inorganics are filtered; all organics are not filtered.
* There are no background levels for organic constituents
1 = mg/L
NT = not tested
NS = no standard
U = The analyte was analyzed for but not detected. The numerical value preceding the U is the associated reporting limit.
J = Results have been qualified "J" estimated result. For more details refer to Data Verification/Validation Reports in the FWGWMP 2012 Sampling Reports.
B = organic or inorganic analysis when the analyte is found in the method blank or any of the field blanks.
Bold = inorganic constituent detected above Facility-Wide background levels.
Italics = inorganic constituent detected below the Facility-Wide background levels.
Shaded boxes indicate any contituent that does not have a background value but is detected above the reporting limit.

Table 4-5. RVAAP Facility-Wide Background Criteria (SAIC, 2001b)

Media Units	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Sediment (mg/kg)	Surface Water (µg/L)	Groundwater Bedrock Zone Filtered (µg/L)	Groundwater Bedrock Zone Unfiltered (µg/L)	Groundwater Unconsolidated Zone Filtered (µg/L)	Groundwater Unconsolidated Unfiltered (µg/L)
Analyte								
Cyanide	0	0	0	0	0	0	0	0
Aluminum	17700	19500	13900	3370	0	9410	0	0
Antimony	0.96	0.96	0	0	0	0	0	0
Arsenic	15.4	19.8	19.5	3.2	0	19.1	11.7	11.7
Barium	88.4	124	123	47.5	256	241	82.1	82.1
Beryllium	0.88	0.88	0.38	0	0	0	0	0
Cadmium	0	0	0	0	0	0	0	0
Calcium	15800	35500	5510	41400	53100	48200	115000	115000
Chromium	17.4	27.2	18.1	0	0	19.5	7.3	7.3
Cobalt	10.4	23.2	9.1	0	0	0	0	0
Copper	17.7	32.3	27.6	7.9	0	17	0	0
Iron	23100	35200	28200	2560	1430	21500	279	279
Lead	26.1	19.1	27.4	0	0	23	0	0
Magnesium	3030	8790	2760	10800	15000	13700	43300	43300
Manganese	1450	3030	1950	391	1340	1260	1020	1020
Mercury	0.036	0.044	0.059	0	0	0	0	0
Nickel	21.1	60.7	17.7	0	83.4	85.3	0	0
Potassium	927	3350	1950	3170	5770	6060	2890	2890
Selenium	104	105	107	0	0	0	0	0
Silver	0	0	0	0	0	0	0	0
Sodium	123	145	112	21300	51400	49700	45700	45700
Thallium	0	0.91	0.89	0	0	0	0	0
Vanadium	31.1	37.6	26.1	0	0	15.5	0	0
Zinc	61.8	93.3	532	42	52.3	193	60.9	60.9

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
Background	BKGmw-005	Unconsolidated	bis(2-Ethylhexyl)phthalate	NT		0.76	U	NT		0.87		6.0	0.071	NS
	BKGmw-021	Unconsolidated	bis(2-Ethylhexyl)phthalate	NT		1.4	B	NT		1.1		6.0	0.071	NS
Load Line 1	LL1mw-064	Unconsolidated	Arsenic	NT		10	U	NT		3.5	J	10	0.045	11.7
			Iron	NT		660		NT		490	J	300	11,000	279
			Manganese	NT		120		NT		110		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.76	U	NT		0.92		6.0	0.071	NS
	LL1mw-065	Unconsolidated	Manganese	NT		140		NT		180		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.99	B	NT		2.0	UJ	6.0	0.071	NS
	LL1mw-086	Unconsolidated	Aluminum	NT		NT		1,900		60	U	200	16,000	0
			Arsenic	NT		NT		5.5	J	10	U	10	0.045	11.7
			Iron	NT		NT		2,700		1,100	J	300	11,000	279
			Manganese	NT		NT		69		540		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.95	J	1.0	J	6.0	0.071	NS
			beta-BHC	NT		NT		0.0095	UJ	0.027		NS	0.022	NS
	LL1mw-087	Unconsolidated	Aluminum	NT		NT		60	U	120,000		200	16,000	0
			Arsenic	NT		NT		7.3	J	170		10	0.045	11.7
			Beryllium	NT		NT		0.15	B	5.6		4.0	16	0
			Chromium	NT		NT		4.0	U	160		100	16,000	7.3
			Cobalt	NT		NT		4.0	U	120		NS	4.7	0
			Iron	NT		NT		180		340,000	J	300	11,000	279
			Lead	NT		NT		5.0	U	93		15	NS	0
			Manganese	NT		NT		190		4,800		50	320	1020
			Vanadium	NT		NT		4.0	U	180		NS	78	0
Load Line 2	LL2mw-059	Bedrock	2,4-DNT	NT		0.39		NT		0.49		NS	0.20	NS
			Arsenic	NT		4.1	J	NT		4.6	J	10	0.045	0
			Cobalt	NT		13	J	NT		8.4		NS	4.7	0
			Iron	NT		5,400		NT		3,000	J	300	11,000	1430
			Manganese	NT		1,100		NT		1,000		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		1.3	B	NT		0.76	UJ	6.0	0.071	NS
	LL2mw-265	Bedrock	Iron	NT		110	J	NT		3,500	J	300	11,000	1430
			Manganese	NT		70		NT		660		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		5.7	B	NT		0.80	UJ	6.0	0.071	NS
Load Line 3	LL3mw-241	Bedrock	2,4,6-TNT	NT		10	J	NT		3.5		NS	2.2	NS
			RDX	NT		1.6	J	NT		1.3	J	NS	0.61	NS
			bis(2-Ethylhexyl)phthalate	NT		0.88	B	NT		0.92		6.0	0.071	NS
	LL3mw-242	Bedrock	bis(2-Ethylhexyl)phthalate	NT		1.3	B	NT		0.80		6.0	0.071	NS
	LL3mw-244	Bedrock	Hexavalent chromium	NT		NT		NT		0.184		NS	0.031	NS
	LL3mw-245	Bedrock	Iron	NT		NT		460		460		300	11,000	1430
			bis(2-Ethylhexyl)phthalate	NT		NT		0.83	J	1.2		6.0	0.071	NS
Load Line 4	LL4mw-199	Unconsolidated	Arsenic	NT		12		NT		11		10	0.045	11.7
			Iron	NT		3,800		NT		3,400	J	300	11,000	279
			Manganese	NT		430		NT		300		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.76	U	NT		0.95		6.0	0.071	NS
	LL4mw-201	Bedrock	Arsenic	NT		NT		28	J	30		10	0.045	0
			Iron	NT		NT		540		890	J	300	11,000	1430
			Manganese	NT		NT		160		150		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		2.0		1.0		6.0	0.071	NS
Load Line 6	LL6mw-002	Unconsolidated	Aluminum	1,300		60	U	NT		5,100		200	16,000	0
			Arsenic	5.0	U	10	U	NT		6.3	J	10	0.045	11.7
			Iron	2,100		100	U	NT		8,000		300	11,000	279
			Manganese	26		5.0	U	NT		100		50	320	1020
			bis(2-Ethylhexyl)phthalate	11	U	0.84	U	NT		22		6.0	0.071	NS
	LL6mw-005	Bedrock	Arsenic	33		17		NT		20		10	0.045	0
			Iron	1,800		1,200		NT		1,100		300	11,000	1430
			Manganese	440		480		NT		490		50	320	1340
			bis(2-Ethylhexyl)phthalate	9.6	UJ	0.76	U	NT		1.8		6.0	0.071	NS

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
Load Line 6	LL6mw-007	Bedrock	Aluminum	220		NT		NT		NT		200	16,000	0
			Iron	440		NT		NT		NT		300	11,000	1430
			Manganese	400		NT		NT		NT		50	320	1340
	LL6mw-008	Unconsolidated	Manganese	NT		NT		1,500		1,500		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	JB	1.1		6.0	0.071	NS
	LL6mw-009	Bedrock	Arsenic	NT		NT		10	U	7.7	J	10	0.045	0
			Iron	NT		NT		100	U	2,900		300	11,000	1430
			Manganese	NT		NT		630		600		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		1.2	J	0.92		6.0	0.071	NS
Load Line 10	LL10mw-003	Bedrock	Carbon tetrachloride	NT		0.47		NT		2.1		5.0	0.39	NS
			Chloroform	NT		0.25	U	NT		0.25		NS	0.19	NS
Load Line 11	LL11mw-007	Unconsolidated	Arsenic	NT		20		NT		20		10	0.045	11.7
			Iron	NT		1,100		NT		990		300	11,000	279
			Manganese	NT		210		NT		180		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.81	U	NT		1.2		6.0	0.071	NS
	LL11mw-011	Unconsolidated	Aluminum	NT		NT		60	U	2,400		200	16,000	0
			Arsenic	NT		NT		10	U	6.9	J	10	0.045	11.7
			Iron	NT		NT		100	U	4,300		300	11,000	279
			Manganese	NT		NT		71		420		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		2.1	B	1.2	J	6.0	0.071	NS
	LL11mw-012	Bedrock	Manganese	NT		NT		73		83		50	320	1340
Load Line 12	LL12mw-182	Unconsolidated	bis(2-Ethylhexyl)phthalate	NT		1.1	B	NT		2.7	J	6.0	0.071	NS
	LL12mw-182ss	Unconsolidated	bis(2-Ethylhexyl)phthalate	NT		NT		1.6		1.9		6.0	0.071	NS
	LL12mw-185	Unconsolidated	Arsenic	NT		10	U	NT		3.5	J	10	0.045	11.7
			Manganese	NT		1,900		NT		1,700		50	320	1020
	LL12mw-187	Unconsolidated	Arsenic	NT		10	U	NT		4.8	J	10	0.045	11.7
			Cobalt	NT		9.9		NT		10		NS	4.7	0
			Manganese	NT		2,100		NT		2,000	J	50	320	1020
			Thallium	NT		0.39	J	NT		0.77	UB	2.0	0.16	0
			Nitrate-Nitrite	NT		NT		NT		1,310	J	1000	1600	NS
	LL12mw-242	Unconsolidated	Aluminum	NT		600		NT		30	J	200	16,000	0
			Arsenic	NT		22		NT		21		10	0.045	11.7
			Iron	NT		1,700		NT		850		300	11,000	279
			Manganese	NT		80		NT		60		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.77	B	NT		0.76	U	6.0	0.071	NS
	LL12mw-245	Unconsolidated	Aluminum	NT		60	UJ	NT		4,000		200	16,000	0
			Arsenic	NT		10	UJ	NT		9.9	J	10	0.045	11.7
			Cobalt	NT		4.0	U	NT		5.0		NS	4.7	0
			Iron	NT		100	U	NT		7,800		300	11,000	279
			Manganese	NT		110		NT		180		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		0.76	UJ	NT		1.9		6.0	0.071	NS
	LL12mw-246	Unconsolidated	Arsenic	NT		31		NT		33		10	0.045	11.7
			Iron	NT		1,300		NT		1,300		300	11,000	279
			Manganese	NT		66		NT		64	J	50	320	1020
	LL12mw-247	Unconsolidated	Arsenic	NT		NT		8.6	J	7.6	J	10	0.045	11.7
			Hexavalent chromium	NT		NT		NT		0.265		NS	0.031	NS
			Iron	NT		NT		360		430		300	11,000	279
			Manganese	NT		NT		160		180		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		1.2		1.0	JB	6.0	0.071	NS
Building 1200	B12mw-012	Bedrock	Aluminum	NT		270		NT		130		200	16,000	0
			Iron	NT		730		NT		790		300	11,000	1430
			Manganese	NT		30		NT		70		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		1.0	B	NT		1.3		6.0	0.071	NS
	B12mw-013	Bedrock	Iron	NT		NT		290		630		300	11,000	1430
			Manganese	NT		NT		21		160		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		1.5	JB	1.7		6.0	0.071	NS

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
C Block	CBLmw-002	Bedrock	bis(2-Ethylhexyl)phthalate	NT		0.92		NT		1.2		6.0	0.071	NS
	CBLmw-005	Bedrock	Cobalt	NT		NT		6.9		4.0	U	NS	4.7	0
			Manganese	NT		NT		110		18		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		0.82	UJ	1.1	B	6.0	0.071	NS
Central Burn Pits	CBPmw-002	Unconsolidated	Arsenic	NT		9.8	J	NT		15		10	0.045	11.7
			Iron	NT		770		NT		320		300	11,000	279
			Manganese	NT		66		NT		100		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		1.9	B	NT		0.91		6.0	0.071	NS
	CBPmw-009	Bedrock	Iron	NT		NT		320		520		300	11,000	1430
			Manganese	NT		NT		100		100		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		32	J	0.88	J	6.0	0.071	NS
Demolition Area 2	DETmw-002	Unconsolidated	Arsenic	3.6	J	NT		NT		NT		10	0.045	11.7
			Manganese	78		NT		NT		NT		50	320	1020
	DETmw-003	Unconsolidated	Arsenic	11		6.9	J	NT		9.8	J	10	0.045	11.7
			Iron	1,600		1,700		NT		1,300		300	11,000	279
			Manganese	250		250		NT		230	J	50	320	1020
			bis(2-Ethylhexyl)phthalate	10	U	0.76	U	NT		1.3		6.0	0.071	NS
	DETmw-004	Unconsolidated	RDX	1.5		2.8		NT		0.50	J	NS	0.61	NS
			bis(2-Ethylhexyl)phthalate	1.1	JB	0.76	U	NT		0.97	J	6.0	0.071	NS
	DA2mw-106	Unconsolidated	Cobalt	9.4		NT		NT		NT		NS	4.7	0
			Iron	6,300		NT		NT		NT		300	11,000	279
			Manganese	5,900		NT		NT		NT		50	320	1020
	DA2mw-107	Unconsolidated	Arsenic	3.2	J	NT		NT		NT		10	0.045	11.7
			Iron	1,700		NT		NT		NT		300	11,000	279
			Manganese	200		NT		NT		NT		50	320	1020
			bis(2-Ethylhexyl)phthalate	0.85	JB	NT		NT		NT		6.0	0.071	NS
	DA2mw-108	Unconsolidated	Iron	3,800		1,800		NT		2,500		300	11,000	279
			Manganese	440		310		NT		290	J	50	320	1020
	DA2mw-114	Bedrock	Iron	NT		NT		NT		860		300	11,000	1430
			Manganese	NT		NT		NT		78	J	50	320	1340
	DA2mw-115	Bedrock	Iron	NT		NT		NT		300		300	11,000	1430
			Manganese	NT		NT		NT		92	J	50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		NT		1.6	J	6.0	0.071	NS
Erie Burning Grounds	EBGmw-125	Unconsolidated	Arsenic	NT		11		NT		20		10	0.045	11.7
			Iron	NT		2,800		NT		7,000	J	300	11,000	279
			Manganese	NT		250		NT		690		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		1.1	B	NT		0.76	UJ	6.0	0.071	NS
	EBGmw-131	Bedrock	Iron	NT		NT		NT		510	J	300	11,000	1430
			Manganese	NT		NT		NT		120		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		NT		0.80		6.0	0.071	NS
Fuze & Booster Quarry	FBQmw-169	Bedrock	Cobalt	8.4		NT		NT		NT		NS	4.7	0
			Iron	480		NT		NT		NT		300	11,000	1430
			Manganese	4,600		NT		NT		NT		50	320	1340
			bis(2-Ethylhexyl)phthalate	0.79	JB	NT		NT		NT		6.0	0.071	NS
	FBQmw-170	Bedrock	Manganese	64		NT		NT		NT		50	320	1340
	FBQmw-174	Bedrock	2,4,6-TNT	9.6		NT		NT		NT		NS	2.2	NS
			bis(2-Ethylhexyl)phthalate	0.88	JB	NT		NT		NT		6.0	0.071	NS
	FBQmw-175	Bedrock	bis(2-Ethylhexyl)phthalate	1.1	JB	NT		NT		NT		6.0	0.071	NS
	FBQmw-177	Bedrock	Manganese	1,100		NT		NT		NT		50	320	1340
Facilitywide	FWGmw-001	Unconsolidated	Aluminum	NT		NT		60	U	510		200	16,000	0
			Iron	NT		NT		100	U	600		300	11,000	279
			bis(2-Ethylhexyl)phthalate	NT		NT		0.80	U	2.9		6.0	0.071	NS
	FWGmw-002	Unconsolidated	Aluminum	NT		NT		310		60	U	200	16,000	0
			Iron	NT		NT		1,200		820		300	11,000	279
			Manganese	NT		NT		180		140		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.83	UJ	1.5		6.0	0.071	NS

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
Facilitywide	FWGmw-003	Unconsolidated	Aluminum	NT		NT		760		320		200	16,000	0
			Arsenic	NT		NT		10	U	3.3	J	10	0.045	11.7
			Iron	NT		NT		1,900		490		300	11,000	279
			Manganese	NT		NT		700		540		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.84	B	2.2		6.0	0.071	NS
			Naphthalene	NT		NT		0.095	U	0.27		NS	0.14	NS
	FWGmw-004	Unconsolidated	Aluminum	NT		NT		60	U	14,000		200	16,000	0
			Arsenic	NT		NT		10	U	9.1	J	10	0.045	11.7
			Cobalt	NT		NT		4.0	U	7.8		NS	4.7	0
			Iron	NT		NT		100	U	22,000		300	11,000	279
			Manganese	NT		NT		150		320		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		1.1	JB	1.3		6.0	0.071	NS
	FWGmw-005	Bedrock	Cobalt	NT		NT		7.4		2.0	J	NS	4.7	0
			Iron	NT		NT		4,200		3,300		300	11,000	1430
			Manganese	NT		NT		1,000		340		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		1.1	B	11	J	6.0	0.071	NS
	FWGmw-006	Unconsolidated	Arsenic	NT		NT		5.2	J	10	U	10	0.045	11.7
			Iron	NT		NT		630		12,000		300	11,000	279
			Manganese	NT		NT		210		2,700		50	320	1020
			Benzene	NT		NT		1.5		0.67		5.0	0.39	NS
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	UJ	1.0		6.0	0.071	NS
	FWGmw-007	Unconsolidated	Manganese	NT		NT		210		130		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.80	UJ	1.3		6.0	0.071	NS
	FWGmw-008	Unconsolidated	Arsenic	NT		NT		5.2	J	7.4	J	10	0.045	11.7
			Iron	NT		NT		670		620		300	11,000	279
			Manganese	NT		NT		760		660		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.82	UJ	0.84		6.0	0.071	NS
	FWGmw-009	Unconsolidated	Arsenic	NT		NT		8.4	J	8.5	J	10	0.045	11.7
			Iron	NT		NT		1,000		810		300	11,000	279
			Manganese	NT		NT		170		150		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.86	UJ	1.1		6.0	0.071	NS
	FWGmw-010	Unconsolidated	Arsenic	NT		NT		10	U	7.2	J	10	0.045	11.7
			Cobalt	NT		NT		28		27		NS	4.7	0
			Iron	NT		NT		13,000		24,000	J	300	11,000	279
			Manganese	NT		NT		2,100		1,700		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.82	JB	0.76	U	6.0	0.071	NS
	FWGmw-011	Unconsolidated	Aluminum	NT		NT		220		3.3	J	200	16,000	0
			Iron	NT		NT		440		940	J	300	11,000	279
			Manganese	NT		NT		410		260		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	U	0.86		6.0	0.071	NS
	FWGmw-012	Bedrock	Iron	NT		NT		1,200		1,800	J	300	11,000	1430
			Manganese	NT		NT		110		95		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		1.6	JB	1.0		6.0	0.071	NS
	FWGmw-013	Bedrock	Manganese	NT		NT		580		480		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	U	1.6		6.0	0.071	NS
	FWGmw-014	Unconsolidated	Manganese	NT		NT		210		200		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	U	0.92		6.0	0.071	NS
	FWGmw-015	Unconsolidated	Aluminum	NT		NT		60	U	310		200	16,000	0
			Iron	NT		NT		330		490		300	11,000	279
			Manganese	NT		NT		660		730		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.76	U	1.1		6.0	0.071	NS
	FWGmw-016	Bedrock	Arsenic	NT		NT		10	U	4.8	J	10	0.045	0
			Iron	NT		NT		9,800		610		300	11,000	1430
			Manganese	NT		NT		3,000		190		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		0.80	JB	1.2		6.0	0.071	NS

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
NACA Test Area	NTAmw-109	Unconsolidated	Iron	NT		290		NT		880		300	11,000	279
			bis(2-Ethylhexyl)phthalate	NT		0.76	U	NT		1.2		6.0	0.071	NS
	NTAmw-119	Unconsolidated	Iron	NT		NT		340		3,100		300	11,000	279
			Manganese	NT		NT		200		330		50	320	1020
			bis(2-Ethylhexyl)phthalate	NT		NT		0.98	JB	1.1		6.0	0.071	NS
			Naphthalene	NT		NT		0.11		0.24		NS	0.14	NS
Ramsdell Quarry Landfill	RQLmw-006	Bedrock	Arsenic	19		NT		NT		NT		10	0.045	0
			Cobalt	39		NT		NT		NT		NS	4.7	0
			Iron	120,000		NT		NT		NT		300	11,000	1430
			Manganese	11,000		NT		NT		NT		50	320	1340
			beta-BHC	0.063	J	NT		NT		NT		NS	0.022	NS
	RQLmw-007	Bedrock	Arsenic	9.8		14		NT		43		10	0.045	0
			Cobalt	13		20	J	NT		5.3		NS	4.7	0
			Iron	2,500		8,000		NT		11,000	J	300	11,000	1430
			Manganese	1,500		2,000		NT		1,700		50	320	1340
			bis(2-Ethylhexyl)phthalate	11	U	0.94	JB	NT		0.76	UJ	6.0	0.071	NS
			Dibenzo(a,h)anthracene	0.14	J	0.095	U	NT		0.095	UJ	NS	0.0029	NS
			Indeno(1,2,3-cd)pyrene	0.14	J	0.095	U	NT		0.095	UJ	NS	0.029	NS
	RQLmw-008	Bedrock	Arsenic	41		15		NT		45		10	0.045	0
			Iron	56,000		61,000		NT		110,000	J	300	11,000	1430
			Manganese	520		670		NT		760		50	320	1340
			Nitrobenzene	0.11	U	0.052	U	NT		0.24		NS	0.12	NS
			bis(2-Ethylhexyl)phthalate	1.0	U	1.3	JB	NT		0.87	U	6.0	0.071	NS
			beta-BHC	0.051	U	0.0097	U	NT		0.075		NS	0.022	NS
	RQLmw-009	Bedrock	Arsenic	18		12		NT		33		10	0.045	0
			Cobalt	4.9	J	2.6	J	NT		5.3		NS	4.7	0
			Iron	9,000		5,600		NT		13,000	J	300	11,000	1430
			Manganese	1,900		940		NT		2,400		50	320	1340
			bis(2-Ethylhexyl)phthalate	11	U	0.77	JB	NT		0.76	U	6.0	0.071	NS
	RQLmw-011	Bedrock	Aluminum	1,100		NT		NT		NT		200	16,000	0
			Cobalt	22		NT		NT		NT		NS	4.7	0
			Iron	4,000		NT		NT		NT		300	11,000	1430
			Manganese	2,600		NT		NT		NT		50	320	1340
	RQLmw-012	Bedrock	Aluminum	860		NT		NT		NT		200	16,000	0
			Cobalt	5.4		NT		NT		NT		NS	4.7	0
			Manganese	240		NT		NT		NT		50	320	1340
			bis(2-Ethylhexyl)phthalate	1.0	JB	NT		NT		NT		6.0	0.071	NS
	RQLmw-014	Bedrock	Cobalt	7.2		NT		NT		NT		NS	4.7	0
			Iron	2,800		NT		NT		NT		300	11,000	1430
			Manganese	2,000		NT		NT		NT		50	320	1340
	RQLmw-015	Bedrock	Manganese	160		NT		NT		NT		50	320	1340
			bis(2-Ethylhexyl)phthalate	1.3	JB	NT		NT		NT		6.0	0.071	NS
	RQLmw-016	Bedrock	Cobalt	5.6		NT		NT		NT		NS	4.7	0
			Iron	24,000		NT		NT		NT		300	11,000	1430
			Manganese	6,800		NT		NT		NT		50	320	1340
			bis(2-Ethylhexyl)phthalate	1.2	JB	NT		NT		NT		6.0	0.071	NS
	RQLmw-017	Bedrock	Cobalt	7.1		NT		NT		NT		NS	4.7	0
			Manganese	3,000		NT		NT		NT		50	320	1340
Winklepeck Burning Grounds	WBGmw-006	Unconsolidated	Manganese	NT		27		NT		100		50	320	1020
			RDX	NT		21		NT		25		NS	0.61	NS
	WBGmw-007	Unconsolidated	Arsenic	NT		10	U	NT		7.9	J	10	0.045	11.7
			Iron	NT		120		NT		360		300	11,000	279
			Manganese	NT		62		NT		130		50	320	1020
	WBGmw-009	Unconsolidated	RDX	NT		1.0		NT		6.6	J	NS	0.61	NS
			Manganese	NT		57		NT		130		50	320	1020

Table 4-6. Exceedances of MCLs and RSLs

Area	Well Number	Monitored Zone	Analyte	Oct-11 Level (µg/L)		Jan-12 Level (µg/L)		April-12 Level (µg/L)		July-12 Level (µg/L)		MCL (µg/L)	USEPA RSL (µg/L)	Background - Filtered (µg/L)
Winklepeck Burning Grounds	WBGmw-019	Bedrock	Iron	NT		NT		NT		460		300	11,000	1430
			Manganese	NT		NT		NT		220		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		NT		0.94		6.0	0.071	NS
	WBGmw-020	Bedrock	Iron	NT		NT		NT		3,900		300	11,000	1430
			Manganese	NT		NT		NT		340		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		NT		1.5		6.0	0.071	NS
	WBGmw-021	Bedrock	Arsenic	NT		NT		NT		7.2	J	10	0.045	0
			Iron	NT		NT		NT		350		300	11,000	1430
			Manganese	NT		NT		NT		230		50	320	1340
			bis(2-Ethylhexyl)phthalate	NT		NT		NT		1.5	B	6.0	0.071	NS
Sharon Conglomerate	SCFmw-002	Bedrock	Arsenic	NT		14		NT		15		10	0.045	0
			Hexavalent chromium	NT		NT		NT		0.31		NS	0.031	NS
			Iron	NT		430		NT		350		300	11,000	1430
			Manganese	NT		73		NT		69		50	320	1340
	SCFmw-004	Bedrock	Manganese	NT		710		NT		690		50	320	1340

Notes:
NS = no standard NT = not tested
All metals are filtered.
J = estimated result. Results have been qualified "J." For more details refer to Data Verification/Validation Reports in the FWGWMP October 2011 and January, April, and July 2012 Sampling Reports.
B = analysis when the analyte is found in the method blank or any of the field blanks.
U = analyzed but not detected at or above the reporting limit.
Bold = constituent detected above MCL or RSL.

Since the 2012 RI wells have only been sampled once (seven wells) or twice (31 wells) during this reporting period, no time-trend plots were generated for these wells. Time-trend graphs for the COPCs are presented in Appendix I. The graphs are organized by AOC (maps showing each of the AOC areas are presented in Appendix I). The background wells are grouped after the AOCs.

The time-trend plots include the comparative criteria of: 1) MCL, 2) RSL, and 3) background concentration (either unconsolidated or bedrock) for inorganics. In Tables 4-2 and 4-3 it is noted that background concentrations for several inorganics are identified as "0" (i.e., not expected to be naturally present at any measurable concentration). These inorganics include aluminum, antimony, arsenic (bedrock only), beryllium, cadmium, chromium (bedrock only), cobalt, copper, lead, selenium, silver, thallium, and vanadium.

4.2 Background Wells

During this reporting period, two unconsolidated aquifer wells (BKGmw-005 and BKGmw-021) were sampled twice (i.e., January and July 2012) from amongst the Background wells at the RVAAP.

Bis(2-ethylhexyl)phthalate was identified at concentrations above its RSL, but below its MCL, in well BKGmw-005 in July 2012 and in well BKGmw-021 in January and July 2012. No other constituents were identified above their respective MCLs or RSLs in the two Background wells during this reporting period.

Wells BKGmw-005 and BKGmw-021 were previously sampled in October 2006, January, April, July, and October 2007, and April 2011. During one prior sampling event at BKGmw-005, bis(2-ethylhexyl)phthalate was identified at a concentration exceeding the RSL; it was not detected at a Method Detection Limit (MDL) of 10 μg/L during the other five sampling events. In well BKGmw-021, bis(2-ethylhexyl)phthalate exceeded the RSL on four occasions.

The time-trend graphs for bis(2-ethylhexyl)phthalate in Appendix I show concentration-change trends (either increasing or decreasing) at wells BKGmw-005 and BKGmw-021 as generally decreasing, although this constituent increased slightly in BKGmw-005 from January to July 2012.

4.3 Building 1200

During the 2012 reporting period, two bedrock aquifer wells (B12mw-012 and B12mw-013) were sampled at Building 1200.

In January 2012, aluminum was identified in well B12mw-012 at a concentration exceeding the MCL for this constituent; it did not exceed the RSL. In July 2012, manganese was identified in wells B12mw-012 and B12mw-013 at concentrations exceeding the MCL but below the RSL. Iron was identified at concentrations exceeding the MCL but below the RSL during the January and July sampling events in well B12mw-012 and in B12mw-013 during the July sampling event. Bis(2-ethylhexyl) phthalate was identified at concentrations exceeding the RSL but below the MCL in well B12mw-012 during January and July 2012 and in well B12mw-013 during April and July 2012. No other constituents were identified above their respective MCLs or RSLs in these Building 1200 wells during this reporting period.

Well B12mw-013 is a new RI well, which was first sampled in April 2012. Well B12mw-012 was previously sampled in April, July, and October 2008, April 2009, and April 2011. Aluminum was not previously detected in this well during the five prior sampling events. Iron exceeded the MCL during the July 2008 sampling event, but it was not detected in this well during the October 2008, April 2009, and April 2011 events. Manganese was identified at concentrations exceeding the MCL in July 2008 and April 2009. Bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL but below the MCL during four previous sampling events; it was not detected in October 2008 at a detection limit of 10 μg/L.

The time-trend graphs in Appendix I show overall increasing trends for iron and aluminum at B12mw-012, although aluminum concentrations decreased between January and July 2012. Conversely, manganese and bis(2-ethylhexyl)phthalate concentrations show decreasing trends over time in this well, although for both constituents there was a slight increase in contaminant concentrations from January to July 2012. Since well B12mw-013 has only been sampled twice, no time-trend graphs are presented for this well. However, iron, manganese, and bis(2-ethylhexyl)phthalate concentrations were all higher in July 2012 compared to the April 2012 results.

4.4 C Block

During this reporting period, two bedrock wells (CBLmw-002 and CBLmw-005) were each sampled twice.

Bis(2-ethylhexyl)phthalate was identified at concentrations above its RSL, but below its MCL, in well CBLmw-002 in January and July 2012 and in well CBLmw-005 in July 2012. Cobalt was identified at a concentration above its RSL value in CBLmw-005 in April 2012, and manganese exceeded its MCL value in this well during the same

sampling event. No other constituents were identified above their respective MCLs or RSLs in these C Block wells during this reporting period.

Well CBLmw-005 is a new RI well, which was first sampled in April 2012. Well CBLmw-002 was previously sampled in April, July, and October 2008, and January 2009. During two prior sampling events (July 2008 and January 2009), bis(2-ethylhexyl)phthalate was identified at a concentration exceeding the RSL; it was not detected at an MDL of 10 µg/L during the other two sampling events.

The time-trend graph for bis(2-ethylhexyl)phthalate in Appendix I shows concentration-change trends (either increasing or decreasing) at well CBLmw-002 as generally decreasing, although this constituent showed a slight increase in concentration from January to July 2012. Since well CBLmw-005 has only been sampled twice, no time-trend graphs are presented for this well. However, cobalt and manganese concentrations decreased from April to July 2012 in this well, and bis(2-ethylhexyl)phthalate was slightly higher in July 2012 compared to the April 2012 result.

4.5 Central Burn Pits

During this reporting period, one unconsolidated aquifer well (CBPmw-002) and one bedrock well (CBPmw-009) were sampled on two occasions at the Central Burn Pits.

Arsenic was identified in well CBPmw-002 at a concentration exceeding the RSL in January, and it was above both the MCL and the RSL in July. Iron and manganese exceeded their respective MCLs, but not their RSLs, in well CBPmw-002 during the January and July 2012 sampling events and in well CBPmw-009 during the April and July sampling events. Bis(2-ethylhexyl)phthalate exceeded its RSL in well CBPmw-002 in January and July 2012 and in well CBPmw-009 in April and July 2012. It also exceeded its MCL in well CBPmw-009 in April 2012. No other constituents were identified above their respective MCLs or RSLs in this Central Burn Pit wells during the October 2011 through July 2012 quarterly sampling events.

Well CBPmw-009 is a new RI well, which was first sampled in April 2012. Well CBPmw-002 was previously sampled in April, July, and October 2008, and January 2009. Arsenic exceeded the MCL and RSL during each prior sampling event. Iron and manganese exceeded the MCL during each prior sampling event at this location; neither constituent exceeded their respective RSLs. Bis(2-ethylhexyl)phthalate was found at concentrations exceeding its RSL, but below its MCL, in this well during all four prior sampling events.

In general, the time-trend graphs in Appendix I show decreasing trends for all four constituents in well CBPmw-002, although arsenic and manganese concentrations increased slightly from January to July 2012 at this location. Since well CBPmw-009 has only been sampled twice, no time-trend graphs are presented for this well. However, iron concentrations increased from April to July 2012 in this well, manganese was unchanged,

and bis(2-ethylhexyl)phthalate was significantly lower in July 2012 compared to the April 2012 result.

4.6 Demolition Area #2

During the 2012 reporting period, seven unconsolidated aquifer wells (DA2mw-104, DA2mw-106, DA2mw-107, DA2mw-108, DETmw-002, DETmw-003, and DETmw-004) were sampled at Demolition Area #2 in October 2011, and three of these wells (DA2mw-108, DETmw-003, and DETmw-004) were also sampled in January and July 2012. In addition, two new bedrock wells (DA2mw-114 and DA2mw-115) were sampled in July 2012.

Bis(2-ethylhexyl)phthalate was identified in wells DA2mw-107 (October 2011), DETmw-003 (July 2012), DA2mw-115 (July 2012), and DETmw-004 (July 2012) at concentrations exceeding its RSL but below its MCL. Arsenic was identified in well DA2mw-107 in October 2011 and in well DETmw-003 in October 2011, January 2012, and July 2012 at concentrations above its RSL; arsenic also exceeded its MCL in well DETmw-003 in October 2011. In October 2011, cobalt was identified in well DA2mw-106 at a concentration above its RSL; there is no MCL for this constituent. Iron was identified at concentrations exceeding the MCL in wells DETmw-003 and DA2mw-008 during three sampling events; in wells DA2mw-106 and DA2mw-107 during the October 2011 sampling event; and in wells DA2mw-114 and DA2mw-115 during the July 2012 sampling event. Manganese also exceeded the MCL in DETmw-002, DA2mw-106, DA2mw-107, DA2mw-114, and DA2mw-115 during one sampling event and in wells DETmw-003 and DA2mw-108 during three sampling events. Iron and manganese did not exceed their respective RSLs in any of the wells in which they were detected. The explosive compound RDX was identified above the RSL in well DETmw-004 during the October 2011 and January 2012 sampling events; there is no MCL for this compound. No other constituents were identified above their respective MCLs or RSLs in the Demolition Area #2 wells during the October 2011 through July 2012 sampling events.

Wells DA2mw-114 and DA2mw-115 are new RI wells, which were first sampled in July 2012. Wells DETmw-003 and DETmw-004 were sampled during nine previous events between October 2006 and April 2011. Well DA2mw-106 was previously sampled in April and October 2008 and January 2009. Well DA2mw-107 was previously sampled in October 2006, January, April, July, and October 2007, and January 2011. Well DA2mw-108 was previously sampled in April and October 2008 and January 2009. Bis(2-ethylhexyl) phthalate exceeded the RSL in well DETmw-003 during two of nine prior sampling events, in well DETmw-004 during seven of nine prior sampling events, and in DA2mw-107 during one of six prior sampling events. Arsenic exceeded the MCL in well DETmw-003 during six of nine prior sampling events and in well DA2mw-107 during one of six prior sampling events. Cobalt exceeded the RSL in well DA2mw-106 during two of three prior sampling events. Iron exceeded the MCL in wells DA2mw-106, DA2mw-107, DA2mw-108, and DETmw-003 during all prior sampling events with the exception of the October 2008 sampling for DA2mw-106. Manganese was above the

MCL in wells DA2mw-106, DA2mw-107, DA2mw-108, and DETmw-003 during all previous sampling episodes for each well. The compound RDX exceeded the RSL during the April 2008, 2009, and 2011 sampling events for well DETmw-004.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells DA2mw-106 (cobalt, iron, and manganese increasing), DA2mw-107 [bis(2-ethylhexyl)phthalate, arsenic, iron, and manganese decreasing], DA2mw-108 (iron and manganese decreasing), DETmw-003 [bis(2-ethylhexyl)phthalate decreasing, and arsenic, iron, and manganese stable to decreasing], and DETmw-004 [bis(2-ethylhexyl)phthalate and RDX decreasing]. Note that between January and July 2012, bis(2-ethylhexyl)phthalate concentrations at wells DETmw-003 and DETmw-004, arsenic concentrations at wells DA2mw-107 and DETmw-003, cobalt concentrations at DA2mw-106, iron concentrations at DA2mw-106, DA2mw-107, and DA2mw-108, and manganese concentrations at DA2mw-106 all increased slightly. These slight increases may be counter to the long-term time trends evidenced at some of these wells. RDX concentrations in well DETmw-004 are seasonally affected (i.e., higher in April and lower in October) at this location. The arsenic concentration at well DA2mw-007 in April 2007 appears to be anomalously high.

Since wells DA2mw-114 and DA2mw-115 have only been sampled once, no time-trend graphs are presented for these wells.

4.7 Erie Burning Grounds

During the 2012 reporting period, one unconsolidated aquifer well (EBGmw-125) and one bedrock well (EBGmw-131) were sampled at the Erie Burning Grounds.

In January 2012, bis(2-ethylhexyl)phthalate was identified in well EBGmw-125 at a concentration exceeding the RSL. This constituent was also identified in well EBGmw-131 at a concentration above the RSL in July 2012. Arsenic, iron, and manganese were identified at concentrations above the MCL during the January and July sampling events in this well. Arsenic concentrations also exceeded the RSL at this location during January and July 2012. Iron and manganese were identified at concentrations above their respective MCLs in well EBGmw-131 in July 2012. No other constituents were identified above their respective MCLs or RSLs in the Erie Burning Grounds wells during this reporting period.

Well EBGmw-131 is a new RI well, which was first sampled in July 2012. Well EBGmw-125 was previously sampled in April and October 2008 and January 2009. Bis(2-ethylhexyl)phthalate exceeded the RSL on one prior occasion in this well. Arsenic exceeded the RSL and MCL during the October 2008 and January 2009 sampling events, but it was only identified at a concentration exceeding the RSL during April 2008. Iron exceeded the MCL for each prior sampling event, and manganese exceeded the RSL and MCL for each sampling event at well EBGmw-125.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at well EBGmw-125. Prior to the July 2012 sampling event, the concentration trends for arsenic, iron, and manganese were decreasing. However, a spike in the concentration levels for arsenic and manganese in July 2012 reversed this overall trend from decreasing to increasing. Iron also spiked in July 2012, but the overall time-trend is still decreasing. The concentration trend for bis(2-ethylhexyl)phthalate is decreasing in this well.

Since well EBGmw-131 has only been sampled once, no time-trend graph is presented for this well.

4.8 Facility-Wide Wells

Between February and April 2012, 16 new RI wells (FWGmw-001 through FWGmw-016) were installed in various areas at RVAAP that are not associated with specific AOCs. The primary objective of the new wells is to provide additional data for completing hydrogeologic system modeling and conduct contaminant fate-and-transport modeling for the Facility-Wide groundwater approach. The new wells will be sampled quarterly until at least four quarters of data have been obtained from each location. During this reporting period, the 16 "FWG" wells were sampled in April and July 2012.

Aluminum was identified at concentrations exceeding the MCL, but not the RSL, in wells FWGmw-001 (July), FWGmw-002 (April), FWGmw-003 (April and July), FWGmw-004 (July), FWGmw-011 (April), and FWGmw-015 (July). Arsenic was identified in wells FWGmw-003 (July), FWGmw-004 (July), FWGmw-006 (April), FWGmw-008 (April and July), FWGmw-009 (April and July), and FWGmw-016 at concentrations above the RSL but not the MCL. Cobalt was identified at concentrations exceeding the RSL in wells FWGmw-004 (July), FWGmw-005 (April), and FWGmw-010 (April and July); there is no MCL for cobalt. In April and July 2012, iron was identified at concentrations exceeding the MCL, but not the RSL, in wells FWGmw-002, FWGmw-003, FWGmw-005, FWGmw-008, FWGmw-009, FWGmw-011, FWGmw-012, FWGmw-015, and FWGmw-016. Iron was only identified above the MCL during one sampling event in wells FWGmw-001 (July) and FWGmw-006 (April). In addition, iron was found to exceed the RSL in wells FWGmw-004 (July), FWGmw-006 (July), and FWGmw-010 (April and July). Manganese was identified at concentrations above the MCL, but not the RSL, in wells FWGmw-002 (April and July), FWGmw-004 (April), FWGmw-006 (April), FWGmw-007 (April and July), FWGmw-009 (April and July), FWGmw-011 (July), FWGmw-012 (April and July), FWGmw-014 (April and July), and FWGmw-016 (July). Manganese exceeded the RSL in wells FWGmw-003 (April and July), FWGmw-004 (July), FWGmw-005 (April and July), FWGmw-006 (July), FWGmw-008 (April and July), FWGmw-010 (April and July), FWGmw-011 (April), FWGmw-013 (April and July), FWGmw-015 (April and July), and FWGmw-016 (April). Benzene was identified at concentrations exceeding the RSL, but not the MSL, in well FWGmw-006 in April and July 2012. Naphthalene was identified in the groundwater sample from FWGmw-003 at a concentration exceeding the RSL in July 2012. Lastly, bis(2-ethylhexyl)phthalate was

identified at concentrations exceeding the RSL, but not the MSL, in wells FWGmw-001 (July), FWGmw-002 (July), FWGmw-003 (April and July), FWGmw-004 (April and July), FWGmw-005 (April), FWGmw-006 (July), FWGmw-007 (July), FWGmw-008 (July), FWGmw-009 (July), FWGmw-010 (April), FWGmw-011 (July), FWGmw-013, (July), FWGmw-014 (July), FWGmw-015 (July), and FWGmw-016 (April and July). Bis(2-ethylhexyl)phthalate also exceeded the MCL in well FWGmw-005 in July 2012. No other constituents were identified above their respective MCLs or RSLs in the Facility-Wide wells during this reporting period.

Since the 16 FWG wells have only been sampled twice, no time-trend graphs are presented for these wells. However, preliminary concentration trends (either increasing or decreasing) from April to July 2012 are as follows: FWGmw-001 [aluminum, iron, and bis(2-ethylhexyl)phthalate increasing], FWGmw-002 [aluminum, iron, and manganese decreasing, bis(2-ethylhexyl)phthalate increasing], FWGmw-003 [aluminum, iron, and manganese decreasing, arsenic, naphthalene, and bis(2-ethylhexyl)phthalate increasing], FWGmw-004 [aluminum, arsenic, cobalt, iron, manganese, and bis(2-ethylhexyl)phthalate increasing], FWGmw-005 [cobalt, iron, and manganese decreasing, bis(2-ethylhexyl)phthalate increasing], FWGmw-006 [arsenic and benzene decreasing, iron, manganese, and bis(2-ethylhexyl)phthalate increasing], FWGmw-007 [manganese decreasing and bis(2-ethylhexyl)phthalate increasing], FWGmw-008 [arsenic and bis(2-ethylhexyl)phthalate increasing, iron and manganese decreasing], FWGmw-009 [arsenic and bis(2-ethylhexyl)phthalate increasing, iron and manganese decreasing], FWGmw-010 [arsenic and iron increasing, cobalt, manganese, and bis(2-ethylhexyl)phthalate slightly decreasing], FWGmw-011 [aluminum and manganese decreasing, iron and bis(2-ethylhexyl)phthalate increasing], FWGmw-012 [iron increasing, manganese and bis(2-ethylhexyl)phthalate decreasing], FWGmw-013 [manganese decreasing, bis(2-ethylhexyl)phthalate increasing], FWGmw-014 [manganese slightly decreasing, bis(2-ethylhexyl)phthalate slightly increasing], FWGmw-015 [aluminum, iron, manganese, and bis(2-ethylhexyl)phthalate increasing], and FWGmw-016 [arsenic and bis(2-ethylhexyl)phthalate increasing, iron and manganese significantly decreasing].

4.9 Fuze and Booster

During the 2012 reporting period, six bedrock aquifer wells (FBQmw-169, FBQmw-170, FBQmw-171, FBQmw-174, FBQmw-175, and FBQmw-177) were sampled at the Fuze and Booster area on one occasion (October 2011 only).

Bis(2-ethylhexyl)phthalate was identified in three wells (FBQmw-169, FBQmw-174, and FBQmw-175) at concentrations above the RSL. Cobalt was identified in well FBQmw-169 at a concentration exceeding its RSL; there is no MCL for this constituent. Iron was identified in FBQmw-169 at a concentration above its MCL but below the RSL. Manganese was identified in three wells (FBQmw-169, FBQmw-170, and FBQmw-177) at concentrations above its MCL; manganese did not exceed the RSL in any of the groundwater samples from the Fuze and Booster wells. In addition, 2,4,6-trinitrotoluene (TNT) was identified in well FBQmw-174 at a concentration above its RSL value during

this sampling event; there is no MCL for this constituent. No other constituents were identified above their respective MCLs or RSLs in the Fuze and Booster wells during this reporting period.

Wells FBQmw-169, FBQmw-170, FBQmw-174, FBQmw-175, and FBQmw-177 were previously sampled in April and October 2008 and January 2009. Wells FBQmw-169 and FBQmw-174 were also sampled in January 2011. Bis(2-ethylhexyl)phthalate exceeded the RSL at well FBQmw-169 during all four prior sampling events; whereas, this constituent exceeded the RSL in wells FBQmw-174 and FBQmw-175 on one previous occasion (January 2009). Cobalt exceeded the RSL in well FBQmw-169 during each prior sampling event, and iron exceeded the MCL at this location during the four previous events. Manganese exceeded the MCL at wells FBQmw-169, FBQmw-170, and FBQmw-177 for each prior sampling event. 2,4,6-TNT was identified at concentrations above the RSL for each previous sampling event in well FBQmw-174.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells FBQmw-169 [bis(2-ethylhexyl)phthalate, cobalt, iron, and manganese decreasing], FBQmw-170 (manganese unchanged), FBQmw-174 [bis(2-ethylhexyl)phthalate and 2,4,6-TNT decreasing], FBQmw-175 [bis(2-ethylhexyl) phthalate decreasing], and FBQmw-177 (manganese unchanged). Note that the bis(2-ethylhexyl)phthalate concentrations reported for FBQmw-174 in April and October 2008 and January 2011 appear to be anomalously elevated, but these values are actually non-detect at ½ the MDL of 10 µg/L, which affects the overall concentration trend at this location. This is also the case for this compound in well FBQmw-175 during the April and October 2008 sampling events. Iron actually increased slightly from January to October 2011 at FBQmw-169, but the overall trend is decreasing.

4.10 Load Line 1

During this reporting period, four unconsolidated aquifer wells (LL1mw-064, LL1mw-065, LL1mw-086, and LL1mw-087) were sampled in Load Line 1.

Bis(2-ethylhexyl)phthalate was identified at a concentration above the RSL level in well LL1mw-064 during the July 2012 event, in LL1mw-065 during the January and July sampling events, and in well LL1mw-086 during the April and July sampling events. Iron was identified at concentrations exceeding its MCL in wells LL1mw-064 (January and July 2012) and LL1mw-086 (April and July 2012) and above its RSL in well LL1mw-087 (July 2012). Manganese was identified at concentrations exceeding its MCL in wells LL1mw-064 and LL1mw-065 during the January and July events and in wells LL1mw-086 and LL1mw-087 during the April event. Manganese also exceeded its RSL in wells LL1mw-086 and LL1mw-087 in July 2012. Also during this reporting period, arsenic was identified above its RSL in wells LL1mw-064 (January and July), LL1mw-086 (April 2012), and LL1mw-087 (April 2012). Arsenic also exceeded its MCL value in well LL1mw-087 in July 2012. Aluminum was identified in well LL1mw-086 at a concentration exceeding its MCL value in April 2012 and in well LL1mw-087 at

a concentration above its RSL value in July 2012. Beryllium, chromium, and lead were identified at concentrations exceeding their respective MCLs in well LL1mw-087 in July 2012. In addition, cobalt and vanadium were found at concentrations above their respective RSL values in well LL1mw-087 in July 2012. Beta-BHC exceeded its RSL value in well LL1mw-086 during the July 2012 event. No other constituents were identified above their respective MCLs or RSLs in the Load Line 1 wells during the October 2011 through July 2012 sampling events.

Wells LL1mw-086 and LL1mw-087 are new RI wells, which were first sampled in July 2012. Prior to the 2012 reporting period, well LL1mw-064 was sampled on five previous occasions (April, July, and October 2008, January 2009, and July 2010); well LL1mw-065 was sampled on six previous occasions (January, April, July, and October 2008, July 2010, and July 2011). Bis(2-ethylhexyl)phthalate exceeded the RSL during each of the prior sampling events in both wells. Arsenic exceeded the RSL during the five previous occasions in well LL1mw-064. Iron exceeded its MCL during all five prior sampling episodes at well LL1mw-064, and manganese exceeded the MCL in wells LL1mw-064 and LL1mw-065 during each of the previous sampling events.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells LL1mw-064 [bis(2-ethylhexyl)phthalate decreasing, arsenic and iron decreasing, and manganese unchanged to slightly decreasing] and LL1mw-065 [bis(2-ethylhexyl) phthalate decreasing and manganese decreasing]. Note that bis(2-ethylhexyl)phthalate concentrations in well LL1mw-064 and manganese concentrations in well LL1mw-065 actually increased slightly between January and July 2012. However, the overall trend for both these constituents is decreasing at these wells.

Since wells LL1mw-086 and LL1mw-087 have only been sampled twice, no time-trend graphs are presented for these wells. However, from April to July 2012, aluminum, arsenic, and iron concentrations in well LL1mw-086 decreased and manganese, bis(2-ethylhexyl)phthalate, and beta-BHC increased. During this same time period, aluminum, arsenic, beryllium, chromium, cobalt, iron, lead, manganese, and vanadium concentrations in well LL1mw-087 significantly increased.

4.11 Load Line 2

During this reporting period, two bedrock aquifer wells (LL2mw-059 and LL2mw-265) were sampled in January and July 2012.

The explosive compound 2,4-dinitrotoluene (DNT), and the metals arsenic and cobalt were identified at concentrations above their respective RSLs in well LL2mw-059 during the January and July sampling events. In addition, iron and manganese were identified at concentrations exceeding their respective MCLs in well LL2mw-059 during both sampling events; in well LL2mw-265 iron exceeded the MCL during July 2012 and manganese exceeded the MCL in January and July 2012. Neither compound exceeded its RSL value. Bis(2-ethylhexyl)phthalate was identified in both wells in January 2012 at concentrations

exceeding its RSL; this constituent was not detected in either well in July 2012. No other constituents were identified above their respective MCLs or RSLs in the Load Line 2 wells during the January and July 2012 sampling events.

Well LL2mw-059 was previously sampled seven times (October 2006, January, April, July, and October 2007, July 2010, and July 2011). Well LL2mw-265 was previously sampled six times (January, April, July, and October 2008, July 2010, and July 2011). The compound 2,4-DNT exceeded the RSL in well LL2mw-059 during five previous sampling events. Arsenic and cobalt previously exceeded their respective RSLs at well LL2mw-059 on two occasions. Iron previously exceeded the MCL at well LL2mw-059 on five occasions and at well LL2mw-265 on four occasions. Manganese previously exceeded the MCL at well LL2mw-059 six times and the RSL two times. In addition, manganese was previously identified at concentrations exceeding the MCL in well LL2mw-265 on five occasions and the RSL on four occasions. Bis(2-ethylhexyl) phthalate was identified at concentrations above the RSL during three prior sampling events in well LL2mw-059 and during five previous sampling events in well LL2mw-265.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells LL2mw-059 [2,4-DNT increasing, arsenic, cobalt, iron, and manganese increasing, and bis(2-ethylhexyl)phthalate decreasing] and LL2mw-265 [iron and manganese increasing and bis(2-ethylhexyl)phthalate decreasing].

Note that the long-term trends for several constituents are greatly affected by spikes in concentration levels observed during July 2010 (cobalt, iron, and manganese) or July 2011 (2,4-DNT and arsenic). Since these concentration spikes occurred, the contaminant levels for these constituents have declined by nearly 60 percent, although the overall trends still show an increase from the earlier 2006-2007 sampling events. The bis(2-ethylhexyl)phthalate concentration trends show seasonal fluctuations at LL2mw-265 with higher levels occurring in the fall-winter months and lower levels occurring in the spring-summer months at this location.

4.12 Load Line 3

During the 2012 reporting period, four bedrock aquifer wells (LL3mw-241, LL3mw-242, LL3mw-244, and LL3mw-245) were sampled in Load Line 3.

Bis(2-ethylhexyl)phthalate was identified in wells LL3mw-241 (January and July 2012), LL3mw-242 (January and July 2012), and LL3mw-245 (April and July 2012) at concentrations above the RSL value but below the MCL. Iron was identified at concentrations exceeding the MCL, but not the RSL, in well LL3mw-245 in April and July 2012. Hexavalent chromium was identified at a concentration above the RSL in well LL3mw-244 in July 2012; there is no MCL for this constituent. In January and July 2012, 2,4,6-TNT and RDX were identified in well LL3mw-241 at concentrations exceeding their respective RSLs. There are no MCL values for these constituents. No

other constituents were identified above their respective MCLs or RSLs in the Load Line 3 wells during this reporting period.

Wells LL3mw-244 and LL3mw-245 are new RI wells, which were first sampled in April 2012. Well LL3mw-241 was previously sampled five times (January, April, July, and October 2008 and July 2011), and well LL3mw-242 was sampled on six prior occasions (October 2006, January, April, July, and October 2007, and January 2011). 2,4,6-TNT and RDX exceeded their respective RSLs in well LL3mw-241 during five prior sampling events. Bis(2-ethylhexyl)phthalate previously exceeded the RSL in wells LL3mw-241 (five times) and LL3mw-242 (four times).

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells LL3mw-241 [bis(2-ethylhexyl)phthalate, RDX, and 2,4,6-TNT decreasing] and LL3mw-242 [bis(2-ethylhexyl)phthalate increasing]. Note that the bis(2-ethylhexyl)phthalate trend in well LL3mw-242 is greatly affected by a spike in the contaminant concentration from less than 5 ppb during the five earliest sampling events to 29 ppb in January 2011. Ignoring this anomalous value, the overall trend for this constituent would be decreasing in this well. RDX and 2,4,6-TNT concentrations declined between January and July 2012 in well LL3mw-241 during this reporting period, and the overall trend since January 2008 is one of decline for both these compounds. However, since October 2008, the concentration levels for RDX and 2,4,6-TNT tend to show an increasing trend at this location.

Since wells LL3mw-244 and LL3mw-245 have only been sampled twice, no time-trend graphs are presented for these wells. However, from April to July 2012, iron concentrations in well LL3mw-245 were unchanged and bis(2-ethylhexyl)phthalate increased slightly. Hexavalent chromium was only sampled on one occasion in well LL3mw-244 during this reporting period.

4.13 Load Line 4

During this reporting period, one unconsolidated aquifer well (LL4mw-199) and one bedrock well (LL4mw-201) were each sampled in Load Line 4 on two occasions.

Arsenic was identified at concentrations exceeding the RSL and MCL in wells LL4mw-199 (January and July 2012) and LL4mw-201 (April and July 2012). Iron was identified at concentrations exceeding its MCL in wells LL4mw-199 (January and July 2012) and LL4mw-201 (April and July 2012). Manganese exceeded the MCL in wells LL4mw-199 (July 2012) and LL4mw-201 (April and July 2012), and it exceeded the RSL in well LL4mw-199 in January 2012. Bis(2-ethylhexyl)phthalate was found at a concentration exceeding the RSL in wells LL4mw-199 (July 2012) and LL4mw-201 (April and July 2012). No other constituents were identified above their respective MCLs or RSLs in LL4mw-199 during this reporting period.

Well LL4mw-201 is a new RI well, which was first sampled in April 2012. Well LL4mw-199 was sampled on six previous occasions (October 2006, January, April, July, and October 2007, and January 2011). Arsenic was identified at concentrations exceeding the MCL during four previous sampling events and at concentrations above the RSL during two earlier sampling episodes in well LL4mw-199. Iron previously exceeded the MCL at well LL4mw-199 on six occasions, and manganese previously exceeded the RSL and MCL at this location on six occasions. Bis(2-ethylhexyl)phthalate exceeded its RSL on two prior occasions at this location.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at well LL4mw-199 [arsenic and iron increasing and manganese and bis(2-ethylhexyl)phthalate decreasing]. Note that arsenic, iron, and manganese concentrations decreased between January and July 2012 at LL4mw-199.

Since well LL4mw-201 has only been sampled twice, no time-trend graphs are presented for this well. However, arsenic and iron concentrations increased slightly and manganese and bis(2-ethylhexyl)phthalate concentrations decreased slightly in this well from April to July 2012.

4.14 Load Line 6

During this reporting period, two unconsolidated aquifer wells (LL6mw-002 and LL6mw-008) and three bedrock aquifer wells (LL6mw-005, LL6mw-007, and LL6mw-009) were sampled in Load Line 6 on at least one occasion.

Aluminum and iron were identified in well LL6mw-002 at concentrations exceeding their respective MCLs in October 2011 and July 2012, and manganese exceeded its MCL in this well in July 2012. Arsenic exceeded the RSL in LL6mw-002 in January and July 2012, and bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL in October 2011, January 2012, and July 2012. Bis(2-ethylhexyl)phthalate also exceeded the MCL in LL6mw-002 in July 2012. Arsenic, iron, and manganese were identified in well LL6mw-005 at concentrations exceeding their respective MCLs in October 2011, January 2012, and July 2012. Iron did not exceed its RSL value in this well; arsenic and manganese did. In addition, bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL, but not the MCL, in well LL6mw-005 in October 2011 and January and July 2012. In October 2011, aluminum, iron, and manganese were identified in well LL6mw-007 at concentrations exceeding their respective MCL values; manganese also exceeded its RSL value during this sampling event. In LL6mw-008, manganese exceeded the MCL and RSL in April and July 2012; bis(2-ethylhexyl)phthalate exceeded its RSL in this well during both sampling events. In July 2012, arsenic exceeded the RSL, but not the MCL, in well LL6mw-009. Iron exceeded the MCL, but not the RSL, in well LL6mw-009 during the July 2012 event. Manganese and bis(2-ethylhexyl)phthalate were identified at concentrations exceeding their respective RSL values in well LL6mw-009 in April and July 2012. No other constituents were identified above their respective MCLs or RSLs in the Load Line 6 wells during this reporting period.

Wells LL6mw-008 and LL6mw-009 are new RI wells, which were first sampled in April 2012. Well LL6mw-002 was previously sampled in April, July, and October 2008, and January 2009. Aluminum and iron exceeded their respective MCL values in this well in July 2008; bis(2-ethylhexyl)phthalate exceeded its RSL value in this well in July and October 2008 and January 2009. Well LL6mw-005 was previously sampled in January, April, July, and October 2009, and October 2010. Arsenic, iron, and manganese were identified at concentrations exceeding their respective MCLs during all five prior sampling events at this location; arsenic and manganese also exceeded their respective RSLs during these five events. Well LL6mw-007 was previously sampled in January, April, July, and October 2009. Manganese exceeded its RSL and MCL in this well during all four prior sampling events.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at well LL6mw-002 [aluminum, arsenic, iron, manganese, and bis(2-ethylhexyl)phthalate increasing], LL6mw-005 [arsenic and iron stable to slightly increasing, and manganese and bis(2-ethylhexyl)phthalate decreasing], and LL6mw-007 (aluminum, iron, and manganese increasing). Note that the aluminum, arsenic, iron, manganese, and bis(2-ethylhexyl)phthalate concentrations in well LL6mw-002 spiked during the July 2012 sampling event; whereas, the January 2012 event had seen a decrease in the concentration trend for each of these constituents with the exception of arsenic, which also increased in January 2012. The iron concentrations in well LL6mw-005 decreased from October 2011 to July 2012, but the overall time-trend indicates a slightly increasing to nearly stable trend.

Since wells LL6mw-008 and LL6mw-009 have only been sampled twice, no time-trend graphs are presented for these wells. However, manganese remained unchanged and bis(2-ethylhexyl)phthalate increased slightly in well LL6mw-008 from April to July 2012. In well LL6mw-009, arsenic and iron increased and manganese and bis(2-ethylhexyl)phthalate decreased slightly from April to July 2012.

4.15 Load Line 10

During this reporting period, one bedrock aquifer well (LL10mw-003) was sampled on two occasions (i.e., January and July 2012) in Load Line 10.

Carbon tetrachloride was identified above its RSL in January and July 2012, and chloroform was identified above its RSL during the July 2012 sampling event. Carbon tetrachloride did not exceed its MCL value during either sampling event; there is no MCL value for chloroform. No other constituents were identified above their respective MCLs or RSLs in the Load Line 10 well during this reporting period.

Well LL10mw-003 was previously sampled in January, April, July, and October 2009. Carbon tetrachloride and chloroform were identified at concentrations exceeding their respective RSLs during all four prior sampling events at this location.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at well LL10mw-003 (carbon tetrachloride and chloroform decreasing). Note that the concentrations for both these constituents increased from January 2012 to July 2012 at this location; however, the general trend for both constituents is on the decline.

4.16 Load Line 11

During this reporting period, one unconsolidated aquifer well (LL11mw-011) and two bedrock aquifer wells (LL11mw-007 and LL11mw-012) were sampled in Load Line 11.

Arsenic, iron, and manganese were identified at concentrations above their respective MCLs in LL11mw-007 during the January and July 2012 sampling events. Arsenic also exceeded its RSL value; iron and manganese did not. In addition, bis(2-ethylhexyl) phthalate was identified at concentrations exceeding its RSL in well LL11mw-007 during both sampling events; it did not exceed its corresponding MCL. In July 2012, aluminum and iron exceeded their respective MCLs in well LL11mw-011, and arsenic exceeded its RSL value in this well. Manganese was identified in LL11mw-011 at concentrations exceeding its MCL in April 2012 and its RSL in July 2012; bis(2-ethylhexyl)phthalate exceeded its RSL value in this well during the April and July 2012 sampling events. In April and July 2012, manganese was identified at concentrations above the MCL, but below the RSL, in well LL11mw-012. No other constituents were identified above their respective MCLs or RSLs in the Load Line 11 wells during this reporting period.

Wells LL11mw-011 and LL11mw-012 are new RI wells, which were sampled in April and July 2012. Well LL11mw-007 was previously sampled in October 2006, January, April, July, and October 2007, and October 2010. (Note that metals were not sampled at this location during the October 2010 event.) During the five 2006 and 2007 sampling events at LL11mw-007, arsenic, iron, and manganese were identified at concentrations exceeding their respective MCLs. Bis(2-ethylhexyl)phthalate was previously identified in this well at concentrations exceeding its RSL value during the April and October 2007 sampling events; it was not detected during the other four sampling dates.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells LL11mw-007 [arsenic slightly increasing and iron, manganese, and bis(2-ethylhexyl)phthalate decreasing]. The concentration-change trend for arsenic is stable to decreasing since the October 2007 sampling event, but the overall time trend indicates a slight increase in concentration levels.

Since wells LL11mw-011 and LL11mw-012 have only been sampled twice, no time-trend graphs are presented for these wells. However, aluminum, arsenic, iron, and manganese increased and bis(2-ethylhexyl)phthalate decreased slightly in well LL11mw-011 from April to July 2012. In well LL11mw-012, manganese increased slightly from April to July 2012.

4.17 Load Line 12

During this reporting period, eight unconsolidated aquifer wells (LL12mw-182, LL12mw-182ss, LL12mw-185, LL12mw-187, LL12mw-242, LL12mw-245, LL12mw-246, and LL12mw-247) were sampled in Load Line 12.

Aluminum (LL12mw-242 and LL12mw-245), arsenic (LL12mw-242, LL12mw-245, and LL12mw-246), iron (LL12mw-242, LL12mw-245, LL12mw-246, and LL12mw-247), manganese (LL12mw-185, LL12mw-187, LL12mw-242, LL12mw-245, LL12mw-246, and LL12mw-247), and thallium (LL12mw-187) were identified at concentrations exceeding their respective MCLs in Load Line 12 during one or more sampling events in 2012. In addition, arsenic exceeded its RSL but not its MCL in three wells (LL12mw-185, LL12mw-187, and LL12mw-247), cobalt exceeded its RSL value in two wells (LL12mw-187 and LL12mw-245), manganese exceeded its RSL value in two wells (LL12mw-185 and LL12mw-187), and thallium exceeded its RSL value in one well (LL12mw-187). Nitrate as nitrite was identified in one well (LL12mw-187) at a concentration exceeding its MCL value, and bis(2-ethylhexyl)phthalate was identified in five wells (LL12mw-182, LL12mw-182ss, LL12mw-242, LL12mw-245, and LL12mw-247) at concentrations exceeding the RSL value during this reporting period. Hexavalent chromium was identified at a concentration exceeding the RSL in well LL12mw-247 in July 2012; there is no MCL for this constituent. No other constituents were identified above their respective MCLs or RSLs in the Load Line 12 wells during this reporting period.

Wells LL12mw-182ss and LL12mw-247 are new RI wells, which were sampled in April and July 2012. Prior to this reporting period, wells LL12mw-185, LL12mw-187, LL12mw-242, LL12mw-245, and LL12mw-246 were sampled on six previous occasions (January, April, July, and October 2008, July 2010, and July 2011). (Note that well LL12mw-187 was also sampled in October 2007 for nitrate-nitrite.) Well LL12mw-182 was sampled on six previous occasions (October 2006, January, April, July, and October 2007, and July 2010). Aluminum exceeded the MCL in well LL12mw-242 on three prior occasions and the RSL during one of these events. Arsenic exceeded the MCL in wells LL12mw-242 and LL12mw-246 on six previous occasions and in well LL12mw-245 on two previous occasions. In addition, arsenic was identified at concentrations exceeding the RSL but below the MCL during three previous occasions in well LL12mw-245. Cobalt exceeded the RSL in well LL12mw-187; cobalt had never exceeded the RSL in LL12mw-245 until the July 2012 sampling event. Iron exceeded its RSL on one occasion in well LL12mw-242. Iron exceeded the MCL during six prior sampling episodes at well LL12mw-242; on five prior occasions in well LL12mw-246; and on three previous occasions in well LL12mw-245. Manganese was identified at concentrations exceeding the RSL in wells LL12mw-185 and LL12mw-187 during six previous sampling events and during one prior sampling event in wells LL12mw-242 and LL12mw-245. Manganese exceeded the MCL in wells LL12mw-242, LL12mw-245, and LL12mw-246 on five prior occasions. Thallium exceeded the RSL at well LL12mw-187 during six previous sampling events. Bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL in well LL12mw-182 on five previous occasions, in well LL12mw-

242 on four prior occasions, and in well LL12mw-245 on three prior occasions. Nitrate-nitrite was identified at concentrations exceeding the MCL in well LL12mw-187 on seven previous occasions.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells LL12mw-182 [bis(2-ethylhexyl)phthalate decreasing], LL12mw-185 (arsenic and manganese increasing), LL12mw-187 (arsenic increasing; cobalt unchanged to decreasing; manganese and thallium decreasing; and nitrate as nitrite increasing), LL12mw-242 [bis(2-ethylhexyl)phthalate, aluminum, arsenic, iron, and manganese decreasing], LL12mw-245 [bis(2-ethylhexyl)phthalate and arsenic decreasing; aluminum, cobalt, and iron increasing; manganese unchanged], and LL12mw-246 (arsenic increasing and iron and manganese unchanged).

The aluminum, arsenic, iron, and manganese trends for well LL12mw-242 are influenced by an apparent spike in contaminant levels in January 2008. Based on the subsequent data measured from this well, the January 2008 results appear anomalous. At the RVAAP, concentration spikes early in the program have generally produced decreasing trends over time; whereas, concentration spikes in the middle or late stages of the sampling program have generally produced increasing trends. If the apparent outliers are not considered, then the concentration trends for each metal compound at this location would be relatively unchanged to slightly decreasing. Nitrate as nitrite shows seasonal fluctuations in concentration patterns (e.g., higher concentrations in the summer and winter and lower concentrations in the spring and fall).

Since wells LL12mw-182ss and LL12mw-247 have only been sampled twice, no time-trend graphs are presented for these wells. However, arsenic and bis(2-ethylhexyl)phthalate decreased slightly and iron, and manganese increased slightly in well LL12mw-247 from April to July 2012. Hexavalent chromium was only sampled in July 2012 in this well. Groundwater samples from well LL12mw-182ss were only analyzed for bis(2-ethylhexyl)phthalate for comparison with well LL12mw-182; this constituent showed a slight increase in concentrations from April to July 2012. The presence of bis(2-ethylhexyl)phthalate in the new stainless steel well (LL12mw-182ss) indicates that this constituent is not leaching from the PVC well materials.

4.18 NACA Test Area

During this reporting period, two unconsolidated aquifer wells (NTAmw-109 and NTAmw-119) were sampled in the NACA Test Area. These are paired wells in which NTAmw-119 was installed in a deeper unconsolidated aquifer zone.

In July 2012, bis(2-ethylhexyl)phthalate was identified at a concentration above its RSL, and iron was identified at a concentration above its MCL in well NTAmw-109. Well NTAmw-119 was found to contain iron and manganese at concentrations exceeding their respective MCLs in April and July 2012. In addition, manganese exceeded the RSL in this well in July 2012. Bis(2-ethylhexyl)phthalate was identified at concentrations

exceeding the RSL in NTAmw-119 in April and July 2012, and naphthalene was detected at a concentration above the RSL in this well in July 2012. No other constituents were identified above their respective MCLs or RSLs in the paired NACA Test Area wells during this reporting period.

Well NTAmw-119 is a new RI well, which was sampled in April and July 2012. Well NTAmw-109 was previously sampled in April and October 2008 and January 2009. Bis(2-ethylhexyl)phthalate exceeded the RSL on one prior sampling event. Iron exceeded the MCL in well NTAmw-109 during all three prior sampling events.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at well NTAmw-109 [bis(2-ethylhexyl)phthalate and iron decreasing]. Note that both constituents increased slightly between January and July 2012.

Since well NTAmw-119 has only been sampled twice, no time-trend graphs are presented for this well. However, iron, manganese, bis(2-ethylhexyl)phthalate, and naphthalene concentrations increased from April to July 2012.

4.19 Ramsdell Quarry Landfill

During this reporting period, 10 bedrock aquifer wells (excluding RQLmw-010 and RQLmw-013) were sampled on at least one occasion (October 2011, January 2012, and/or July 2012) at the Ramsdell Quarry Landfill.

Bis(2-ethylhexyl)phthalate was identified in three wells (RQLmw-012, RQLmw-015, and RQLmw-016) in October 2011 and in three wells (RQLmw-007, RQLmw-008, and RQLmw-009) in January 2012 at concentrations exceeding its RSL value. The pesticide beta-BHC and the explosive compound nitrobenzene were identified at concentrations exceeding their respective RSLs in well RQLmw-008 during the July 2012 sampling event. In addition, beta-BHC was also identified above its RSL value in the groundwater sample from well RQLmw-006 in October 2011. The semi-volatile organic compounds dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene were detected in well RQLmw-007 at concentrations above their respective RSLs during the October 2011 sampling event.

In October 2011, aluminum was identified at a concentration above its MCL, but below its RSL, in wells RQLmw-011 and RQLmw-012. Arsenic was identified in the three RCRA wells (RQLmw-007, RQLmw-008, and RQLmw-009) at concentrations exceeding the MCL during October 2011 and January and July 2012, with the exception of RQLmw-007 in October 2011 when arsenic exceeded the RSL but not the MCL. Arsenic was also identified at a concentration above its MCL in well RQLmw-006 in October 2006. Cobalt was identified at concentrations above the RSL in well RQLmw-007 during three sampling events, in well RQLmw-009 during two sampling events, and in wells RQLmw-006, RQLmw-011, RQLmw-012, RQLmw-014, RQLmw-016, and RQLmw-017 during one sampling event.

In October 2011, iron was identified above its RSL and MCL values in wells RQLmw-006, RQLmw-008, and RQLmw-016; it was identified at concentrations only exceeding its MCL in wells RQLmw-007, RQLmw-009, RQLmw-011, and RQLmw-014 during this event. In January 2012, iron was identified at concentrations exceeding its MCL and RSL values in well RQLmw-008, and it was identified at concentrations exceeding its MCL in wells RQLmw-007 and RQLmw-009 during this event. In July 2012, iron was identified at concentrations above its RSL and MCL values in wells RQLmw-007, RQLmw-008, and RQLmw-009.

Manganese was detected above its MCL and RSL values in wells RQLmw-006, RQLmw-007, RQLmw-008, RQLmw-009, RQLmw-011, RQLmw-014, RQLmw-016, and RQLmw-017 during the October 2011 sampling event and also in wells RQLmw-007, RQLmw-008, and RQLmw-009 during the January and July 2012 sampling events. No other constituents were identified above their respective MCLs or RSLs in the Ramsdell Quarry Landfill wells during this reporting period.

Since 2006, wells RQLmw-006 and RQLmw-011 have only been sampled on two occasions (October 2010 and October 2011). Consequently, they are not included on the concentration-trend graphs in Appendix E. Wells RQLmw-007, RQLmw-008, RQLmw-009 were sampled on nine previous occasions (October 2006, April and October in each year from 2007 through 2009, October 2010, and April 2011) prior to this reporting period; whereas, wells RQLmw-012, RQLmw-014, RQLmw-015, RQLmw-016, and RQLmw-017 were sampled on three prior occasions (April and October 2008 and January 2009). Beta-BHC was detected at concentrations exceeding the RSL on two previous occasions in well RQLmw-008. Bis(2-ethylhexyl)phthalate was identified at concentrations exceeding its RSL value on four prior occasions in well RQLmw-009, on three previous occasions in wells RQLmw-007 and RQLmw-008, on two previous occasions in RQLmw-016, and on one previous occasion in wells RQLmw-012 and RQLmw-015. Dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene were not identified above their method detection limits in well RQLmw-007 during the nine prior sampling events. Similarly, nitrobenzene was not detected in well RQLmw-008 prior to the July 2012 sampling event. Aluminum was detected at concentrations exceeding MCL values during three previous sampling events in RQLmw-012. Arsenic exceeded the MCL during seven previous occasions in well RQLmw-007, nine times in RQLmw-008, and five times in RQLmw-009. Arsenic was not detected in well RQLmw-009 in April 2008, April 2009, and April 2011. During the remaining sampling events, arsenic was identified at concentrations exceeding the RSL in each well. Cobalt was identified at concentrations exceeding its RSL value on six previous occasions in RQLmw-007, on five prior occasions in RQLmw-009, on four previous occasions in RQLmw-017, on three prior occasions in RQLmw-012 and RQLmw-014, and on two previous occasions in RQLmw-016. Iron exceeded its RSL on six prior occasions in well RQLmw-007, nine times in RQLmw-008, four times in RQLmw-009 and RQLmw-016, and twice in RQLmw-014. Iron was not detected in well RQLmw-014 in October 2008. During the remaining sampling events, iron was identified at concentrations exceeding the MCL in each well. Manganese exceeded the RSL on eight prior occasions in wells RQLmw-007, RQLmw-008, and RQLmw-009, on four prior occasions in wells RQLmw-014, RQLmw-

016, and RQLmw-017, on three previous occasions in RQLmw-015, and on one previous occasion in RQLmw-012. During the remaining sampling events, manganese was identified at concentrations exceeding its MCL value in each well, with the exception of the April 2011 result for RQLmw-007.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at wells RQLmw-007 [bis(2-ethylhexyl)phthalate, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, iron, and manganese decreasing and cobalt increasing], RQLmw-008 [bis(2-ethylhexyl)phthalate, arsenic, iron, manganese, and beta-BHC decreasing and nitrobenzene increasing], RQLmw-009 [bis(2-ethylhexyl)phthalate, arsenic, cobalt, iron, and manganese decreasing], RQLmw-012 [bis(2-ethylhexyl)phthalate, aluminum, and cobalt decreasing and manganese unchanged], RQLmw-014 (cobalt increasing; iron unchanged; and manganese decreasing), RQLmw-015 [bis(2-ethylhexyl)phthalate and manganese decreasing], RQLmw-016 [bis(2-ethylhexyl)phthalate, cobalt, and manganese decreasing and iron increasing], and RQLmw-017 (cobalt and manganese decreasing).

The trend graph for the pesticide beta-BHC at RQLmw-008 shows a decreasing trend, although the concentration trend increased from January to July 2012. This trend graph, which shows numerous deflections, actually reflects the various detection limits used over time for this constituent; prior to this sampling event, beta-BHC was only detected on two prior occasions in this well. Arsenic concentrations in wells RQLmw-007, RQLmw-008, and RQLmw-009 show apparent seasonal fluctuations; concentrations are typically lower in the spring and higher in the summer and fall. Arsenic concentrations increased from January to July 2012. As mentioned previously, wells RQLmw-006 and RQLmw-011 are not included on the concentration-trend graphs since they have only been sampled on two other occasions (October 2010 and October 2011).

4.20 Sharon Conglomerate

During this reporting period, groundwater samples were collected from two wells (SCFmw-002 and SCFmw-004) completed in the basal Sharon Conglomerate unit. Both wells were sampled in January and July 2012.

Arsenic was identified at concentrations exceeding the MCL and RSL in well SCFmw-002 during the January and July 2012 sampling events. In addition, well SCFmw-002 was found to contain iron at concentrations exceeding the MCL, but below RSL values, during both sampling events. Manganese was identified at concentrations exceeding the MCL and RSL in well SCFmw-004 during both sampling events, and this constituent was identified above the MCL, but below the RSL, in well SCFmw-002 in January and July 2012. No other constituents were identified above their respective MCLs or RSLs in the two basal Sharon Conglomerate wells during this reporting period.

The Sharon Conglomerate wells have been sampled every quarter since April 2009, with the exception of April 2010 and July and October 2011. However, inorganics were not

evaluated in the groundwater samples from well SCFmw-002 in July 2010, and pesticides were not analyzed in this well during the first four sampling events at this location. Arsenic exceeded the MCL during seven previous occasions in well SCFmw-002. Iron exceeded its MCL on six prior occasions in well SCFmw-002. Iron was below background concentrations in this Sharon Conglomerate well. Manganese exceeded the RSL in well SCFmw-004 during all eight prior sampling events. In well SCFmw-002, manganese was identified at concentrations exceeding the MCL during six previous sampling episodes.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at the basal Sharon Conglomerate wells. Arsenic, iron, and manganese concentrations show a decreasing trend in well SCFmw-002, although arsenic concentrations increased slightly from January to July 2012. Manganese shows an increasing trend over time in well SCFmw-004, although concentrations have consistently decreased from April 2011 to July 2012.

4.21 Winklepeck Burning Grounds

During this reporting period, four unconsolidated aquifer wells (WBGmw-006, WBGmw-007, WBGmw-009, and WBGmw-018) and three bedrock aquifer wells (WBGmw-019, WBGmw-020, and WBGmw-021) were sampled at the Winklepeck Burning Grounds.

Arsenic was identified at concentrations exceeding its RSL value in well WBGmw-007 during the January and July 2012 sampling events and in well WBGmw-021 during the July 2012 event. Iron was identified in wells WBGmw-007, WBGmw-019, WBGmw-020, and WBGmw-021 at concentrations exceeding its MCL value during the July 2012 event; it did not exceed its RSL value in these wells. Manganese was identified at concentrations exceeding the MCL, but not the RSL, in wells WBGmw-006, WBGmw-007, and WBGmw-009 in January and July 2012 and in wells WBGmw-019 and WBGmw-021 during the July 2012 event. Manganese was found at concentrations above the RSL in well WBGmw-020 during the July 2012 sampling event. The compound, RDX, was identified in wells WBGmw-006 and WBGmw-009 at concentrations exceeding the RSL. Bis(2-ethylhexyl)phthalate was identified in wells WBGmw-019, WBGmw-020, and WBGmw-021 at concentrations exceeding the RSL, but not the MCL, during the July 2012 sampling event. No other constituents were identified above their respective MCLs or RSLs in the Winklepeck Burning Ground wells during this reporting period.

Wells WBGmw-018, WBGmw-019, WBGmw-020, and WBGmw-021 are new RI wells, which were sampled in July 2012. Wells WBGmw-006, WBGmw-007, and WBGmw-009 were previously sampled in October 2006, January, April, July, and October 2007, and January 2011. Arsenic previously exceeded the RSL, but not the MCL, in well WBGmw-007 during three prior sampling events; this compound was not detected during the first three sampling events at this location. Iron exceeded the MCL, but not the RSL,

on four prior occasions in well WBGmw-007. Manganese was identified at concentrations exceeding the MCL in well WBGmw-006 on five previous occasions, in well WBGmw-007 on four prior occasions, and in well WBGmw-009 during three previous sampling episodes. The compound RDX was identified at concentrations exceeding the RSL in WBGmw-006 and WBGmw-009 during all six prior sampling events for these wells.

The time-trend graphs in Appendix I show concentration-change trends (either increasing or decreasing) at the Winklepeck Burning Ground wells. Arsenic concentrations increased in well WBGmw-007 from January 2011 to July 2012, resulting in an increasing time-trend for this constituent. The iron concentration data for well WBGmw-007 shows a decreasing trend over time; however, iron concentrations have increased since January 2011. The manganese concentration data for wells WBGmw-006, WBGmw-007, and WBGmw-009 show increasing trends in each well. This is mainly due to a concentration spike in July 2012 for this constituent. RDX shows a decreasing trend in wells WBGmw-006 and WBGmw-009.

Since wells WBGmw-018, WBGmw-019, WBGmw-020, and WBGmw-021 have only been sampled once, no time-trend graphs are presented for these wells.

4.22 MCL and RSL Exceedances

Table 4-6 lists all wells and COPCs reported as present in samples collected during the FWGWMP in October 2011 and January, April, and July 2012 at concentrations greater than either the MCLs or the RSLs. This section summarizes those conditions and is presented by analyte group (e.g., inorganics, explosives, etc.).

4.22.1 Inorganics

During this reporting period, aluminum (15 wells), arsenic (36 wells), beryllium (one well), chromium (one well), cobalt (18 wells), iron (58 wells), lead (one well), manganese (73 wells), thallium (one well), and vanadium (one well) were reported at concentrations exceeding their respective MCLs and/or RSLs during at least one sampling event from the 172 wells sampled. The following general observations were noted regarding the inorganic constituents: 1) the MCL for aluminum was exceeded in 15 wells, and the aluminum RSL was exceeded in one well during one sampling event; 2) all detected arsenic concentrations exceeded the RSL and 49% of the detected arsenic concentrations exceeded the MCL; 3) beryllium exceeded the MCL in one well during one sampling event; 4) chromium exceeded the MCL in one well during one sampling event; 5) cobalt exceeded the RSL in 18 wells; there is no MCL for cobalt; 6) iron exceeded the MCL in 58 wells, and it exceeded the RSL in nine wells on at least one occasion; 7) lead exceeded the MCL in one well; there is no RSL for lead; 8) manganese exceeded the MCL in 73 wells, and it exceeded the RSL in 38 wells on at least one occasion; 9) thallium exceeded the RSL in one well on one occasion; and 10) vanadium exceeded the RSL in one well on one occasion; there is no MCL for vanadium.

4.22.2 Volatile Organic Compounds

During this reporting period, benzene (one well), carbon tetrachloride (one well), and chloroform (one well) were reported at concentrations exceeding their respective RSLs during at least one sampling event. The following general observations were noted regarding the VOCs: 1) benzene was identified at concentrations exceeding the RSL but not the MCL in one well on two occasions; 2) carbon tetrachloride exceeded the RSL but not the MCL in one well on two occasions; and 3) chloroform exceeded the RSL in one well on one occasion; there is no MCL for this VOC.

4.22.3 Semivolatile Organic Compounds

During this reporting period, bis(2-ethylhexyl)phthalate (65 wells), naphthalene (one well), dibenzo(a,h)anthracene (one well), and indeno(1,2,3-cd)pyrene (one well) were reported at concentrations exceeding their respective MCLs and/or RSLs during at least one sampling event. The following general observations were noted regarding the SVOCs: 1) bis(2-ethylhexyl)phthalate was identified at concentrations exceeding the RSL in 65 wells, and it exceeded the MCL in three wells on at least one occasion; 2) naphthalene exceeded the RSL but not the MCL in one well on one occasion; 3) dibenzo(a,h)anthracene exceeded the RSL in one well on one occasion; there is no MCL for this SVOC; and 4) indeno(1,2,3-cd)pyrene exceeded the RSL in one well on one occasion; there is no MCL for this SVOC.

The presence of dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene in well RQLmw-007 is the first reported detection of these two SVOCs at concentrations above screening levels at Ramsdell Quarry Landfill. Similarly, the presence of naphthalene in the new RI well NTAmw-119 is the first reported detection of this SVOC above screening levels in the NACA Test Area. There are no MCL values for these SVOCs; however, the dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene concentrations did exceed the corresponding FWCUGs in groundwater for Resident Farmer – Adult and Child pursuant to *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (SAIC, March 2010). Naphthalene did not exceed these criteria. Under the 2nd screening step for qualifying site chemicals at RVAAP presented in the Draft 2010 Addendum to the Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater (USACE, 2010), dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene qualify as new COPCs in Ramsdell Quarry Landfill. Note that these compounds are already listed COPCs for facility-wide groundwater at RVAAP.

4.22.4 Pesticides and Herbicides

During the 2012 reporting period, beta-BHC (three wells) was reported at concentrations exceeding the RSL during at least one sampling event. There are no established MCLs for this pesticide/herbicide.

4.22.5 Explosives and Propellants

During this sampling period, 2,4-dinitrotoluene (one well), 2,4,6-TNT (two wells), nitrobenzene (one well), nitrate as nitrite (one well), and RDX (four wells) were reported at concentrations exceeding their respective RSLs during at least one sampling event. In addition, nitrate as nitrite exceeded its MCL in one well during one sampling event. There are no MCLs for the other explosives and propellants.

In July 2012, the compound nitrobenzene was identified in well RQLmw-008; this was the first occurrence of this compound in this well. However, nitrobenzene has been identified in other wells in the Ramsdell Quarry Landfill area, and it is considered a COPC for this area.

4.22.6 Hexavalent Chromium

During the July 2012 sampling event hexavalent chromium was detected at levels above the reporting limit in 5 wells. Three of these detections were elevated above the RSL of 0.031 μg/L (there is no MCL for hexavalent chromium). The wells with detected concentrations at or above the RSL are: LL3mw-244 (0.184 μg/L), LL12mw-247 (0.265 μg/L) and SCFmw-002 (0.31 μg/L). Note that these three wells will be resampled for hexavalent chromium during the October 2012 monitoring event.

4.23 Alpha, Beta, and Gamma Radionuclides

FWGmw-014 (one of the newly installed wells in the former monazite sands storage area) and BKGmw-005 were analyzed for alpha, beta, and gamma radionuclides. As shown in Table 3-9 the gross alpha and beta screening indicated that no results exceeded their respective Minimum Detectable Concentrations (MDCs) or MCLs. The gamma spectroscopy results indicated that no results exceeded their respective MDCs or MCLs except for Radium 226 (23 pCi/L J in April and 36 pCi/L J in July) and Bismuth 214 (23 pCi/L J in April and 36 pCi/L J in July) in FWGmw-014. The results are presented in Table 3-9.

Since the analysis of the July samples indicated potential RA-226 contamination, EQM made the determination to reanalyze the July samples in order to get a better understanding of any potential issues as described below.

A review of the data from the July 2012 sampling event identified a detection for Ra-226 similar to the April 2012 event. EQM believed the reported Ra-226 concentration was likely a false positive, due to a combination of both a misidentification by the gamma spectroscopy software and the elevated reporting limit of the analytical method applied. After discussions with the laboratory technical director, we determined that further analysis of samples FWGFWGmw-014-0094-GW (monazite well) and FWGBKGmw-005c-0068-GW (background well) was needed to definitively rule out the presence of Ra-226 and further investigate the unknown naturally occurring radioactive material

(NORM). It is critical to remember that Ra-226 is predominantly an alpha particle emitter, and that the main intent of the monazite sand investigation was to monitor for thorium (isotope of concern from monazite sand).

EQM decided to analyze the July samples for total alpha radium by method 903.0 (approved drinking water method for total alpha radium) and total thorium & uranium by ICPMS, method 6020. The results of the reanalysis were as follows; the total alpha radium for both FWGBKGmw-005-0068-GW and FWGFWGmw-014-0094-GW were below the EPA drinking water limit of 5.0pCi/L at 0.149pCi/L for FWGBKGmw-005-0068-GW and at 0.26pCi/L for FWGFWGmw-014-0094-GW. The total uranium results were also reported to be below EPA limits of 30ug/L. Total uranium was reported for sample FWGBKGmw-005-0068-GW at 0.45ug/L and for sample FWGFWGmw-014-0094-GW the total uranium result was 0.4ug/L. While there is no EPA standard for thorium in drinking water, the thorium results were below the laboratory reporting limit of 2ug/L for both samples. Thorium was detected in sample FWGBKGmw-005-0068-GW at 0.7ug/L and not detected for FWGFWGmw-014-0094-GW.

Based on the additional analysis EQM does not believe that there is a radiation concern at well FWGmw-014. This well will, however be monitored for radionuclides for an additional 2 quarters (October 2012 and January 2013).

4.24 Assessment of Groundwater Remedial Action Effectiveness

Groundwater remedial actions have not been performed to date at RVAAP and therefore are not discussed in this report. The facility-wide groundwater conditions are still being evaluated.

SECTION 5

FWGWMP ANNUAL RECOMMENDATIONS/REVIEW

5.1 FWGWMP Annual Recommendations

The USACE is performing CERCLA closure at the former RVAAP under the IRP and the Military Munitions Response Program (MMRP). The overall goal is to remediate the RVAAP installation so all of the property can be transferred to the Army National Guard (ARNG) and be used by the OHARNG as a military training site. Activities conducted under the IRP include monitoring of an extensive network (now 281 wells) of groundwater monitoring wells at the RVAAP facility. To date, 243 FWGWMP wells at the facility have been sampled and analyzed a minimum of four quarters. In 2012, 38 additional wells were installed as part of the RI. The new wells will be sampled quarterly until a minimum of four quarters of groundwater data have been obtained. Monitoring of the facility-wide groundwater is specified as a requirement of the Ohio EPA's DFFOs. The DFFOs were issued to the U.S. Department of the Army on June 10, 2004. Additionally, much of the FWGWMP has been conducted as part of the groundwater RI study(s). This is similar to groundwater detection monitoring, and nature and extent monitoring. Going forward, data generated under the FWGWMP will continue to be used to further assess groundwater under additional RI activities, and to assist in completing the FS.

The Army has proposed, with concurrence from the Ohio EPA and the OHARNG, to move from an area-specific approach to a facility-wide approach for the groundwater (RVAAP-66 facility-wide groundwater). This will provide a more focused approach for achieving the goals of the FWGWMP including:

- Characterize the nature and extent of facility-wide groundwater contamination.
- Assess the risk posed to human health and the environment from facility-wide groundwater.
- Establish a system to monitor potential offsite migration of contaminants via groundwater.
- Provide for continuing groundwater monitoring at the RQL and DA2 RCRA units.

In order to accomplish the goal for a facility-wide approach to groundwater the USACE, under a GSA PBA contract, retained EQM (Contract No. GS-10F-0293K – Delivery Order W912QR-11-F-0266) to obtain a signed ROD for the facility-wide groundwater (RVAAP-66).

The objective of this project is to complete groundwater investigation activities in support of the ROD. It should be noted that this section of the Annual 2012 Report only presents a broad summary of the RI/FS Activities. Additional details regarding the objectives and

scope for completing the remedial investigation activities are provided in the RI/FS Work Plan (EQM, 2013). A significant amount of work has already been conducted at RVAAP surrounding the various AOCs including remedial investigations, human health risk evaluations, feasibility studies, interim remedial measures, groundwater monitoring, etc. The current FWGWMP schedule involves quarterly sampling of a subset of the 243 existing wells at RVAAP. A baseline data set has been established for all of the wells at RVAAP. It appears from these data that the initial investigative phase for the existing wells has been completed [i.e., there is an understanding of the impacts of specific AOC sources to individual wells at the facility]. As a result, this RI/FS will pursue a ROD for groundwater using a facility-wide approach. Consequently, the RI for facility-wide groundwater will entail a thorough evaluation of historical data, assessment of key data gaps, geotechnical analyses, additional chemical analyses, aquifer testing, preparation of a baseline risk assessment (BRA), groundwater modeling, and installation of additional wells to supplement the hydrogeologic and fate-and-transport models. Specifically, additional monitoring wells will be installed at the facility to further characterize the nature and extent of facility-wide groundwater impacts and to support hydrogeologic system and contaminant fate-and-transport modeling.

The transition from an AOC-based to facility-wide approach is designed to evaluate the overall contributions to groundwater from all potential contaminant source areas at RVAAP and to predict potential offsite migration pathways, potential potable use areas, and areas that may require restricted groundwater use. In the latter case, this may involve melding of several previously described AOCs or smaller segregated areas based on the model outputs. Historical data previously obtained from the various AOCs will be reviewed, screened, evaluated, and used as input into the evaluations conducted as part of the facility-wide groundwater RI (e.g., conceptual model, nature and extent, BRA, and fate-and-transport models).

The primary objective of the RI/FS is to obtain a signed Record of Decision for facility-wide groundwater at RVAAP. To meet this goal, the following steps will be taken:

- Review historical studies and monitoring activities at RVAAP in order to coordinate the facility-wide groundwater investigation with all other relevant investigations conducted to date.
- Screen historical and recent data to identify SRCs and COPCs and their distribution in groundwater across RVAAP via site mapping and groundwater modeling.
- Evaluate and determine if any contaminants have migrated or are migrating off RVAAP through the collection of data from newly installed wells and subsequent groundwater modeling.
- Conduct a BRA to evaluate the potential threat to human health and the environment through the groundwater pathway if no remedial action is taken. The BRA will determine the COPCs that are COCs, if any, which may ultimately require mitigation.

- Identify potential groundwater use areas, as well as potential restricted areas that cannot be used for potable use, via evaluation of new and existing data, groundwater modeling, and risk evaluation. It will ultimately be the Army National Guard's (ARNG's) responsibility for final evaluation of the potential areas for potable use by Ohio Army National Guard (OHARNG) personnel. Identification of these zones through modeling will serve as the starting point for ARNG to validate whether these areas are suitable for potable groundwater use and to assess the effect any future production well(s) might have on the aquifer, including radius of influence (ROI) and resulting flow patterns.
- Perform the FS, Proposed Plan, and ROD to address any identified COCs. The plan objective will have been met when the ROD has been approved and signed.

Key elements that will be conducted under this RI/FS work plan include:

- Evaluation of Existing Data, including:
  - Review of historical studies and monitoring activities.
  - Preparation of isoconcentration maps.
  - Assessment of origin of common contaminants in groundwater.
  - Investigation of the potential origin and impact of bis(2-ethylhexyl)phthalate.
- Development of Conceptual Site Model
- Identification of Key Data Gaps, potentially including:
  - Evaluation of preferential flow zones/exit pathways.
  - Analysis of fracture/aperture density in bedrock cores and their effect on leakage potential of the aquifer.
  - Evaluation of potential source areas that have not previously been assessed and their contribution to facility-wide contaminant loading, if any.
  - Additional geochemical and geotechnical analyses.
  - Evaluation of the interaction between surface water and groundwater.
- Field Investigation, including:
  - Installation of 39 new wells in support of hydrogeologic system modeling and contaminant fate-and-transport modeling and to address key data gaps.
  - Permeability testing on 20 test cores.
  - Aquifer testing, including two short-term pump tests.
  - Groundwater sampling, including quarterly sampling of the 39 new wells, semiannual sampling of 35 existing wells (including five Resource Conservation and Recovery Act wells), sampling of the six Mustard Burial Site wells for chemical warfare breakdown products, and assessing the presence of hexavalent chromium in the new and existing wells and perchlorate in the new wells.
- Contaminant Fate-and-Transport Modeling
  - Develop a facility-wide 3-dimensional groundwater flow model.

  - Predict migration paths and maximum future extent of contaminant migration.
  - Demonstrate early attainment use zones.
  - Screen alternative remedial actions in support of FS development via model simulations.

- Assessment of Risks
  - Conduct a baseline human health risk assessment for the facility-wide groundwater exposure.
  - Use results to document any no-action decision and/or to potentially reduce or eliminate the scope of the FS.

- Treatability Study/Pilot Testing (if necessary)

- Preparation of Remedial Investigation Report

- Preparation of Feasibility Study
  - Evaluate and screen potential remedial alternatives.
  - Identify "early attainment" groundwater resource use zones.
  - Perform detailed analysis of selected remedial alternatives.

The following activities associated with the RI/FS have yet to be completed:

- Complete four quarters of groundwater sampling of the 38 new RI wells.

- Prepare and submit the RI Work Plan including:
  - A review of historical data/studies.
  - Identification of data gaps.
  - Determine the need for additional analyses/testing as it relates to the RI.
  (A draft RI Work Plan was submitted; this document will be finalized upon concurrence by the Ohio EPA.)

- Prepare the RI Report, which will include:
  - Groundwater modeling in support of two major elements of project execution: 1) facility-wide fate-and-transport evaluation and 2) evaluation and optimization of remedial alternatives in the FS.
  - Refining the facility-wide groundwater conceptual site model using data collected during the RI phase and historical hydrogeologic data.
  - Conducting a human health baseline risk assessment for facility-wide groundwater exposure including: 1) The use of the FWCUGs, 2) fate-and-transport modeling, and 3) an assessment of potential offsite impacts.

- Prepare and complete the FS.

- Prepare and complete the Proposed Plan including the public hearing and comment period.

- Prepare and complete the ROD.

The OHARNG would like to utilize groundwater in certain areas of the facility. Specific areas for groundwater use have not been specifically identified by the OHARNG. Ongoing activities in pursuit of the ROD for facility-wide groundwater will better determine contaminated areas (if any) and help identify where groundwater can or cannot be utilized at the facility.

As required by Ohio EPA's DFFOs, EQM will continue to perform Facility-Wide groundwater monitoring during the development of the RI/FS, including scheduled groundwater sampling and analysis, sampling event reporting, and annual report preparation and submittal.

Moving forward, the RI report, including fate-and-transport modeling and the baseline human health risk assessment, will be completed by September 2013.

SECTION 6

REFERENCES

Portage Environmental. 2004. *RVAAP Facility-Wide Groundwater Monitoring Program Plan*.

SAIC. 2001b. *Phase II Remedial Investigation Report for the Winklepeck Burning Grounds at Ravenna Army Ammunition Plant, Ravenna, Ohio.*

SAIC. March 2010. *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio*.

SAIC. February 2011. *Facility-Wide Sampling and Analysis Plan for Environmental Investigations.*

SAIC/REIMS. 2005. *Table of Reported Construction Depths from REIMS Information.*

SpecPro, Inc. 2005a. *Facility-Wide Groundwater Monitoring Program Report on the April 2005 Sampling Event, Ravenna Training and Logistics Site/Ravenna Army Ammunition Plant, Ravenna, Ohio.*

SpecPro, Inc. 2005b. *Facility-Wide Groundwater Monitoring Program, Report on the July 2005 Sampling Event, Ravenna Training and Logistics Site/Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2006a. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2005, Ravenna Training and Logistics Site/Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2006b. *Facility-Wide Groundwater Monitoring Program, Report on the March 2006 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2006c. *Facility-Wide Groundwater Monitoring Program, Report on the May 2006 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2006d. (Draft) *Facility-Wide Groundwater Monitoring Program, Annual Report for 2006, Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2007a. *Facility-Wide Groundwater Monitoring Program, Report on the July 2006 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2007b. *Facility-Wide Groundwater Monitoring Program, Report on the October 2006 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*

SpecPro, Inc. 2007c. *Facility-Wide Groundwater Monitoring Program, Report on the January 2006 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2007a. *Facility-Wide Groundwater Monitoring Program, Report on the April 2007 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2007b. *Facility-Wide Groundwater Monitoring Program, Report on the July 2007 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2007c. *Facility-Wide Groundwater Monitoring Program, Report on the October 2007 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2007d. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2007, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Environmental Quality Management, Inc. 2008a. *Facility-Wide Groundwater Monitoring Program, Report on the January 2008 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2008b. *Facility-Wide Groundwater Monitoring Program, Report on the April 2008 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2008c. *Facility-Wide Groundwater Monitoring Program, Report on the July 2008 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2008d. *Facility-Wide Groundwater Monitoring Program, Report on the October 2008 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2008e. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2008, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Environmental Quality Management, Inc. 2009a. *Facility-Wide Groundwater Monitoring Program, Report on the January 2009 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2009b. *Facility-Wide Groundwater Monitoring Program, Report on the April 2009 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2009c. *Facility-Wide Groundwater Monitoring Program, Report on the July 2009 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2009d. *Facility-Wide Groundwater Monitoring Program, Report on the October 2009 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2009e. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2009, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Environmental Quality Management, Inc. 2010a. *Facility-Wide Groundwater Monitoring Program, Report on the January 2010 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2010b. *Facility-Wide Groundwater Monitoring Program, Report on the April 2010 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2010c. *Facility-Wide Groundwater Monitoring Program, Report on the July 2010 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2010d. *Facility-Wide Groundwater Monitoring Program, Report on the October 2010 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2010e. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2010, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Environmental Quality Management, Inc. 2011a. *Facility-Wide Groundwater Monitoring Program, Report on the January 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2011b. *Facility-Wide Groundwater Monitoring Program, Report on the April 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2011c. *Facility-Wide Groundwater Monitoring Program, Report on the July 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2011d. *Facility-Wide Groundwater Monitoring Program, Report on the October 2011 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2011e. *Facility-Wide Groundwater Monitoring Program, Annual Report for 2011, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

EQM. January 2012a. *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

EQM. January 2012b. *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Sampling and Analysis Plan for Environmental Services Addendum.*

EQM. January 2012c. *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Quality Assurance Project Plan Addendum.*

EQM. January 2012d. *Final Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Site Safety and Health Plan Addendum.*

EQM. January 2012e. *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Semiannual Monitoring Addendum, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

EQM. October 2012f. *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Monitoring Well Installation Report, Ravenna Army Ammunition Plant, Ravenna, Ohio.*

Environmental Quality Management, Inc. 2012g. *Facility-Wide Groundwater Monitoring Program, Report on the January 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2012h. *Facility-Wide Groundwater Monitoring Program, Report on the April 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2012i. *Facility-Wide Groundwater Monitoring Program, Report on the July 2012 Sampling Event, Ravenna Army Ammunition Plant, Ravenna, Ohio*.

Environmental Quality Management, Inc. 2013. *Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Remedial Investigation/Feasibility Study Work Plan*.

USACE. October 2007. *Draft Proposal to Update the Facility-Wide Ground Water Monitoring Program.*

APPENDIX A

CORRESPONDENCE DOCUMENTING THE CHANGE IN WELLS TO BE SAMPLED

Semiannual Analyte List

Well Location	VOCs	SVOCs			Metals[d]	Explosives	Pesticides	PCBs	Nitrate	Cyanide
		Nitroaromatics & Phthalates[a]	Phenols[b]	PAHs[c]						
SCFmw-002	x	x	x	x	x	x	x	x	x	
SCFmw-004	x	x	x		x	x	x	x		
LL1mw-064	x	x			x	x	x			
LL1mw-065	x	x			x	x	x			
LL2mw-059	x	x	x		x	x	x	x		
LL2mw-265	x	x	x		x	x	x	x		
LL3mw-241	x	x			x	x	x			
LL3mw-242	x	x			x	x	x			
LL4mw-199	x	x			x	x	x			
LL6mw-002		x		x	x					
LL6mw-005		x		x	x					
LL10mw-003	x				x					
LL11mw-007	x	x			x	x	x			
LL12mw-182		x								
LL12mw-185					x				x	
LL12mw-187	x	x	x	x	x	x	x	x	x	
LL12mw-242	x	x	x	x	x	x	x	x	x	
LL12mw-245	x	x	x	x	x	x	x	x	x	
LL12mw-246	x	x	x	x	x	x	x	x	x	
BKGmw-005	x	x			x	x	x	x		
BKGmw-021	x	x			x	x	x	x		
CBLmw-002		x		x				x		
CBPmw-002		x			x		x	x		
B12mw-012		x		x	x					
WBGmw-006	x	x			x	x				
WBGmw-007	x	x			x	x				
WBGmw-009	x	x			x	x				
DA2mw-108		x			x	x		x		
DET-003	x	x	x	x	x	x	x	x		x
DET-004	x	x	x	x	x	x	x	x		x
NTAmw-109	x	x		x	x			x		
EBGmw-125		x			x					
RQLmw-007	x	x	x	x	x	x	x	x		x
RQLmw-008	x	x	x	x	x	x	x	x		x
RQLmw-009	x	x	x	x	x	x	x	x		x

[a] Analyte list includes: 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, Butyl benzyl phthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, and Nitrobenzene

[b] Analyte list includes: 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2-Chlorophenol, 2-Methylphenol, 2-Nitrophenol, 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 3&4 Methylphenol, 4-Nitrophenol, Pentachlorophenol, and Phenol

[c] Analyte list includes: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, and Pyrene.

[d] Analyte list includes: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, and Zinc.

Subject: RE: Ravenna's July 2011 Groundwater Monitoring Event (FWGWMP) (UNCLASSIFIED)
From: "Nichter, Mark W LRL" <Mark.W.Nichter@usace.army.mil>
Date: Wed, 13 Jul 2011 13:35:36 -0400
To: "Mohr, Eileen" <eileen.mohr@epa.state.oh.us>, "Deppisch, Vicki" <Vicki.Deppisch@epa.state.oh.us>, John Miller <jmiller@eqm.com>
CC: "Patterson, Mark C Mr CIV USA OSA" <mark.c.patterson@us.army.mil>, "Esler, Christy L Ms ARMY GUEST USA OSA USA" <christy.esler@us.army.mil>, "Beckham, Glen LRL" <Glen.Beckham@usace.army.mil>, "Moore, Gregory F LRL" <Gregory.F.Moore@usace.army.mil>, "Krantz, Kathy J LRL" <Kathy.J.Krantz@usace.army.mil>, "Tait, Kathryn S Ms CIV NG OHARNG" <kathryn.s.tait@us.army.mil>, "McCambridge, Conni" <Conni.McCambridge@epa.state.oh.us>

Classification: UNCLASSIFIED
Caveats: NONE

John Miller - I have discussed the Table 4-2 list of wells and associated chemical analyses to be included in the July (now August) 2011 groundwater monitoring event with Vicki Deppisch. Vicki is aware of and in agreement with the revised list of analyses. However, the Ohio EPA and the USACE did discuss possible revisions to this table during the December 1-2, 2010 groundwater monitoring meeting, and we need to include these revisions in the upcoming monitoring event.

The first revision includes the addition of "hexavalent chromium" analysis. Please note that I have reviewed the historical groundwater database, and the screening process that we used for total chromium. The screening process is as follows: Chromium is first screened against a background value = 0.0073 mg/l, then the Federal MCL value = 0.1 mg/l, then the FWCUG value = 0.2139 mg/l, then the Federal RSLs value = 0.000043 mg/l. If the constituent concentrations exceeded the applicable screening criteria, then we considered the total chromium a Chemical of Potential Concern (COPC). The screening resulted in only 5 exceedances of the screening criteria for total chromium (from the entire database). The exceedances occurred in one background well, Load Line 1, Load Line 12, and the Atlas Scrap Yard. Since we are now planning to sample wells located in Load Lines 1 and 12 during this groundwater monitoring event, we need to include hexavalent chromium in the sampling analyses.

The second revision pertains to the "Dinitrotoluene (DNT) Isomers." DNT has been identified as a groundwater COPC at several AOCs at the Ravenna facility. This includes Load Lines 1, 2, 3, and 12. Ohio EPA has requested that a summary of DNT isomers be discussed in the text of the report associated with the upcoming monitoring event.

Please let me know if you will have a problem with performing the above or if you would like to discuss this in greater detail. Thanks - Mark

Mark W. Nichter, PG
Geologist
Environmental Compliance (CELRL-ED-E-C)
Louisville District

U.S. Army Corps of Engineers
(502) 315-6375 (Office)
(502) 418-8449 (Mobile)
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-2232
mark.w.nichter@usace.army.mil

Comments on our Environmental Services are invited:
http://ice.disa.mil/index.cfm?fa=card&site_id=915&service_provider_id=115446

-----Original Message-----
From: Mohr, Eileen [mailto:eileen.mohr@epa.state.oh.us]
Sent: Wednesday, July 13, 2011 9:32 AM
To: Deppisch, Vicki; John Miller
Cc: Nichter, Mark W LRL; Patterson, Mark C Mr CIV USA OSA; Esler, Christy L Ms ARMY GUEST USA OSA USA; Beckham, Glen LRL; Moore, Gregory F LRL; Krantz, Kathy J LRL; Tait, Kathryn S Ms CIV NG OHARNG; McCambridge, Conni
Subject: RE: Ravenna's July 2011 Groundwater Monitoring Event (FWGWMP) (UNCLASSIFIED)

Thanks everyone!

From: Deppisch, Vicki
Sent: Wednesday, July 13, 2011 8:03 AM
To: John Miller
Cc: Nichter, Mark W LRL; Mohr, Eileen; Patterson, Mark C Mr CIV USA OSA; Esler, Christy L Ms ARMY GUEST USA OSA USA; Beckham, Glen LRL; Moore, Gregory F LRL; Krantz, Kathy J LRL; Tait, Kathryn S Ms CIV NG OHARNG; McCambridge, Conni; Deppisch, Vicki
Subject: RE: Ravenna's July 2011 Groundwater Monitoring Event (FWGWMP) (UNCLASSIFIED)

August 1 is fine with me. Thanks for getting this together so quickly.
vicki

-----Original Message-----
From: John Miller [mailto:jmiller@eqm.com]
Sent: Wednesday, July 13, 2011 7:58 AM
To: Deppisch, Vicki
Cc: Nichter, Mark W LRL; Mohr, Eileen; Patterson, Mark C Mr CIV USA OSA; Esler, Christy L Ms ARMY GUEST USA OSA USA; Beckham, Glen LRL; Moore, Gregory F LRL; Krantz, Kathy J LRL; Tait, Kathryn S Ms CIV NG OHARNG; McCambridge, Conni
Subject: Re: Ravenna's July 2011 Groundwater Monitoring Event (FWGWMP) (UNCLASSIFIED)

Vicki/Mark: EQM will proceed with making arrangements for sampling the referenced wells for the analytes specified in Table 4-2. Given the time frame I would like to request that the "July" event be conducted the week of August 1. It generally takes us at least one week to order and receive supplies, and another week to label and assemble bottles and sample kits. Additionally I have some personnel conflicts the week of July 25. If delaying the event until August 1-4 is unacceptable I will make the sampling happen the week of July 25, but I thought I would make the request.
Thanks, John

On 7/13/2011 7:40 AM, Deppisch, Vicki wrote:
> Mark
> No apology is necessary; I know your busy. Sampling the wells proposed in

Table 4-2 is acceptable to Ohio EPA, please have EQM proceed with the July 2011 sampling event. Thanks
vic

-----Original Message-----
From: Nichter, Mark W LRL [mailto:Mark.W.Nichter@usace.army.mil]
Sent: Tuesday, July 12, 2011 6:20 PM
To: Deppisch, Vicki
Cc: Mohr, Eileen; Patterson, Mark C Mr CIV USA OSA; Esler, Christy L Ms ARMY GUEST USA OSA USA; Beckham, Glen LRL; Moore, Gregory F LRL; Krantz, Kathy J LRL; Tait, Kathryn S Ms CIV NG OHARNG; John Miller
Subject: Ravenna's July 2011 Groundwater Monitoring Event (FWGWMP) (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Vicki - My apologies for not bringing this to your attention earlier. The USACE does not currently have a clear path forward for conducting Ravenna's July 2011 quarterly groundwater monitoring event.

If you recall, the USACE provided a groundwater presentation at the Ravenna facility on December 1-2, 2010. The purpose of the meeting was to present an up-to-date characterization of the groundwater quality at the facility, and to present proposed addendums (or changes) to the approved 2004 FWGWMP Plan. Table 4-2 of the draft "2010 Addendum to the FWGWMP Plan" included a proposed monitoring well network (see attached) for continued groundwater sampling at the facility. The revised monitoring well network focuses on those wells that have the highest reported concentrations of COPCs. These areas are anticipated to have the highest potential for groundwater impact. Table 4-2 also includes other existing wells located in close proximity or down-gradient of the high concentration wells. Table 4-2 was proposed for future groundwater monitoring events, and implements the proposed sampling frequency, changes in the parameters to be analyzed, and the wells to be included or excluded from the monitoring well schedule.

The proposed changes to the FWGWMP were not formally accepted or approved by the Ohio EPA during the December 2010 meeting. Open discussions during the meeting revealed that this was the right time to abandon the AOC approach, and to adopt a facility-wide approach to monitoring groundwater (RVAAP-66) at the Ravenna facility.

Given our current situation with the July 2011 monitoring event, The USACE would like to propose two (2) options for the Ohio EPA's consideration. The first option is to instruct EQM (our current groundwater monitoring
Contractor) to proceed with the July 2011 groundwater monitoring event using the attached Table 4-2 proposed monitoring well network. The second option is to by-pass the July 2011 groundwater monitoring event, and then implement our next scheduled monitoring event, which will occur in October 2011. The October monitoring event should allow sufficient time for the development of a facility-wide approach to groundwater monitoring. Your questions and comments please - Mark

Mark W. Nichter, PG
Geologist
Environmental Compliance (CELRL-ED-E-C) Louisville District U.S. Army Corps of Engineers
(502) 315-6375 (Office)

(502) 418-8449 (Mobile)
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-2232
mark.w.nichter@usace.army.mil

Comments on our Environmental Services are invited:
http://ice.disa.mil/index.cfm?fa=card&site id=915&service provider id=115446

Classification: UNCLASSIFIED
Caveats: NONE

--
John Miller
Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
513-825-7500 voice
513-825-7495 fax

The information contained in this electronic message is intended only for the use of the individual or entity to which it is address and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are informed that any dissemination, copying or disclosure of the material contained herein, to include any attachments, in whole or in part, is strictly prohibited. If you have received this transmission in error, please notify the sender and purge this message.

Classification: UNCLASSIFIED
Caveats: NONE

APPENDIX B

LIST OF WELLS SAMPLED BY QUARTER

October 2011 Well Sampling Locations

Well #	Location
LL6mw-002	Load Line 6
LL6mw-005	Load Line 6
LL6mw-007	Load Line 6
DET-002	Open Demolition Area 2
DET-003	Open Demolition Area 2
DET-004	Open Demolition Area 2
DA2mw-104	Open Demolition Area 2
DA2mw-106	Open Demolition Area 2
DA2mw-107	Open Demolition Area 2
DA2mw-108	Open Demolition Area 2
FBQmw-169	Fuze & Booster Quarry
FBQmw-170	Fuze & Booster Quarry
FBQmw-171	Fuze & Booster Quarry
FBQmw-174	Fuze & Booster Quarry
FBQmw-175	Fuze & Booster Quarry
FBQmw-177	Fuze & Booster Quarry
RQLmw-006	Ramsdell Quarry
RQLmw-007	Ramsdell Quarry
RQLmw-008	Ramsdell Quarry
RQLmw-009	Ramsdell Quarry
RQLmw-011	Ramsdell Quarry
RQLmw-012	Ramsdell Quarry
RQLmw-014	Ramsdell Quarry
RQLmw-015	Ramsdell Quarry
RQLmw-016	Ramsdell Quarry
RQLmw-017	Ramsdell Quarry
MBSmw-001	Suspected MBS
MBSmw-002	Suspected MBS
MBSmw-003	Suspected MBS
MBSmw-004	Suspected MBS
MBSmw-005	Suspected MBS
MBSmw-006	Suspected MBS

January 2012 Well List	
Well ID	**Location**
SCFmw-002	Sharon Conglomerate Deep Well
SCFmw-004	Sharon Conglomerate Deep Well
LL1mw-064	Load Line 1
LL1mw-065	Load Line 1
LL2mw-059	Load Line 2
LL2mw-265	Load Line 2
LL3mw-241	Load Line 3
LL3mw-242	Load Line 3
LL4mw-199	Load Line 4
LL6mw-002	Load Line 6
LL6mw-005	Load Line 6
LL10mw-003	Load Line 10
LL11mw-007	Load Line 11
LL12mw-182	Load Line 12
LL12mw-185	Load Line 12
LL12mw-187	Load Line 12
LL12mw-242	Load Line 12
LL12mw-245	Load Line 12
LL12mw-246	Load Line 12
BKGmw-005	Background Well
BKGmw-021	Background Well
CBLmw-002	C-Block
CBPmw-002	Central Burn Pit
B12mw-012	Building 1200
WBGmw-006	Winklepeck Burning Grounds
WBGmw-007	Winklepeck Burning Grounds
WBGmw-009	Winklepeck Burning Grounds
DA2mw-108	Open Demolition Area #2
DET-003	Open Demolition Area #2
DET-004	Open Demolition Area #2
NTAmw-109	NACA Test Area
EBGmw-125	Erie Burning Grounds
RQLmw-007	Ramsdell Quarry Landfill
RQLmw-008	Ramsdell Quarry Landfill
RQLmw-009	Ramsdell Quarry Landfill

April 2012 Well Sampling		
Well ID Number	**Map ID Number**	**RVAAP Location**
LL1mw-086	1	SE/Load Line 1
LL1mw-087	3	Southeast area of RVAAP
LL12mw-247	4	Southeast area of RVAAP
LL4mw-201	5	South of Load Line 4
LL3mw-244	6	South of Load Line 3
LL3mw-245	7	East of Load Line 3
CBPmw-009	8	Central Burn Pits
FWGmw-001	9	Group 2 DLA Ore Storage Area
B12mw-013	10	Building 1200
FWGmw-002	11	North Perimeter
FWGmw-003	12	North Line Road Coal Tipple
FWGmw-004	20	Administration Area/George Road
FWGmw-005	21	Western Area of Facility
FWGmw-006	22	Western Area of Facility
FWGmw-007	23	Southwestern Area of Facility
FWGmw-008	24	Western Depot Area
FWGmw-009	25	Western Depot Area
NTAmw-119	26	NACA Test
LL6mw-008	27	Load Line 6
LL6mw-009	28	Load Line 6
LL11mw-011	29	Load Line 11
LL11mw-012	30	Load Line 11
FWGmw-010	31	DLA Main Ore Storage Yard Area
FWGmw-011	32	East Classification Yard
FWGmw-012	33	East Classification Yard
FWGmw-013	34	Wet Storage Area
FWGmw-014	35	Route 80 Tank Farm
CBLmw-005	36	C Block
FWGmw-015	37	Admin/ George Road
FWGmw-016	38	Admin/ George Road
LL12mw-182ss	39	Load Line 12
LL12mw-182		Load Line 12

July 2012 New Well Sampling List	
Well ID Number	**RVAAP Location**
LL1mw-086	SE/Load Line 1
EBGmw-131	Paired with EBGmw-125
LL1mw-087	Southeast area of RVAAP
LL12mw-247	Southeast area of RVAAP
LL4mw-201	South of Load Line 4
LL3mw-244	South of Load Line 3
LL3mw-245	East of Load Line 3
CBPmw-009	Central Burn Pits
FWGmw-001	Group 2 DLA Ore Storage Area
B12mw-013	Building 1200
FWGmw-002	North Perimeter
FWGmw-003	North Line Road Coal Tipple
WBGmw-018	Near WBGmw-007 (west)
WBGmw-019	Near WBGmw-007 (west)
WBGmw-020	Paired with WBGmw-009
WBGmw-021	Paired with WBGmw-006
DA2mw-114	Near DA2mw-108
DA2mw-115	Paired with DETmw-003
FWGmw-004	Administration Area/George Road
FWGmw-005	Western Area of Facility
FWGmw-006	Western Area of Facility
FWGmw-007	Southwestern Area of Facility
FWGmw-008	Western Depot Area
FWGmw-009	Western Depot Area
NTAmw-119	NACA Test
LL6mw-008	Load Line 6
LL6mw-009	Load Line 6
LL11mw-011	Load Line 11
LL11mw-012	Load Line 11
FWGmw-010	DLA Main Ore Storage Yard Area
FWGmw-011	East Classification Yard
FWGmw-012	East Classification Yard
FWGmw-013	Wet Storage Area
FWGmw-014	Route 80 Tank Farm
CBLmw-005	C Block
FWGmw-015	Admin/ George Road
FWGmw-016	Admin/ George Road
LL12mw-182ss	Load Line 12

July 2012 Semiannual Well Sampling List	
Well ID Number	**RVAAP Location**
SCFmw-002	Sharon Conglomerate Deep Well
SCFmw-004	Sharon Conglomerate Deep Well
LL1mw-064	Load Line 1
LL1mw-065	Load Line 1
LL2mw-059	Load Line 2
LL2mw-265	Load Line 2
LL3mw-241	Load Line 3
LL3mw-242	Load Line 3
LL4mw-199	Load Line 4
LL6mw-002	Load Line 6
LL6mw-005	Load Line 6
LL10mw-003	Load Line 10
LL11mw-007	Load Line 11
LL12mw-182	Load Line 12
LL12mw-185	Load Line 12
LL12mw-187	Load Line 12
LL12mw-242	Load Line 12
LL12mw-245	Load Line 12
LL12mw-246	Load Line 12
BKGmw-005	Background Well
BKGmw-021	Background Well
CBLmw-002	C-Block
CBPmw-002	Central Burn Pit
B12mw-012	Building 1200
WBGmw-006	Winklepeck Burning Grounds
WBGmw-007	Winklepeck Burning Grounds
WBGmw-009	Winklepeck Burning Grounds
DA2mw-108	Open Demolition Area #2
DET-003	Open Demolition Area #2
DET-004	Open Demolition Area #2
NTAmw-109	NACA Test Area
EBGmw-125	Erie Burning Grounds
RQLmw-007	Ramsdell Quarry Landfill
RQLmw-008	Ramsdell Quarry Landfill
RQLmw-009	Ramsdell Quarry Landfill

APPENDIX C

WATER LEVEL MEASUREMENT FIELD SHEETS
JULY 2012

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
ASYmw-001	Atlas Scrap Yard	7/17/2012	9:00	12.75	23.15	hard	OH1266
ASYmw-002	Atlas Scrap Yard	7/17/2012	8:55	14.64	22.94	soft	OH1266
ASYmw-003	Atlas Scrap Yard	7/17/2012	8:50	13.62	23.50	hard	OH1266
ASYmw-004	Atlas Scrap Yard	7/17/2012	8:38	10.86	29.80	hard	OH1266
ASYmw-005	Atlas Scrap Yard	7/17/2012	8:32	10.26	27.20	soft	OH1266
ASYmw-006	Atlas Scrap Yard	7/17/2012	8:20	14.40	28.90	hard	OH1266
ASYmw-007	Atlas Scrap Yard	7/17/2012	8:12	15.20	28.90	hard	OH1266
ASYmw-008	Atlas Scrap Yard	7/17/2012	8:05	7.69	27.25	soft	5769
ASYmw-009	Atlas Scrap Yard	7/17/2012	8:45	13.29	24.12	soft	OH1266
ASYmw-010	Atlas Scrap Yard	7/17/2012	8:23	12.66	30.95	hard	OH1266
B12mw-010	Building 1200	7/16/2012	13:07	18.04	22.82	hard	5769
B12mw-011	Building 1200	7/16/2012	13:11	19.28	26.72	hard	5769
B12mw-012	Building 1200	7/16/2012	13:09	18.48	24.81	hard	5769
B12mw-013	Building 1200	7/16/2012	13:05	18.92	24.20	hard	5769
BKGmw-004	Background	7/23/2012	13:45	14.00	22.28	hard	5769
BKGmw-005	Background	7/16/2012	12:25	14.67	20.88	medium	5767
BKGmw-006	Background	7/16/2012	16:34	23.18	37.67	hard	OH02911
BKGmw-008	Background	7/23/2012	14:00	17.66	27.48	hard	5769
BKGmw-010	Background	7/16/2012	13:13	18.24	21.97	hard	5769
BKGmw-012	Background	7/24/2012	12:40	11.48	63.26	hard	5769
BKGmw-013	Background	7/17/2012	12:10	12.69	27.97	hard	5769
BKGmw-015	Background	7/16/2012	16:39	49.95	53.10	hard	OH02911
BKGmw-016	Background	7/16/2012	13:52	8.29	21.13	hard	5767
BKGmw-017	Background	7/16/2012	12:49	20.85	35.90	medium	5767

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
BKGmw-018	Background	7/16/2012	16:20	16.07	26.63	hard	OH02911
BKGmw-019	Background	7/16/2012	16:14	20.69	35.56	hard	OH02911
BKGmw-020	Background	7/17/2012	10:37	12.47	33.31	hard	5769
BKGmw-021	Background	7/23/2012	13:35	15.34	21.46	hard	5769
CBLmw-001	C-Block Quarry	7/16/2012	11:51	43.03	50.40	hard	5767
CBLmw-002	C-Block Quarry	7/16/2012	12:01	37.66	47.30	hard	5767
CBLmw-003	C-Block Quarry	7/16/2012	11:25	36.17	44.70	hard	5767
CBLmw-004	C-Block Quarry	7/16/2012	11:35	36.02	46.92	medium	5767
CBLmw-005	C-Block Quarry	7/16/2012	11:13	24.32	32.40	hard	5767
CBPmw-001	Central Burn Pits	7/16/2012	14:16	13.48	34.11	hard	5769
CBPmw-002	Central Burn Pits	7/16/2012	14:10	8.72	31.68	hard	5769
CBPmw-003	Central Burn Pits	7/16/2012	13:52	13.52	30.14	hard	5769
CBPmw-004	Central Burn Pits	7/16/2012	14:00	11.59	29.61	soft	5769
CBPmw-005	Central Burn Pits	7/16/2012	13:56	12.82	27.33	hard	5769
CBPmw-006	Central Burn Pits	7/16/2012	14:04	8.65	25.20	soft	5769
CBPmw-007	Central Burn Pits	7/16/2012	13:48	16.90	31.85	hard	5769
CBPmw-008	Central Burn Pits	7/16/2012	13:32	16.71	27.92	hard	5769
CBPmw-009	Central Burn Pits	7/16/2012	14:13	11.13	66.56	hard	5769
CPmw-001	Cobb's Pond	7/16/2012	16:10	6.94	14.69	hard	5769
CPmw-002	Cobb's Pond	7/16/2012	16:30	4.99	14.94	hard	5769
CPmw-003	Cobb's Pond	7/16/2012	16:22	5.00	17.70	hard	5769
CPmw-004	Cobb's Pond	7/16/2012	13:42	13.38	22.52	hard	5769
CPmw-005	Cobb's Pond	7/16/2012	13:40	11.98	43.17	hard	5769
CPmw-006	Cobb's Pond	7/16/2012	13:28	9.16	20.67	hard	5769

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
DA2mw-104	Demo.Area 2	7/17/2012	10:47	21.71	29.18	hard	5769
DA2mw-105	Demo.Area 2	7/17/2012	11:09	4.42	16.21	hard	5769
DA2mw-106	Demo.Area 2	7/17/2012	11:14	9.78	16.78	hard	5769
DA2mw-107	Demo.Area 2	7/17/2012	11:16	9.86	16.81	hard	5769
DA2mw-108	Demo.Area 2	7/17/2012	11:01	7.01	17.13	hard	5769
DA2mw-109	Demo.Area 2	7/17/2012	11:45	16.49	24.31	soft	5769
DA2mw-110	Demo.Area 2	7/17/2012	11:48	11.79	22.33	hard	5769
DA2mw-111	Demo.Area 2	7/17/2012	11:40	8.37	14.77	hard	5769
DA2mw-112	Demo.Area 2	7/17/2012	11:32	8.15	17.04	hard	5769
DA2mw-113	Demo.Area 2	7/17/2012	11:28	8.79	16.28	hard	5769
DA2mw-114	Demo.Area 2	7/17/2012	10:59	5.79	21.73	hard	5769
DA2mw-115	Demo.Area 2	7/17/2012	11:18	6.74	46.79	hard	5769
DETmw-001B	Demo.Area 2	7/17/2012	10:50	24.49	38.50	hard	5769
DETmw-002	Demo.Area 2	7/17/2012	11:04	32.86	42.01	hard	5769
DETmw-003	Demo.Area 2	7/17/2012	11:20	9.82	16.00	hard	5769
DETmw-004	Demo.Area 2	7/17/2012	11:25	10.90	13.80	hard	5769
EBGmw-123	Erie Burning Grounds	7/16/2012	11:58	10.49	34.75	hard	5769
EBGmw-124	Erie Burning Grounds	7/16/2012	12:00	4.29	32.64	hard	5769
EBGmw-125	Erie Burning Grounds	7/16/2012	11:55	12.98	27.43	medium	5769
EBGmw-126	Erie Burning Grounds	7/16/2012	11:42	2.89	27.78	hard	5769
EBGmw-127	Erie Burning Grounds	7/16/2012	11:38	5.61	32.82	hard	5769
EBGmw-128	Erie Burning Grounds	7/16/2012	11:29	8.15	28.24	hard	5769
EBGmw-129	Erie Burning Grounds	7/16/2012	11:47	7.35	30.90	hard	5769
EBGmw-130	Erie Burning Grounds	7/16/2012	12:10	7.78	28.39	hard	5769

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
EBGmw-131	Erie Burning Grounds	7/16/2012	11:52	11.69	73.04	hard	5769
FBQmw-166	Fuze and Booster Quarry	7/16/2012	16:09	7.05	19.70	hard	5767
FBQmw-167	Fuze and Booster Quarry	7/16/2012	15:47	6.51	18.97	hard	5767
FBQmw-168	Fuze and Booster Quarry	7/16/2012	16:18	12.80	21.20	medium	5767
FBQmw-169	Fuze and Booster Quarry	7/16/2012	15:56	8.87	18.08	hard	5767
FBQmw-170	Fuze and Booster Quarry	7/16/2012	14:30	19.39	32.69	medium	5767
FBQmw-171	Fuze and Booster Quarry	7/16/2012	15:24	20.28	31.40	hard	5767
FBQmw-172	Fuze and Booster Quarry	7/16/2012	15:16	27.52	34.40	hard	5767
FBQmw-173	Fuze and Booster Quarry	7/16/2012	15:15	43.07	53.08	hard	OH02911
FBQmw-174	Fuze and Booster Quarry	7/16/2012	15:13	17.64	23.12	hard	OH02911
FBQmw-175	Fuze and Booster Quarry	7/16/2012	15:10	18.43	25.89	hard	OH02911
FBQmw-176	Fuze and Booster Quarry	7/16/2012	14:17	10.36	23.61	medium	5767
FBQmw-177	Fuze and Booster Quarry	7/16/2012	14:08	15.02	24.75	soft	5767
FWGmw-001	Facilitywide	7/23/2012	13:20	10.60	20.04	hard	5769
FWGmw-002	Facilitywide	7/23/2012	13:30	24.00	70.05	hard	5769
FWGmw-003	Facilitywide	7/16/2012	12:35	6.98	21.08	medium	5767
FWGmw-004	Facilitywide	7/16/2012	16:33	16.41	22.58	medium	5767
FWGmw-005	Facilitywide	7/16/2012	13:04	22.35	31.80	medium	5767
FWGmw-006	Facilitywide	7/16/2012	13:19	10.25	19.21	medium	5767
FWGmw-007	Facilitywide	7/24/2012	10:10	24.19	32.32	hard	5769
FWGmw-008	Facilitywide	7/16/2012	13:28	8.97	22.09	soft	OH1266
FWGmw-009	Facilitywide	7/16/2012	13:40	3.09	20.38	medium	5767
FWGmw-010	Facilitywide	7/16/2012	12:20	12.19	19.09	hard	5769
FWGmw-011	Facilitywide	7/16/2012	15:04	4.48	17.79	hard	5769
FWGmw-012	Facilitywide	7/16/2012	15:06	2.93	42.45	hard	5769
FWGmw-013	Facilitywide	7/17/2012	12:00	21.75	36.69	hard	5769
FWGmw-014	Facilitywide	7/16/2012	12:15	6.18	21.11	medium	5767
FWGmw-015	Facilitywide	7/16/2012	16:43	8.74	26.31	medium	5767
FWGmw-016	Facilitywide	7/16/2012	16:47	18.30	67.47	soft	5767

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
LL1mw-063	Loadline 1	7/16/2012	13:45	35.39	30.13	hard	OH1266
LL1mw-064	Loadline 1	7/16/2012	15:00	3.32	21.05	hard	5769
LL1mw-065	Loadline 1	7/16/2012	14:46	14.02	23.09	hard	5769
LL1mw-067	Loadline 1	7/16/2012	13:00	17.62	25.69	hard	5769
LL1mw-078	Loadline 1	7/16/2012	15:05	31.04	41.15	soft	OH1266
LL1mw-079	Loadline 1	7/16/2012	13:35	31.26	41.95	hard	OH1266
LL1mw-080	Loadline 1	7/16/2012	14:25	14.09	22.40	hard	OH1266
LL1mw-081	Loadline 1	7/16/2012	13:55	29.88	41.88	soft	OH1266
LL1mw-082	Loadline 1	7/16/2012	14:05	29.36	42.44	hard	OH1266
LL1mw-083	Loadline 1	7/16/2012	14:50	32.06	41.45	soft	OH1266
LL1mw-084	Loadline 1	7/16/2012	14:15	30.49	39.10	hard	OH1266
LL1mw-085	Loadline 1	7/16/2012	14:35	34.55	45.30	hard	OH1266
LL1mw-086	Loadline 1	7/16/2012	14:54	9.92	77.15	hard	5769
LL1mw-087	Loadline 1	7/16/2012	14:38	16.49	18.55	medium	OH1266
LL2mw-059	Loadline 2	7/16/2012	17:00	13.63	21.78	hard	OH1266
LL2mw-060	Loadline 2	7/16/2012	17:00	10.79	20.79	hard	5769
LL2mw-261	Loadline 2	7/16/2012	16:00	7.88	22.52	hard	OH1266
LL2mw-262	Loadline 2	7/16/2012	16:20	10.83	22.70	hard	OH1266
LL2mw-263	Loadline 2	7/16/2012	16:30	11.21	23.45	hard	OH1266
LL2mw-264	Loadline 2	7/16/2012	16:40	9.92	22.42	hard	OH1266
LL2mw-265	Loadline 2	7/16/2012	16:55	10.31	24.45	hard	OH1266
LL2mw-266	Loadline 2	7/16/2012	15:50	14.12	22.75	hard	OH1266
LL2mw-267	Loadline 2	7/16/2012	15:30	11.89	22.05	hard	OH1266
LL2mw-268	Loadline 2	7/16/2012	15:20	16.56	29.95	soft	OH1266
LL2mw-269	Loadline 2	7/16/2012	16:45	18.58	30.32	hard	OH1266
LL2mw-270	Loadline 2	7/16/2012	16:10	11.59	22.45	hard	OH1266
LL3mw-232	Loadline 3	7/17/2012	8:49	21.43	39.78	medium	5767
LL3mw-233	Loadline 3	7/17/2012	8:30	26.71	31.76	soft	5767
LL3mw-234	Loadline 3	7/17/2012	8:23	13.09	22.61	soft	5767

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
LL3mw-235	Loadline 3	7/17/2012	9:01	21.44	22.93	hard	5767
LL3mw-236	Loadline 3	7/17/2012	9:11	17.96	26.57	hard	5767
LL3mw-237	Loadline 3	7/17/2012	9:20	18.86	25.51	hard	5767
LL3mw-238	Loadline 3	7/17/2012	8:12	18.95	23.33	hard	5767
LL3mw-239	Loadline 3	7/17/2012	8:01	26.14	36.90	soft	5767
LL3mw-240	Loadline 3	7/17/2012	9:27	28.84	36.65	medium	5767
LL3mw-241	Loadline 3	7/17/2012	8:40	15.78	25.53	hard	5767
LL3mw-242	Loadline 3	7/16/2012	17:07	17.94	22.54	hard	5769
LL3mw-243	Loadline 3	7/16/2012	17:09	17.21	26.33	hard	5769
LL3mw-244	Loadline 3	7/16/2012	16:40	14.54	47.10	hard	5769
LL3mw-245	Loadline 3	7/17/2012	12:30	13.51	48.80	hard	OH1266
LL4mw-193	Loadline 4	7/16/2012	15:41	8.39	24.18	medium	5769
LL4mw-194	Loadline 4	7/16/2012	15:45	10.73	23.42	hard	5769
LL4mw-195	Loadline 4	7/16/2012	16:06	12.14	22.74	soft	5769
LL4mw-196	Loadline 4	7/16/2012	16:00	14.12	21.70	hard	5769
LL4mw-197	Loadline 4	7/16/2012	15:57	14.94	23.58	hard	5769
LL4mw-198	Loadline 4	7/16/2012	16:03	10.24	21.68	hard	5769
LL4mw-199	Loadline 4	7/16/2012	15:34	7.95	23.14	hard	5769
LL4mw-200	Loadline 4	7/16/2012	15:30	18.13	25.08	hard	5769
LL4mw-201	Loadline 4	7/16/2012	15:36	9.77	70.72	hard	5769
LL5mw-001	Loadline 5	7/16/2012	12:30	21.42	27.10	medium	OH02911
LL5mw-002	Loadline 5	7/16/2012	13:00	22.17	27.56	hard	OH02911
LL5mw-003	Loadline 5	7/16/2012	12:55	20.88	24.40	hard	OH02911
LL5mw-004	Loadline 5	7/16/2012	12:50	19.38	25.39	soft	OH02911
LL5mw-005	Loadline 5	7/16/2012	12:32	22.92	29.74	soft	OH02911
LL5mw-006	Loadline 5	7/16/2012	12:42	21.53	27.10	hard	OH02911
LL6mw-001	Loadline 6	7/20/2012	10:14	16.02	17.54	hard	5767
LL6mw-002	Loadline 6	7/20/2012	9:52	22.38	24.43	hard	5767
LL6mw-003	Loadline 6	7/20/2012	9:00	17.46	25.60	soft	5767

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
LL6mw-004	Loadline 6	7/20/2012	9:47	18.30	24.48	hard	5767
LL6mw-005	Loadline 6	7/20/2012	9:12	13.23	22.03	soft	5767
LL6mw-006	Loadline 6	7/20/2012	10:03	15.66	17.72	hard	5767
LL6mw-007	Loadline 6	7/20/2012	9:32	8.79	19.36	medium	5767
LL6mw-008	Loadline 6	7/20/2012	9:20	16.76	20.20	medium	5767
LL6mw-009	Loadline 6	7/20/2012	9:22	16.32	41.34	soft	5767
LL7mw-001	Loadline 7	7/20/2012	10:22	21.83	33.02	hard	5767
LL7mw-002	Loadline 7	7/20/2012	10:28	18.15	27.18	hard	5767
LL7mw-003	Loadline 7	7/20/2012	10:35	12.85	33.49	hard	5767
LL7mw-004	Loadline 7	7/20/2012	10:43	15.23	32.18	hard	5767
LL7mw-005	Loadline 7	7/20/2012	10:50	22.99	30.31	hard	5767
LL7mw-006	Loadline 7	7/20/2012	11:00	12.93	30.27	hard	5767
LL8mw-001	Loadline 8	7/20/2012	11:10	13.18	27.47	soft	5767
LL8mw-002	Loadline 8	7/20/2012	11:20	20.23	32.55	hard	5767
LL8mw-003	Loadline 8	7/20/2012	11:15	14.67	23.00	hard	5767
LL8mw-004	Loadline 8	7/20/2012	11:27	13.19	22.70	hard	5767
LL8mw-005	Loadline 8	7/20/2012	11:32	15.06	27.74	soft	5767
LL8mw-006	Loadline 8	7/20/2012	11:38	20.99	27.05	soft	5767
LL9mw-001	Loadline 9	7/16/2012	11:40	16.92	23.38	hard	OH02911
LL9mw-002	Loadline 9	7/16/2012	11:28	15.19	22.79	hard	OH02911
LL9mw-003	Loadline 9	7/16/2012	11:32	14.29	24.26	hard	OH02911
LL9mw-004	Loadline 9	7/16/2012	11:04	21.69	34.73	hard	OH02911
LL9mw-005	Loadline 9	7/16/2012	11:23	17.98	23.55	hard	OH02911
LL9mw-006	Loadline 9	7/16/2012	11:10	20.36	28.88	hard	OH02911
LL9mw-007	Loadline 9	7/16/2012	11:12	10.83	18.20	hard	OH02911
LL10mw-001	Loadline 10	7/16/2012	12:05	25.23	29.63	hard	OH02911
LL10mw-002	Loadline 10	7/16/2012	11:55	18.71	29.84	hard	OH02911
LL10mw-003	Loadline 10	7/16/2012	12:10	21.62	28.59	hard	OH02911
LL10mw-004	Loadline 10	7/16/2012	12:17	14.61	33.57	hard	OH02911

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
LL10mw-005	Loadline 10	7/16/2012	12:00	16.77	24.29	hard	OH02911
LL10mw-006	Loadline 10	7/16/2012	11:50	14.01	26.52	medium	OH02911
LL11mw-001	Loadline 11	7/16/2012	14:44	13.50	23.45	hard	OH02911
LL11mw-002	Loadline 11	7/16/2012	13:35	5.49	16.51	hard	OH02911
LL11mw-003	Loadline 11	7/16/2012	13:46	5.09	16.09	soft	OH02911
LL11mw-004	Loadline 11	7/16/2012	13:55	2.96	16.24	hard	OH02911
LL11mw-005	Loadline 11	7/16/2012	14:02	10.50	16.48	hard	OH02911
LL11mw-006	Loadline 11	7/16/2012	14:08	8.64	15.58	hard	OH02911
LL11mw-007	Loadline 11	7/16/2012	14:21	16.20	25.40	hard	OH02911
LL11mw-008	Loadline 11	7/16/2012	14:17	5.89	15.78	hard	OH02911
LL11mw-009	Loadline 11	7/16/2012	14:37	6.70	19.58	hard	OH02911
LL11mw-010	Loadline 11	7/16/2012	14:23	7.68	23.52	hard	OH02911
LL11mw-011	Loadline 11	7/16/2012	10:58	9.30	20.44	medium	5767
LL11mw-012	Loadline 11	7/16/2012	11:04	21.38	119.45	hard	OH02911
LL12mw-088	Loadline 12	7/17/2012	11:00	7.36	27.45	hard	OH1266
LL12mw-107	Loadline 12	7/17/2012	11:10	9.99	33.75	hard	OH1266
LL12mw-113	Loadline 12	7/17/2012	9:30	8.63	19.80	soft	OH1266
LL12mw-128	Loadline 12	7/17/2012	11:35	10.13	34.03	hard	OH1266
LL12mw-153	Loadline 12	7/17/2012	11:50	7.13	24.80	hard	OH1266
LL12mw-154	Loadline 12	7/17/2012	11:45	9.63	28.65	hard	OH1266
LL12mw-182	Loadline 12	7/17/2012	12:00	11.41	38.02	hard	OH1266
LL12mw-182ss	Loadline 12	7/17/2012	12:05	11.37	38.50	hard	OH1266
LL12mw-183	Loadline 12	7/17/2012	10:05	13.25	36.35	hard	OH1266
LL12mw-184	Loadline 12	7/17/2012	10:50	13.10	31.10	hard	OH1266
LL12mw-185	Loadline 12	7/17/2012	9:40	8.39	23.30	hard	OH1266
LL12mw-186	Loadline 12	7/17/2012	9:15	8.89	21.05	hard	OH1266
LL12mw-187	Loadline 12	7/17/2012	9:35	11.05	29.95	hard	OH1266
LL12mw-188	Loadline 12	7/17/2012	9:24	7.53	22.10	soft	OH1266
LL12mw-189	Loadline 12	7/17/2012	9:10	9.34	19.64	hard	OH1266

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
LL12mw-242	Loadline 12	7/17/2012	9:45	10.74	28.80	soft	OH1266
LL12mw-243	Loadline 12	7/17/2012	11:30	9.42	24.40	hard	OH1266
LL12mw-244	Loadline 12	7/17/2012	9:50	11.30	30.70	soft	OH1266
LL12mw-245	Loadline 12	7/17/2012	11:20	8.36	30.44	medium	OH1266
LL12mw-246	Loadline 12	7/17/2012	9:58	16.97	35.05	hard	OH1266
LL12mw-247	Loadline 12	7/16/2012	16:48	6.79	22.58	hard	5769
LNWmw-024	Landfill North of Winklepeck	7/17/2012	10:25	13.98	22.50	hard	5769
LNWmw-025	Landfill North of Winklepeck	7/17/2012	10:30	5.98	20.34	hard	5769
LNWmw-026	Landfill North of Winklepeck	7/17/2012	10:20	12.84	25.93	hard	5769
LNWmw-027	Landfill North of Winklepeck	7/17/2012	10:15	8.75	26.84	hard	5769
NTAmw-107	NACA Test Area	7/17/2012	11:00	12.92	24.10	soft	5767
NTAmw-108	NACA Test Area	7/17/2012	10:54	17.92	24.41	medium	5767
NTAmw-109	NACA Test Area	7/17/2012	11:10	12.53	20.38	soft	5767
NTAmw-110	NACA Test Area	7/17/2012	11:22	14.91	29.74	hard	5767
NTAmw-111	NACA Test Area	7/17/2012	9:55	8.16	22.02	hard	5767
NTAmw-112	NACA Test Area	7/17/2012	10:01	9.64	26.56	medium	5767
NTAmw-113	NACA Test Area	7/17/2012	10:09	7.80	29.60	hard	5767
NTAmw-114	NACA Test Area	7/17/2012	10:15	7.74	22.65	hard	5767
NTAmw-115	NACA Test Area	7/17/2012	10:23	16.03	25.29	hard	5767
NTAmw-116	NACA Test Area	7/17/2012	10:31	8.56	22.54	hard	5767
NTAmw-117	NACA Test Area	7/17/2012	10:38	16.65	27.50	medium	5767
NTAmw-118	NACA Test Area	7/17/2012	10:45	10.39	24.62	medium	5767
NTAmw-119	NACA Test Area	7/17/2012	11:17	12.90	104.68	hard	OH02911
RQLmw-006	Ramsdell Quarry Landfill	7/16/2012	12:45	33.83	42.05	hard	OH1266
RQLmw-007	Ramsdell Quarry Landfill	7/16/2012	11:55	6.24	18.60	hard	OH1266
RQLmw-008	Ramsdell Quarry Landfill	7/16/2012	12:05	6.38	18.68	hard	OH1266
RQLmw-009	Ramsdell Quarry Landfill	7/16/2012	12:15	5.02	18.85	hard	OH1266
RQLmw-010	Ramsdell Quarry Landfill	7/16/2012	12:45	25.45	35.26	hard	5769
RQLmw-011	Ramsdell Quarry Landfill	7/16/2012	12:25	22.19	35.36	hard	OH1266

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
RQLmw-012	Ramsdell Quarry Landfill	7/16/2012	12:35	22.07	32.70	hard	OH1266
RQLmw-013	Ramsdell Quarry Landfill	7/16/2012	12:43	25.64	36.40	hard	5769
RQLmw-014	Ramsdell Quarry Landfill	7/16/2012	12:31	20.49	31.48	hard	5769
RQLmw-015	Ramsdell Quarry Landfill	7/16/2012	13:10	30.66	42.05	hard	OH1266
RQLmw-016	Ramsdell Quarry Landfill	7/16/2012	13:00	34.09	41.70	hard	OH1266
RQLmw-017	Ramsdell Quarry Landfill	7/16/2012	12:55	29.17	32.70	hard	5769
SCFmw-001	Sharon Conglomerate	7/16/2012	13:15	89.51	214.50	medium	OH02911
SCFmw-002	Sharon Conglomerate	7/16/2012	16:50	18.28	150.30	medium	5769
SCFmw-003	Sharon Conglomerate	7/16/2012	16:58	8.49	139.65	medium	5769
SCFmw-004	Sharon Conglomerate	7/16/2012	14:42	0.45	112.50	medium	5769
SCFmw-005	Sharon Conglomerate	7/16/2012	12:28	11.81	156.40	medium	5769
SCFmw-006	Sharon Conglomerate	7/23/2012	13:50	18.36	87.89	hard	5769
WBGmw-005	Winklepeck Burning Grounds	7/17/2012	9:30	7.76	21.14	hard	5769
WBGmw-006	Winklepeck Burning Grounds	7/17/2012	7:55	9.99	20.14	hard	5769
WBGmw-007	Winklepeck Burning Grounds	7/17/2012	8:15	18.39	26.38	hard	5769
WBGmw-008	Winklepeck Burning Grounds	7/17/2012	8:25	15.98	20.82	hard	5769
WBGmw-009	Winklepeck Burning Grounds	7/17/2012	9:05	15.18	24.26	hard	5769
WBGmw-010	Winklepeck Burning Grounds	7/17/2012	9:43	9.39	23.24	hard	5769
WBGmw-011	Winklepeck Burning Grounds	7/17/2012	9:25	11.95	23.84	hard	5769
WBGmw-012	Winklepeck Burning Grounds	7/17/2012	9:15	22.39	31.68	hard	5769
WBGmw-013	Winklepeck Burning Grounds	7/17/2012	10:00	11.94	24.04	hard	5769
WBGmw-014	Winklepeck Burning Grounds	7/17/2012	4:00	17.49	24.98	hard	5769
WBGmw-015	Winklepeck Burning Grounds	7/17/2012	8:30	14.25	23.48	hard	5769
WBGmw-016	Winklepeck Burning Grounds	7/17/2012	8:10	18.20	25.21	hard	5769
WBGmw-017	Winklepeck Burning Grounds	7/17/2012	9:50	9.34	23.35	hard	5769
WBGmw-018	Winklepeck Burning Grounds	7/17/2012	8:00	21.70	24.81	hard	5769
WBGmw-019	Winklepeck Burning Grounds	7/17/2012	8:05	18.38	50.44	hard	5769
WBGmw-020	Winklepeck Burning Grounds	7/17/2012	8:35	14.02	43.80	hard	5769
WBGmw-021	Winklepeck Burning Grounds	7/17/2012	7:50	10.65	43.12	hard	5769

*All measurements from top of casing
NR = Not Recorded

COMPREHENSIVE WATER LEVEL MEASUREMENTS

RVAAP FACILITY-WIDE GROUNDWATER MONITORING PROGRAM July 2012

Well Number	Location	Date	Time	Depth to Water*	Depth to Bottom	Description of bottom	Instrument/Serial Number
MBSmw-001	Mustard Agent Burial Site	7/24/2012	9:20	17.96	31.08	hard	5769
MBSmw-002	Mustard Agent Burial Site	7/24/2012	9:30	18.49	31.24	hard	5769
MBSmw-003	Mustard Agent Burial Site	7/24/2012	9:45	18.84	30.80	hard	5769
MBSmw-004	Mustard Agent Burial Site	7/24/2012	9:50	16.94	27.24	hard	5769
MBSmw-005	Mustard Agent Burial Site	7/24/2012	9:25	18.19	30.00	hard	5769
MBSmw-006	Mustard Agent Burial Site	7/24/2012	9:10	17.64	28.20	hard	5769

*All measurements from top of casing
NR = Not Recorded

APPENDIX D

OCTOBER 2011
WATER LEVEL MEASUREMENTS & POTENTIOMETRIC MAPS

Depth to Water and Potentiometric Elevation (October 2011)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	October 2011 Depth to Water (ft, BTOC)	Potentiometric Elevation October 2011 (ft, amsl)
Background	BKGmw-004	Unconsolidated	967.66	13.35	954.31
	BKGmw-005	Unconsolidated	1151.94	12.34	1139.60
	BKGmw-006	Sharon	1028.88	23.38	1005.50
	BKGmw-008	Sharon	972.90	17.31	955.59
	BKGmw-010	Sharon	1006.18	16.46	989.72
	BKGmw-012	Sharon	1000.07	9.02	991.05
	BKGmw-013	Unconsolidated	989.09	12.71	976.38
	BKGmw-015	Sharon	1040.40	48.89	991.51
	BKGmw-016	Unconsolidated	1100.92	6.78	1094.14
	BKGmw-017	Unconsolidated	1135.30	18.12	1117.18
	BKGmw-018	Sharon	1045.56	16.34	1029.22
	BKGmw-019	Unconsolidated	1110.74	21.54	1089.20
	BKGmw-020	Unconsolidated	1067.50	10.00	1057.50
	BKGmw-021	Unconsolidated	974.66	15.32	959.34
Load Line 1	LL1mw-063	Sharon	994.84	26.70	968.14
	LL1mw-064	Unconsolidated	935.10	1.72	933.38
	LL1mw-065	Unconsolidated	944.41	11.62	932.79
	LL1mw-067	Sharon	980.36	19.50	960.86
	LL1mw-078	Sharon	995.84	32.99	962.85
	LL1mw-079	Sharon	997.87	33.00	964.87
	LL1mw-080	Sharon	996.27	9.80	986.47
	LL1mw-081	Sharon	998.92	29.60	969.32
	LL1mw-082	Sharon	1006.45	28.38	978.07
	LL1mw-083	Sharon	995.20	33.90	961.30
	LL1mw-084	Sharon	998.73	28.10	970.63
	LL1mw-085	Sharon	996.84	35.90	960.94
Load Line 2	LL2mw-059	Sharon	966.67	14.24	952.43
	LL2mw-060	Sharon	961.57	10.86	950.71
	LL2mw-261	Sharon	1011.40	6.99	1004.41
	LL2mw-262	Sharon	1012.62	7.32	1005.30
	LL2mw-263	Sharon	1011.47	7.45	1004.02
	LL2mw-264	Sharon	1011.88	5.55	1006.33
	LL2mw-265	Sharon	961.24	10.62	950.62
	LL2mw-266	Sharon	1016.28	11.02	1005.26
	LL2mw-267	Sharon	1014.81	9.32	1005.49
	LL2mw-268	Sharon	1017.28	14.48	1002.80
	LL2mw-269	Sharon	1011.62	16.65	994.97
	LL2mw-270	Sharon	1010.18	8.01	1002.17
Load Line 3	LL3mw-232	Sharon	1000.41	19.72	980.69
	LL3mw-233	Sharon	1004.36	26.78	977.58
	LL3mw-234	Sharon	1006.56	10.02	996.54
	LL3mw-235	Sharon	1009.94	17.63	992.31
	LL3mw-236	Sharon	1011.17	15.78	995.39
	LL3mw-237	Sharon	1005.57	15.15	990.42
	LL3mw-238	Sharon	1006.91	15.09	991.82
	LL3mw-239	Sharon	1003.50	24.21	979.29
	LL3mw-240	Sharon	1007.52	28.73	978.79
	LL3mw-241	Sharon	994.65	9.53	985.12
	LL3mw-242	Sharon	999.32	16.78	982.54
	LL3mw-243	Sharon	991.16	14.34	976.82

Depth to Water and Potentiometric Elevation (October 2011)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	October 2011 Depth to Water (ft, BTOC)	Potentiometric Elevation October 2011 (ft, amsl)
Load Line 4	LL4mw-193	Unconsolidated	982.92	6.84	976.08
	LL4mw-194	Unconsolidated	983.76	9.27	974.49
	LL4mw-195	Unconsolidated	982.59	11.28	971.31
	LL4mw-196	Unconsolidated	984.55	13.60	970.95
	LL4mw-197	Unconsolidated	985.46	4.82	980.64
	LL4mw-198	Unconsolidated	983.42	9.00	974.42
	LL4mw-199	Unconsolidated	977.28	7.91	969.37
	LL4mw-200	Unconsolidated	987.93	18.26	969.67
Load Line 5	LL5mw-001	Homewood	1127.92	21.47	1106.45
	LL5mw-002	Homewood	1128.68	22.26	1106.42
	LL5mw-003	Unconsolidated	1127.70	21.10	1106.60
	LL5mw-004	Homewood	1125.81	19.39	1106.42
	LL5mw-005	Homewood	1129.42	22.98	1106.44
	LL5mw-006	Homewood	1128.00	21.59	1106.41
Load Line 6	LL6mw-001	Unconsolidated	1124.16	15.21	1108.95
	LL6mw-002	Unconsolidated	1129.36	22.26	1107.10
	LL6mw-003	Homewood	1125.38	17.62	1107.76
	LL6mw-004	Homewood	1125.39	18.21	1107.18
	LL6mw-005	Homewood	1120.47	13.20	1107.27
	LL6mw-006	Unconsolidated	1124.37	16.15	1108.22
	LL6mw-007	Homewood	1115.62	8.50	1107.12
Load Line 7	LL7mw-001	Homewood	1129.64	21.95	1107.69
	LL7mw-002	Homewood	1129.55	18.00	1111.55
	LL7mw-003	Homewood	1120.84	12.80	1108.04
	LL7mw-004	Homewood	1126.32	16.10	1110.22
	LL7mw-005	Homewood	1135.87	22.92	1112.95
	LL7mw-006	Homewood	1123.56	12.21	1111.35
Load Line 8	LL8mw-001	Unconsolidated	1121.46	13.38	1108.08
	LL8mw-002	Unconsolidated	1124.51	20.84	1103.67
	LL8mw-003	Unconsolidated	1119.05	15.10	1103.95
	LL8mw-004	Unconsolidated	1115.75	13.52	1102.23
	LL8mw-005	Homewood	1115.73	15.27	1100.46
	LL8mw-006	Homewood	1117.17	21.50	1095.67
Load Line 9	LL9mw-001	Homewood	1134.62	16.59	1118.03
	LL9mw-002	Homewood	1127.30	12.97	1114.33
	LL9mw-003	Homewood	1135.76	12.64	1123.12
	LL9mw-004	Homewood	1131.83	22.13	1109.70
	LL9mw-005	Homewood	1130.93	17.38	1113.55
	LL9mw-006	Homewood	1129.88	20.35	1109.53
	LL9mw-007	Homewood	1119.99	10.43	1109.56
Load Line 10	LL10mw-001	Homewood	1132.77	25.84	1106.93
	LL10mw-002	Homewood	1127.13	18.84	1108.29
	LL10mw-003	Homewood	1130.28	21.44	1108.84
	LL10mw-004	Homewood	1122.39	14.82	1107.57
	LL10mw-005	Homewood	1125.67	17.09	1108.58
	LL10mw-006	Unconsolidated	1123.83	14.32	1109.51

Depth to Water and Potentiometric Elevation (October 2011)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	October 2011 Depth to Water (ft, BTOC)	Potentiometric Elevation October 2011 (ft, amsl)
Load Line 11	LL11mw-001	Unconsolidated	1100.16	10.26	1089.90
	L L11mw-002	Unconsolidated	1080.00	6.99	1073.01
	LL11mw-003	Unconsolidated	1088.48	2.70	1085.78
	LL11mw-004	Unconsolidated	1084.72	2.05	1082.67
	LL11mw-005	Unconsolidated	1079.40	8.11	1071.29
	LL11mw-006	Unconsolidated	1086.50	4.39	1082.11
	LL11mw-007	Unconsolidated	1082.00	14.13	1067.87
	LL11mw-008	Unconsolidated	1087.74	1.80	1085.94
	LL11mw-009	Unconsolidated	1091.54	3.35	1088.19
	LL11mw-010	Unconsolidated	1082.68	4.84	1077.84
Load Line 12	LL12mw-088	Unconsolidated	981.06	7.26	973.80
	LL12mw-107	Unconsolidated	980.15	10.26	969.89
	LL12mw-113	Sharon Shale	980.18	5.22	974.96
	LL12mw-128	Unconsolidated	978.24	10.22	968.02
	LL12mw-153	Unconsolidated	977.85	6.43	971.42
	LL12mw-154	Unconsolidated	979.06	9.13	969.93
	LL12mw-182	Unconsolidated	984.42	11.20	973.22
	LL12mw-183	Sharon Shale	982.98	13.50	969.48
	LL12mw-184	Unconsolidated	983.16	13.30	969.86
	LL12mw-185	Unconsolidated	981.31	9.40	971.91
	LL12mw-186	Sharon Shale	978.31	5.85	972.46
	LL12mw-187	Unconsolidated	979.94	9.81	970.13
	LL12mw-188	Unconsolidated	980.63	4.70	975.93
	LL12mw-189	Sharon Shale	978.04	4.24	973.80
	LL12mw-242	Unconsolidated	981.20	8.80	972.40
	LL12mw-243	Unconsolidated	980.79	9.55	971.24
	LL12mw-244	Unconsolidated	980.65	10.36	970.29
	LL12mw-245	Unconsolidated	980.04	8.68	971.36
	LL12mw-246	Unconsolidated	984.83	17.16	967.67
Atlas Scrap Yard	ASYmw-001	Sharon	981.13	12.39	968.74
	ASYmw-002	Sharon	985.24	15.79	969.45
	ASYmw-003	Sharon	982.21	13.43	968.78
	ASYmw-004	Sharon	979.66	10.08	969.58
	ASYmw-005	Sharon	979.80	8.56	971.24
	ASYmw-006	Sharon	983.01	14.64	968.37
	ASYmw-007	Unconsolidated	984.16	15.75	968.41
	ASYmw-008	Unconsolidated	978.85	5.64	973.21
	ASYmw-009	Sharon	982.70	12.94	969.76
	ASYmw-010	Unconsolidated	981.05	12.89	968.16
Building 1200	B12mw-010	Sharon	1005.92	18.05	987.87
	B12mw-011	Sharon	1006.70	19.80	986.90
	B12mw-012	Sharon	1006.32	19.97	986.35
C-Block Quarry	CBLmw-001	Homewood	1181.08	43.78	1137.30
	CBLmw-002	Homewood	1175.24	38.25	1136.99
	CBLmw-003	Homewood	1175.06	36.74	1138.32
	CBLmw-004	Homewood	1174.84	36.38	1138.46

Depth to Water and Potentiometric Elevation (October 2011)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	October 2011 Depth to Water (ft, BTOC)	Potentiometric Elevation October 2011 (ft, amsl)
Central Burn Pits	CBPmw-001	Unconsolidated	975.84	13.10	962.74
	CBPmw-002	Unconsolidated	970.04	9.10	960.94
	CBPmw-003	Unconsolidated	974.67	12.49	962.18
	CBPmw-004	Unconsolidated	971.13	11.05	960.08
	CBPmw-005	Unconsolidated	971.59	12.33	959.26
	CBPmw-006	Unconsolidated	967.64	8.11	959.53
	CBPmw-007	Unconsolidated	976.37	15.96	960.41
	CBPmw-008	Unconsolidated	973.19	16.31	956.88
Cobbs Pond	CPmw-001	Unconsolidated	975.26	3.96	971.30
	CPmw-002	Unconsolidated	972.31	0.12	972.19
	CPmw-003	Unconsolidated	972.92	0.80	972.12
	CPmw-004	Unconsolidated	981.20	10.84	970.36
	CPmw-005	Unconsolidated	973.58	11.37	962.21
	CPmw-006	Unconsolidated	965.13	9.96	955.17
Demolition Area 2	DETmw-001B	Unconsolidated	1065.85	23.71	1042.14
	DETmw-002	Unconsolidated	1061.24	32.78	1028.46
	DETmw-003	Unconsolidated	1036.81	9.65	1027.16
	DETmw-004	Unconsolidated	1038.68	10.74	1027.94
	DA2mw-104	Unconsolidated	1073.89	22.09	1051.80
	DA2mw-105	Unconsolidated	1045.34	3.24	1042.10
	DA2mw-106	Unconsolidated	1043.79	5.23	1038.56
	DA2mw-107	Unconsolidated	1041.63	8.49	1033.14
	DA2mw-108	Unconsolidated	1032.36	6.95	1025.41
	DA2mw-109	Unconsolidated	1071.29	16.18	1055.11
	DA2mw-110	Unconsolidated	1063.78	10.55	1053.23
	DA2mw-111	Unconsolidated	1042.12	7.41	1034.71
	DA2mw-112	Unconsolidated	1037.44	7.59	1029.85
	DA2mw-113	Unconsolidated	1037.11	7.79	1029.32
Erie Burning Grounds	EBGmw-123	Unconsolidated	947.82	9.30	938.52
	EBGmw-124	Unconsolidated	941.39	2.97	938.42
	EBGmw-125	Unconsolidated	949.89	7.43	942.46
	EBGmw-126	Unconsolidated	940.61	1.98	938.63
	EBGmw-127	Unconsolidated	943.07	4.09	938.98
	EBGmw-128	Unconsolidated	945.13	6.46	938.67
	EBGmw-129	Unconsolidated	944.36	5.59	938.77
	EBGmw-130	Unconsolidated	944.00	6.05	937.95
Fuze and Booster Quarry	FBQmw-166	Unconsolidated	1108.86	5.18	1103.68
	FBQmw-167	Unconsolidated	1115.90	5.61	1110.29
	FBQmw-168	Homewood	1133.91	13.19	1120.72
	FBQmw-169	Homewood	1120.58	7.34	1113.24
	FBQmw-170	Homewood	1142.26	19.89	1122.37
	FBQmw-171	Homewood	1143.55	20.13	1123.42
	FBQmw-172	Homewood	1150.09	28.70	1121.39
	FBQmw-173	Homewood	1165.94	44.40	1121.54
	FBQmw-174	Homewood	1139.97	18.71	1121.26
	FBQmw-175	Homewood	1140.73	19.44	1121.29
	FBQmw-176	Unconsolidated	1131.91	10.95	1120.96
	FBQmw-177	Homewood	1128.57	15.15	1113.42
Landfill North of Winklepeck	LNWmw-024	Unconsolidated	1038.00	12.36	1025.64
	LNWmw-025	Unconsolidated	1029.13	4.67	1024.46
	LNWmw-026	Unconsolidated	1027.80	5.09	1022.71
	LNWmw-027	Unconsolidated	1027.13	7.22	1019.91

Depth to Water and Potentiometric Elevation (October 2011)

RVAAP Area	Well ID	Monitored Zone	TOC Elevation (ft, amsl)	October 2011 Depth to Water (ft, BTOC)	Potentiometric Elevation October 2011 (ft, amsl)
NACA Test Area	NTAmw-107	Unconsolidated	1080.30	13.28	1067.02
	NTAmw-108	Unconsolidated	1085.62	18.36	1067.26
	NTAmw-109	Unconsolidated	1079.84	12.55	1067.29
	NTAmw-110	Unconsolidated	1082.62	14.90	1067.72
	NTAmw-111	Unconsolidated	1080.94	4.64	1076.30
	NTAmw-112	Unconsolidated	1078.33	9.67	1068.66
	NTAmw-113	Unconsolidated	1075.68	7.65	1068.03
	NTAmw-114	Unconsolidated	1078.71	7.02	1071.69
	NTAmw-115	Unconsolidated	1089.65	14.45	1075.20
	NTAmw-116	Unconsolidated	1094.33	5.90	1088.43
	NTAmw-117	Unconsolidated	1094.54	14.52	1080.02
	NTAmw-118	Unconsolidated	1081.44	10.63	1070.81
Ramsdell Quarry Landfill	RQLmw-006	Sharon	995.39	35.40	959.99
	RQLmw-007	Sharon	965.91	6.31	959.60
	RQLmw-008	Sharon	966.08	6.64	959.44
	RQLmw-009	Sharon	964.58	4.95	959.63
	RQLmw-010	Sharon	982.14	25.39	956.75
	RQLmw-011	Sharon	976.57	22.06	954.51
	RQLmw-012	Sharon	977.65	22.21	955.44
	RQLmw-013	Sharon	980.71	25.41	955.30
	RQLmw-014	Sharon	973.49	20.21	953.28
	RQLmw-015	Sharon	991.26	32.06	959.20
	RQLmw-016	Sharon	996.60	36.24	960.36
	RQLmw-017	Sharon	991.23	30.50	960.73
Sharon Congolmerate	SCFmw-001	Sharon Conglomerate	1120.71	89.53	1031.18
	SCFmw-002	Sharon Conglomerate	984.56	19.98	964.58
	SCFmw-003	Sharon Conglomerate	958.47	8.95	949.52
	SCFmw-004	Sharon Conglomerate	944.17	0.00	944.17
	SCFmw-005	Sharon Conglomerate	960.80	10.68	950.12
	SCFmw-006	Sharon Conglomerate	965.92	17.84	948.08
Winklepeck Burning Grounds	WBGmw-005	Unconsolidated	1054.70	5.94	1048.76
	WBGmw-006	Unconsolidated	1014.66	6.60	1008.06
	WBGmw-007	Unconsolidated	1000.59	17.73	982.86
	WBGmw-008	Unconsolidated	1008.21	14.57	993.64
	WBGmw-009	Unconsolidated	1047.53	13.40	1034.13
	WBGmw-010	Unconsolidated	1069.85	8.14	1061.71
	WBGmw-011	Unconsolidated	1072.38	10.77	1061.61
	WBGmw-012	Unconsolidated	1079.11	21.82	1057.29
	WBGmw-013	Unconsolidated	1071.70	12.00	1059.70
	WBGmw-014	Unconsolidated	996.78	16.50	980.28
	WBGmw-015	Unconsolidated	1011.60	11.23	1000.37
	WBGmw-016	Unconsolidated	997.03	17.60	979.43
	WBGmw-017	Unconsolidated	1006.62	8.39	998.23
Suspected Mustard Agent Burial Site	MBS-001	Unconsolidated	1082.20	18.00	1064.20
	MBS-002	Unconsolidated	1083.22	18.68	1064.54
	MBS-003	Unconsolidated	1084.45	19.32	1065.13
	MBS-004	Unconsolidated	1081.80	17.28	1064.52
	MBS-005	Unconsolidated	1082.42	18.29	1064.13
	MBS-006	Unconsolidated	1081.83	12.79	1069.04

TOC = top of casing
amsl = above mean sea level
BTOC = below top of casing

Well Construction Details, Including October 2011 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	Oct 2011 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Background	BKGmw-004	2368852.97	569464.76	965.16	19.5	967.66	A	Unconsolidated	9.2	19.2	19.5	2.50	22.0	22.35	-0.35	hard
	BKGmw-005	2340835.86	562288.45	1,149.44	19.0	1,151.94	A	Unconsolidated	8.2	18.2	18.5	2.50	21.0	21.00	0.00	hard
	BKGmw-006	2358643.96	571910.47	1,026.38	35.1	1,028.88	A	Sharon	24.7	34.7	35.1	2.50	37.6	37.65	-0.05	hard
	BKGmw-008	2372741.08	569654.23	970.40	25.0	972.90	A	Sharon	14.7	24.7	25.0	2.50	27.5	27.48	0.02	hard
	BKGmw-010	2371372.86	565540.54	1,003.80	22.0	1,006.18	A	Sharon	8.9	18.9	19.2	2.38	21.6	22.10	-0.50	hard
	BKGmw-012	2367795.23	563918.86	997.57	59.8	1,000.07	A	Sharon	38.6	59.6	59.8	2.50	62.3	62.00	0.30	soft
	BKGmw-013	2361627.39	558269.16	986.59	25.5	989.09	A	Unconsolidated	15.2	25.2	25.5	2.50	28.0	27.96	0.04	hard
	BKGmw-015	2361482.22	569339.87	1,037.90	51.0	1,040.40	A	Sharon	30.1	50.1	50.4	2.50	52.9	53.72	-0.82	soft
	BKGmw-016	2342407.08	553983.50	1,098.42	19.0	1,100.92	A	Unconsolidated	8.4	18.5	18.6	2.50	21.1	21.28	-0.18	hard
	BKGmw-017	2346115.35	562452.04	1,132.80	34.8	1,135.30	A	Unconsolidated	23.2	33.3	33.6	2.50	36.1	36.02	0.08	soft
	BKGmw-018	2354993.91	570873.35	1,043.06	24.7	1,045.56	A	Sharon	14.5	24.5	24.7	2.50	27.2	27.64	-0.44	hard
	BKGmw-019	2349882.14	559864.55	1,108.24	34.0	1,110.74	A	Unconsolidated	23.0	33.0	33.2	2.50	35.7	35.58	0.12	hard
	BKGmw-020	2357856.24	558756.24	1,065.00	30.7	1,067.50	A	Unconsolidated	20.5	30.5	30.7	2.50	33.2	33.80	-0.60	hard
	BKGmw-021	2367622.95	571016.75	972.16	19.0	974.66	A	Unconsolidated	7.7	17.8	18.1	2.50	20.6	21.56	-0.96	hard
Load Line 1	LL1mw-063	2376841.36	563650.53	992.20	27.4	994.84	A	Sharon	17.1	27.1	27.4	2.64	30.0	29.94	0.06	medium
	LL1mw-064	2380286.97	563118.74	932.32	18.4	935.10	A	Unconsolidated	8.0	18.0	18.4	2.78	21.1	21.06	0.04	hard
	LL1mw-065	2380452.00	560916.92	941.53	20.5	944.41	A	Unconsolidated	10.2	20.2	20.5	2.88	23.4	23.26	0.14	hard
	LL1mw-067	2376545.30	565201.14	977.55	22.8	980.36	A	Sharon	12.8	22.5	22.8	2.81	25.6	25.67	-0.07	hard
	LL1mw-078	2376275.85	564623.87	993.40	38.7	995.84	A	Sharon	28.7	38.2	38.7	2.44	41.1	41.06	0.04	medium
	LL1mw-079	2376228.31	563739.63	995.30	29.5	997.87	A	Sharon	29.5	38.9	39.5	2.57	42.0	41.88	0.12	hard
	LL1mw-080	2376845.07	562479.73	993.70	19.5	996.27	A	Sharon	9.5	19.0	19.5	2.57	22.0	22.32	-0.32	hard
	LL1mw-081	2376672.66	563462.73	996.40	39.4	998.92	A	Sharon	29.4	38.9	39.4	2.52	41.9	41.95	-0.05	medium
	LL1mw-082	2376977.38	562956.86	1,003.70	39.0	1,006.45	A	Sharon	28.9	38.5	39.0	2.75	41.8	41.44	0.36	hard
	LL1mw-083	2377074.80	563612.75	992.80	39.3	995.20	A	Sharon	29.1	38.6	39.3	2.40	41.7	41.35	0.35	soft
	LL1mw-084	2377316.02	563160.44	996.40	37.0	998.73	A	Sharon	26.7	36.3	37.0	2.33	39.3	39.03	0.27	hard
	LL1mw-085	2377246.94	562046.25	994.30	42.1	996.84	A	Sharon	32.2	41.6	42.1	2.54	44.7	45.15	-0.45	hard
Load Line 2	LL2mw-059	2375453.00	558020.00	964.33	19.5	966.67	A	Sharon	9.3	19.1	19.5	2.34	21.8	21.86	-0.06	medium
	LL2mw-060	2375978.00	558022.00	958.93	18.3	961.57	A	Sharon	8.1	17.9	18.3	2.64	20.9	20.78	0.12	hard
	LL2mw-261	2373317.81	561898.25	1,009.55	22.5	1,011.40	A	Sharon	9.8	19.8	20.0	1.85	21.9	22.50	-0.60	hard
	LL2mw-262	2373970.79	562219.87	1,011.12	21.2	1,012.62	A	Sharon	10.6	20.6	20.8	1.50	22.3	23.68	-1.38	hard
	LL2mw-263	2374289.51	561591.19	1,009.42	22.2	1,011.47	A	Sharon	10.8	20.8	21.0	2.05	23.0	23.46	-0.46	hard
	LL2mw-264	2374532.00	561173.60	1,010.10	20.5	1,011.88	A	Sharon	9.8	19.8	20.0	1.78	21.7	22.41	-0.71	hard
	LL2mw-265	2375594.06	557972.91	959.47	22.5	961.24	A	Sharon	11.8	21.8	22.0	1.77	23.8	24.38	-0.58	hard
	LL2mw-266	2373744.03	561981.86	1,014.09	20.5	1,016.28	A	Sharon	9.8	19.8	20.0	2.19	22.2	22.75	-0.55	hard
	LL2mw-267	2373715.04	561393.22	1,012.81	20.5	1,014.81	A	Sharon	9.8	19.8	20.0	2.00	22.0	22.05	-0.05	hard
	LL2mw-268	2374157.30	560831.04	1,015.47	28.8	1,017.28	A	Sharon	17.3	27.3	27.5	1.81	29.3	29.90	-0.60	soft
	LL2mw-269	2374756.07	559484.12	1,009.49	28.0	1,011.62	A	Sharon	17.1	27.1	27.3	2.13	29.4	30.30	-0.90	hard
	LL2mw-270	2372858.41	562655.93	1,009.93	20.5	1,010.18	A	Sharon	9.8	19.8	20.0	0.25	20.3	22.45	-2.15	hard
Load Line 3	LL3mw-232	2369862.96	561365.91	998.59	37.8	1,000.41	A	Sharon	26.8	36.8	37.0	1.82	38.8	39.85	-1.05	hard
	LL3mw-233	2369934.52	560750.41	1,002.47	31.1	1,004.36	A	Sharon	20.1	30.1	30.3	1.89	32.2	31.90	0.30	soft
	LL3mw-234	2370297.47	560058.89	1,004.47	20.5	1,006.56	A	Sharon	9.8	19.8	20.0	2.09	22.1	22.68	-0.58	hard
	LL3mw-235	2370642.47	559812.63	1,008.05	21.2	1,009.94	A	Sharon	10.1	20.1	20.3	1.89	22.2	23.00	-0.80	hard
	LL3mw-236	2371178.58	559866.75	1,008.94	25.5	1,011.17	A	Sharon	13.8	23.8	24.0	2.23	26.2	26.65	-0.45	hard
	LL3mw-237	2371475.00	559328.09	1,003.57	23.9	1,005.57	A	Sharon	12.7	22.7	22.9	2.00	24.9	25.60	-0.70	hard
	LL3mw-238	2370625.34	559569.06	1,004.75	20.7	1,006.91	A	Sharon	10.5	20.5	20.7	2.16	22.9	23.40	-0.50	hard
	LL3mw-239	2370895.01	559101.39	1,001.70	35.7	1,003.50	A	Sharon	24.9	34.9	35.0	1.80	36.8	36.85	-0.05	soft
	LL3mw-240	2371309.57	558204.34	1,005.60	35.5	1,007.52	A	Sharon	24.4	34.4	34.6	1.92	36.5	36.63	-0.13	soft
	LL3mw-241	2370332.80	559298.09	992.41	23.8	994.65	A	Sharon	12.7	22.7	22.9	2.24	25.1	25.64	-0.54	hard
	LL3mw-242	2371993.30	557034.21	997.39	20.5	999.32	A	Sharon	9.8	19.8	20.0	1.93	21.9	22.55	-0.65	hard
	LL3mw-243	2371532.61	556688.92	989.36	24.5	991.16	A	Sharon	13.8	23.8	24.0	1.80	25.8	26.35	-0.55	hard

Well Construction Details, Including October 2011 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	Oct 2011 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Load Line 4	LL4mw-193	2364237.44	554959.74	980.88	21.9	982.92	A	Unconsolidated	11.3	21.3	21.5	2.04	23.5	24.20	-0.70	medium
	LL4mw-194	2364584.76	555088.18	981.87	22.0	983.76	A	Unconsolidated	11.3	21.3	21.5	1.89	23.4	23.50	-0.10	hard
	LL4mw-195	2365198.84	555045.69	980.83	21.0	982.59	A	Unconsolidated	10.3	20.3	20.5	1.76	22.3	22.75	-0.45	medium
	LL4mw-196	2365297.28	555212.59	982.56	20.0	984.55	A	Unconsolidated	9.2	19.2	19.4	1.99	21.4	21.80	-0.40	medium
	LL4mw-197	2365385.95	555396.55	983.79	21.7	985.46	A	Unconsolidated	10.8	20.8	21.0	1.67	22.7	23.62	-0.92	hard
	LL4mw-198	2364991.12	555440.99	981.61	22.0	983.42	A	Unconsolidated	10.3	20.3	20.5	1.81	22.3	21.75	0.55	hard
	LL4mw-199	2365421.66	554621.06	975.20	22.0	977.28	A	Unconsolidated	10.3	20.3	20.5	2.08	22.6	23.20	-0.60	hard
	LL4mw-200	2365904.12	554579.72	985.97	23.5	987.93	A	Unconsolidated	12.6	22.6	23.0	1.96	25.0	25.20	-0.20	hard
Load Line 5	LL5mw-001	2354625.07	554319.25	1,125.00	24.0	1,127.92	A	Homewood	14.0	24.0	24.0	2.92	26.9	27.01	-0.11	hard
	LL5mw-002	2354571.52	554604.01	1,125.80	25.0	1,128.68	A	Homewood	15.0	25.0	25.0	2.88	27.9	27.54	0.36	hard
	LL5mw-003	2354964.47	554535.41	1,124.70	21.0	1,127.70	A	Unconsolidated	11.0	21.0	21.0	3.00	24.0	23.97	0.03	hard
	LL5mw-004	2355006.44	554073.73	1,122.90	22.4	1,125.81	A	Homewood	12.0	22.0	22.0	2.91	24.9	25.31	-0.41	medium
	LL5mw-005	2354422.02	554152.73	1,126.50	27.8	1,129.42	A	Homewood	17.0	27.0	27.0	2.92	29.9	29.71	0.19	hard
	LL5mw-006	2354730.78	553984.82	1,125.10	24.5	1,128.00	A	Homewood	14.0	24.0	24.0	2.90	26.9	27.09	-0.19	hard
Load Line 6	LL6mw-001	2353153.23	554214.84	NA	18.0	1,124.16	F	Unconsolidated	7.0	17.0	17.0	0.00	17.0	17.66	-0.66	hard
	LL6mw-002	2353820.09	553589.88	NA	23.0	1,129.36	F	Unconsolidated	12.5	22.5	22.5	0.00	22.5	24.45	-1.95	hard
	LL6mw-003	2353048.68	553544.34	NA	23.4	1,125.38	A	Homewood	12.5	22.5	22.5	3.35	25.9	25.63	0.27	soft
	LL6mw-004	2353368.79	553431.82	NA	23.0	1,125.39	A	Homewood	12.5	22.5	22.5	2.58	25.1	24.50	0.60	hard
	LL6mw-005	2353194.52	553170.76	NA	19.9	1,120.47	A	Homewood	9.5	19.5	19.5	2.96	22.5	22.07	0.43	soft
	LL6mw-006	2352419.15	553165.28	NA	20.0	1,124.37	A	Unconsolidated	7.0	17.0	17.0	0.00	17.0	17.75	-0.75	hard
	LL6mw-007	2353354.89	552677.17	NA	20.0	1,115.62	F	Homewood	9.5	19.5	19.5	0.00	19.5	19.29	0.21	hard
Load Line 7	LL7mw-001	2352192.91	554925.77	1,126.90	30.0	1,129.64	A	Homewood	19.5	29.5	29.5	2.74	32.2	33.03	-0.83	hard
	LL7mw-002	2351918.23	555126.55	1,126.70	26.5	1,129.55	A	Homewood	15.0	25.0	25.0	2.85	27.8	27.13	0.67	hard
	LL7mw-003	2352351.04	555417.04	1,118.23	31.5	1,120.84	A	Homewood	21.0	31.0	31.0	2.61	33.6	33.51	0.09	hard
	LL7mw-004	2352035.20	555581.14	1,123.30	29.5	1,126.32	A	Homewood	19.5	29.5	29.5	3.02	32.5	32.20	0.30	hard
	LL7mw-005	2351741.47	555581.80	1,133.30	28.2	1,135.87	A	Homewood	18.0	28.0	28.0	2.57	30.6	30.28	0.32	hard
	LL7mw-006	2351879.92	555990.59	1,120.70	28.0	1,123.56	A	Homewood	17.5	27.5	27.5	2.86	30.4	30.30	0.10	hard
Load Line 8	LL8mw-001	2351666.10	552607.06	1,118.69	24.0	1,121.46	A	Unconsolidated	14.0	24.0	24.0	2.77	26.8	27.54	-0.74	soft
	LL8mw-002	2351010.33	552408.18	1,121.67	30.4	1,124.51	A	Unconsolidated	20.0	30.0	30.0	2.84	32.8	32.70	0.10	hard
	LL8mw-003	2351359.25	552231.14	1,116.30	21.0	1,119.05	A	Unconsolidated	10.5	20.5	20.5	2.75	23.3	23.06	0.24	hard
	LL8mw-004	2351261.83	551807.58	1,112.73	20.5	1,115.75	A	Unconsolidated	10.0	20.0	20.0	3.02	23.0	22.83	0.17	hard
	LL8mw-005	2351748.32	551522.48	1,112.51	24.0	1,115.73	A	Homewood	14.0	24.0	24.0	3.22	27.2	27.08	0.12	soft
	LL8mw-006	2351483.58	551296.77	1,114.33	24.2	1,117.17	A	Homewood	14.0	24.0	24.0	2.84	26.8	27.10	-0.30	soft
Load Line 9	LL9mw-001	2355817.04	556125.81	NA	21.6	1,134.62	A	Homewood	10.5	20.5	20.5	2.78	23.3	23.34	-0.04	hard
	LL9mw-002	2355907.76	556755.11	NA	21.0	1,127.30	A	Homewood	10.0	20.0	20.0	2.42	22.4	22.75	-0.35	hard
	LL9mw-003	2356635.21	556445.31	NA	22.0	1,135.76	A	Homewood	11.5	21.5	21.5	2.30	23.8	24.20	-0.40	hard
	LL9mw-004	2357338.76	556002.00	NA	33.0	1,131.83	A	Homewood	22.0	32.0	32.0	2.91	34.9	34.66	0.24	hard
	LL9mw-005	2356505.95	557063.36	NA	20.6	1,130.93	A	Homewood	10.0	20.0	20.0	3.30	23.3	23.50	-0.20	hard
	LL9mw-006	2357446.67	556434.79	NA	26.8	1,129.88	A	Homewood	16.0	26.0	26.0	2.90	28.9	28.80	0.10	hard
	LL9mw-007	2357024.34	557000.56	NA	19.0	1,119.99	F	Homewood	8.5	18.5	18.5	0.00	18.5	16.20	2.30	hard
Load Line 10	LL10mw-001	2355272.22	555816.25	1,130.00	28.0	1,132.77	A	Homewood	17.0	27.0	27.0	2.77	29.8	29.54	0.26	hard
	LL10mw-002	2355710.51	555523.36	1,124.40	28.0	1,127.13	A	Homewood	17.0	27.0	27.0	2.73	29.7	29.74	-0.04	hard
	LL10mw-003	2355389.92	555494.71	1,127.40	26.4	1,130.28	A	Homewood	16.0	26.0	26.0	2.88	28.9	28.50	0.40	hard
	LL10mw-004	2355438.20	555236.59	1,119.60	31.2	1,122.39	A	Homewood	21.0	31.0	31.0	2.79	33.8	33.44	0.36	hard
	LL10mw-005	2355943.55	555380.53	1,122.90	27.0	1,125.67	A	Homewood	16.5	26.5	26.5	2.77	29.3	29.90	-0.60	hard
	LL10mw-006	2355654.80	554995.25	1,121.20	24.0	1,123.83	A	Unconsolidated	13.5	23.5	23.5	2.63	26.1	26.40	-0.30	hard

Well Construction Details, Including October 2011 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	Oct 2011 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Load Line 11	LL11mw-001	2352778.89	557505.03	1,097.46	23.0	1,100.16	A	Unconsolidated	11.4	21.4	21.4	2.70	24.1	23.34	0.76	hard
	LL11mw-002	2353354.28	558310.52	1,080.29	20.0	1,080.00	F	Unconsolidated	6.3	16.3	16.3	-0.29	16.0	16.39	-0.39	hard
	LL11mw-003	2352737.87	557999.62	1,088.45	17.0	1,088.48	F	Unconsolidated	5.9	15.9	15.9	0.03	15.9	16.00	-0.10	soft
	LL11mw-004	2352737.24	558164.36	1,084.60	17.0	1,084.72	F	Unconsolidated	6.1	16.1	16.1	0.12	16.2	16.13	0.07	hard
	LL11mw-005	2352847.56	558501.02	1,079.60	17.0	1,079.40	F	Unconsolidated	6.2	16.2	16.2	-0.20	16.0	16.38	-0.38	hard
	LL11mw-006	2352521.36	558263.28	1,086.61	17.0	1,086.50	F	Unconsolidated	5.6	15.6	15.6	-0.11	15.5	15.65	-0.15	hard
	LL11mw-007	2352094.81	558189.71	1,079.22	23.0	1,082.00	A	Unconsolidated	12.4	22.4	22.4	2.78	25.2	25.25	-0.05	hard
	LL11mw-008	2352388.60	557981.17	1,087.90	17.0	1,087.74	F	Unconsolidated	5.6	15.6	15.6	-0.16	15.4	15.65	-0.25	hard
	LL11mw-009	2352577.18	557901.18	1,088.38	17.0	1,091.54	F	Unconsolidated	6.7	16.7	16.7	-0.10	16.6	19.45	-2.85	hard
	LL11mw-010	2352039.00	557675.43	1,080.22	22.0	1,082.68	A	Unconsolidated	10.9	20.9	20.9	2.46	23.4	23.40	0.00	hard
Load Line 12	LL12mw-088	2368667.75	556393.79	978.94	29.0	981.06	A	Unconsolidated	14.8	24.8	25.0	2.12	27.1	27.40	-0.30	hard
	LL12mw-107	2368595.67	556759.02	978.03	33.0	980.15	A	Unconsolidated	20.7	30.7	31.0	2.12	33.1	33.64	-0.54	hard
	LL12mw-113	2368223.73	558345.37	977.67	23.0	980.18	A	Sharon Shale	12.3	22.3	22.5	2.51	25.0	20.81	4.19	soft
	LL12mw-128	2368293.20	557371.54	976.21	34.0	978.24	A	Unconsolidated	21.1	31.1	31.3	2.03	33.3	33.98	-0.68	soft
	LL12mw-153	2368138.87	557823.23	975.34	26.0	977.85	A	Unconsolidated	12.3	22.3	22.5	2.51	25.0	25.05	-0.05	hard
	LL12mw-154	2368183.88	557754.56	977.00	29.0	979.06	A	Unconsolidated	16.4	26.4	26.6	2.06	28.7	28.66	0.04	hard
	LL12mw-182	2368853.20	555890.35	982.20	36.1	984.42	A	Unconsolidated	25.2	35.2	35.5	2.22	37.7	38.12	-0.42	soft
	LL12mw-183	2369224.36	556068.15	980.59	36.0	982.98	A	Sharon Shale	23.3	33.3	33.6	2.39	36.0	36.27	-0.27	hard
	LL12mw-184	2368997.48	556399.46	980.96	29.5	983.16	A	Unconsolidated	18.8	28.8	29.0	2.20	31.2	31.34	-0.14	hard
	LL12mw-185	2368829.86	556946.75	979.09	24.0	981.31	A	Unconsolidated	10.8	20.8	21.0	2.22	23.2	23.22	-0.02	hard
	LL12mw-186	2367912.39	559065.95	976.34	23.0	978.31	A	Sharon Shale	8.8	18.8	19.0	1.97	21.0	21.12	-0.12	hard
	LL12mw-187	2368524.14	557633.10	977.90	29.0	979.94	A	Unconsolidated	17.2	27.2	27.4	2.04	29.4	29.89	-0.49	soft
	LL12mw-188	2367908.82	558132.59	978.46	20.5	980.63	A	Unconsolidated	9.8	19.8	20.0	2.17	22.2	22.05	0.15	hard
	LL12mw-189	2367945.92	558569.27	976.17	18.5	978.04	A	Sharon Shale	7.5	17.5	17.7	1.87	19.6	19.60	0.00	soft
	LL12mw-242	2368545.29	558020.51	978.40	26.3	981.20	A	Unconsolidated	15.5	25.5	25.5	2.80	28.3	28.78	-0.48	hard
	LL12mw-243	2368190.04	557376.32	978.10	24.0	980.79	A	Unconsolidated	13.0	23.0	23.0	2.69	25.7	24.34	1.36	soft
	LL12mw-244	2368751.42	557377.17	978.10	30.0	980.65	A	Unconsolidated	19.5	29.5	29.5	2.55	32.1	30.84	1.26	soft
	LL12mw-245	2368370.74	557044.55	977.50	29.0	980.04	A	Unconsolidated	18.0	28.0	28.0	2.54	30.5	29.68	0.82	soft
	LL12mw-246	2369432.17	556658.89	982.00	32.0	984.83	A	Unconsolidated	21.5	31.5	31.5	2.83	34.3	34.95	-0.65	hard
Atlas Scrap Yard	ASYmw-001	2366260.85	558404.04	978.40	22.0	981.13	A	Sharon	11.0	21.0	21.0	2.73	23.7	23.19	0.51	hard
	ASYmw-002	2366170.86	557887.86	982.00	20.0	985.24	A	Sharon	10.0	19.5	19.5	3.24	22.7	22.99	-0.29	medium
	ASYmw-003	2366651.49	558015.94	979.70	21.5	982.21	A	Sharon	11.0	21.0	21.0	2.51	23.5	23.54	-0.04	hard
	ASYmw-004	2367166.04	557640.81	977.10	27.8	979.66	A	Sharon	17.0	27.0	27.0	2.56	29.6	29.87	-0.27	hard
	ASYmw-005	2367448.16	557783.01	977.60	25.0	979.80	A	Sharon	14.0	24.0	24.0	2.20	26.2	27.22	-1.02	hard
	ASYmw-006	2366746.73	557257.72	980.20	27.0	983.01	A	Sharon	16.0	26.0	26.0	2.81	28.8	22.68	6.12	soft
	ASYmw-007	2366834.49	556818.08	981.40	28.0	984.16	A	Unconsolidated	16.0	26.0	26.0	2.76	28.8	28.98	-0.18	hard
	ASYmw-008	2367475.07	557087.66	976.20	26.0	978.85	A	Unconsolidated	15.0	25.0	25.0	2.65	27.7	27.14	0.56	medium
	ASYmw-009	2366631.94	557603.68	979.90	22.0	982.70	A	Sharon	11.5	21.5	21.5	2.80	24.3	24.28	0.02	soft
	ASYmw-010	2366985.37	557270.61	978.20	28.0	981.05	A	Unconsolidated	17.0	27.0	27.0	2.85	29.8	31.20	-1.40	hard
Building 1200	B12mw-010	2371292.81	565827.43	1,002.72	21.0	1,005.92	A	Sharon	10.0	20.0	20.0	3.20	23.2	22.92	0.28	hard
	B12mw-011	2371416.15	565687.82	1,003.76	24.7	1,006.70	A	Sharon	14.0	24.0	24.0	2.94	26.9	26.83	0.07	hard
	B12mw-012	2371430.41	565828.01	1,003.43	22.3	1,006.32	A	Sharon	12.0	22.0	22.0	2.89	24.9	24.92	-0.02	hard
C-Block Quarry	CBLmw-001	2343657.08	559403.12	1,178.50	50.0	1,181.08	A	Homewood	39.0	49.0	49.0	2.58	51.6	49.60	2.00	hard
	CBLmw-002	2343845.22	559044.48	1,172.50	45.3	1,175.24	A	Homewood	34.5	44.5	44.5	2.74	47.2	47.49	-0.29	hard
	CBLmw-003	2343970.00	559695.52	1,172.22	44.0	1,175.06	A	Homewood	33.0	43.0	43.0	2.84	45.8	44.69	1.11	hard
	CBLmw-004	2343688.76	559951.58	1,172.08	45.0	1,174.84	A	Homewood	34.0	44.0	44.0	2.76	46.8	47.25	-0.45	hard
Central Burn Pits	CBPmw-001	2367095.37	561616.01	972.71	32.3	975.84	A	Unconsolidated	21.8	31.8	31.8	3.13	34.9	34.40	0.50	soft
	CBPmw-002	2367295.66	561865.83	967.33	30.0	970.04	A	Unconsolidated	19.5	29.5	29.5	2.71	32.2	31.85	0.35	soft
	CBPmw-003	2366768.68	561944.14	972.04	25.0	974.67	A	Unconsolidated	14.5	24.5	24.5	2.63	27.1	30.26	-3.16	medium
	CBPmw-004	2366978.80	562123.80	968.58	27.5	971.13	A	Unconsolidated	17.0	27.0	27.0	2.55	29.5	29.72	-0.22	soft
	CBPmw-005	2366919.66	562311.88	968.83	25.0	971.59	A	Unconsolidated	14.5	24.5	24.5	2.76	27.3	27.48	-0.18	soft
	CBPmw-006	2367243.68	562311.87	965.01	23.0	967.64	A	Unconsolidated	12.5	22.5	22.5	2.63	25.1	25.34	-0.24	soft
	CBPmw-007	2366512.62	562006.41	973.47	30.0	976.37	A	Unconsolidated	19.5	29.5	29.5	2.90	32.4	32.00	0.40	hard
	CBPmw-008	2366757.21	562668.84	970.57	25.5	973.19	A	Unconsolidated	15.0	25.0	25.0	2.62	27.6	28.03	-0.43	medium

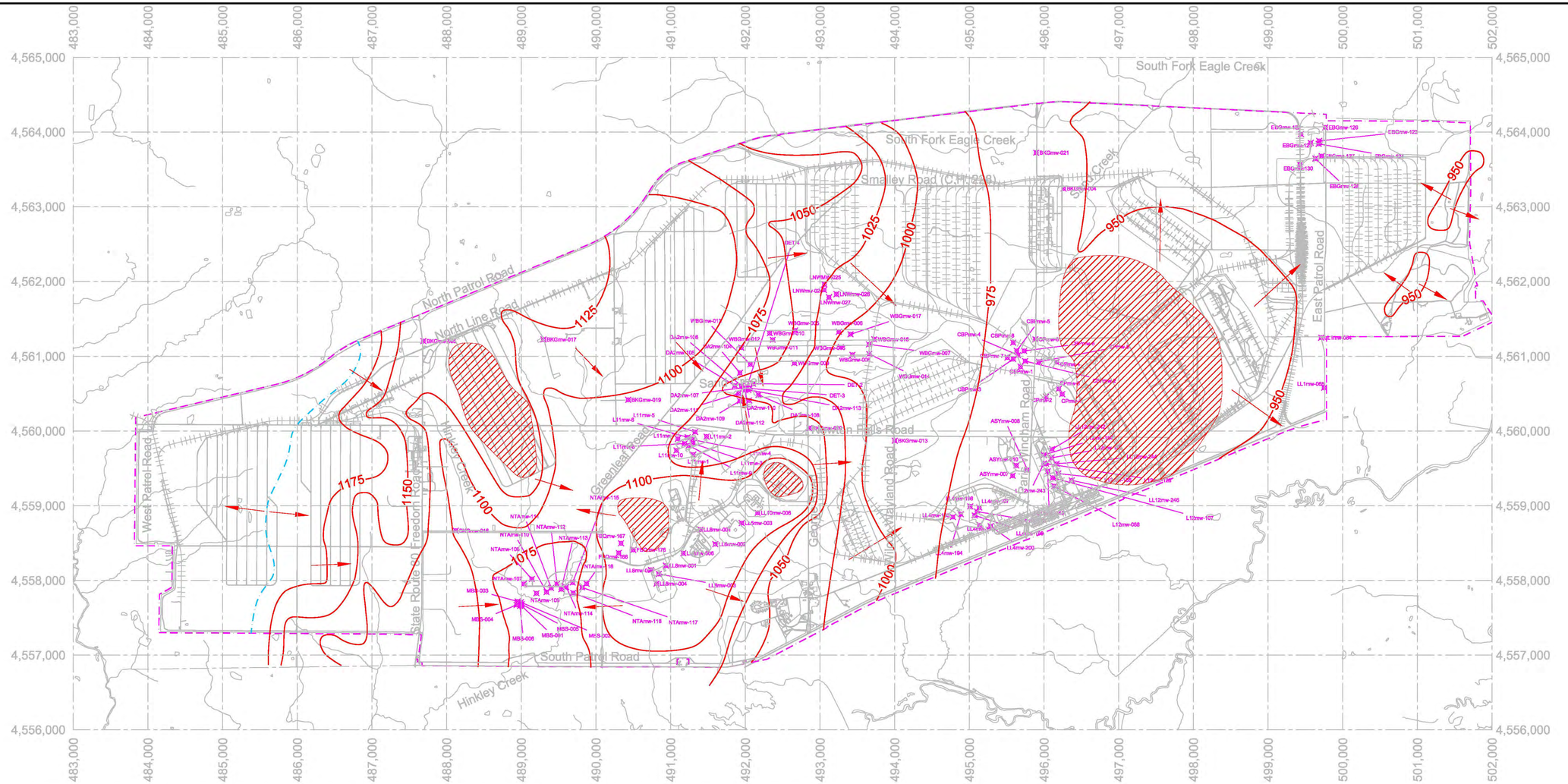
Well Construction Details, Including October 2011 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	Oct 2011 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Cobbs Pond	CPmw-001	2368948.81	560440.91	975.46	16.0	975.26	F	Unconsolidated	5.5	15.5	15.5	-0.20	15.3	14.78	0.52	hard
	CPmw-002	2368239.23	560311.26	972.72	16.0	972.31	F	Unconsolidated	5.5	15.5	15.5	-0.41	15.1	15.08	0.02	hard
	CPmw-003	2368796.49	560676.30	973.27	18.5	972.92	F	Unconsolidated	8.0	18.0	18.0	-0.35	17.6	17.80	-0.20	hard
	CPmw-004	2368674.31	561843.46	978.51	20.0	981.20	A	Unconsolidated	9.5	19.5	19.5	2.69	22.2	22.52	-0.32	hard
	CPmw-005	2367900.41	561846.78	970.71	40.0	973.58	A	Unconsolidated	29.5	39.5	39.5	2.87	42.4	43.15	-0.75	hard
	CPmw-006	2367727.13	562830.13	962.97	18.5	965.13	A	Unconsolidated	8.0	18.0	18.0	2.16	20.2	20.63	-0.43	hard
Demolition Area 2	DET-001B	2354959.47	560820.03	1,064.35	39.0	1,065.85	A	Unconsolidated	34.0	39.0	39.0	1.50	40.5	38.64	1.86	hard
	DET-002	2355360.33	560664.71	1,060.24	39.0	1,061.24	A	Unconsolidated	34.0	39.0	39.0	1.00	40.0	42.35	-2.35	medium
	DET-003	2355204.94	560456.10	1,035.81	15.0	1,036.81	A	Unconsolidated	7.0	12.0	12.0	1.00	13.0	16.03	-3.03	hard
	DET-004	2355072.36	560454.22	1,037.68	11.0	1,038.68	A	Unconsolidated	6.0	11.0	11.0	1.00	12.0	13.90	-1.90	hard
	DA2mw-104	2354773.79	561129.59	1,070.82	27.0	1,073.89	A	Unconsolidated	16.3	26.3	26.5	3.07	29.6	29.24	0.36	soft
	DA2mw-105	2354557.62	560572.58	1,042.66	14.0	1,045.34	A	Unconsolidated	8.3	13.3	13.5	2.68	16.2	16.33	-0.13	hard
	DA2mw-106	2354848.85	560560.49	1,041.19	16.0	1,043.79	A	Unconsolidated	8.3	15.3	15.5	2.60	18.1	16.90	1.20	hard
	DA2mw-107	2354924.29	560480.05	1,039.18	15.0	1,041.63	A	Unconsolidated	8.8	13.8	14.0	2.45	16.5	16.95	-0.45	hard
	DA2mw-108	2355604.43	560181.78	1,029.92	15.0	1,032.36	A	Unconsolidated	9.3	14.3	14.5	2.44	16.9	17.28	-0.38	hard
	DA2mw-109	2354793.14	559897.89	1,068.66	24.0	1,071.29	A	Unconsolidated	11.3	21.3	21.5	2.63	24.1	24.41	-0.31	soft
	DA2mw-110	2355195.91	559927.02	1,061.39	20.0	1,063.78	A	Unconsolidated	9.3	19.3	19.5	2.39	21.9	22.48	-0.58	hard
	DA2mw-111	2354728.33	560222.94	1,039.63	12.6	1,042.12	A	Unconsolidated	7.1	12.1	12.3	2.49	14.8	14.90	-0.10	hard
	DA2mw-112	2355018.98	560378.36	1,034.87	15.0	1,037.44	A	Unconsolidated	8.8	13.8	14.0	2.57	16.6	17.04	-0.44	hard
	DA2mw-113	2355153.13	560394.81	1,034.51	14.0	1,037.11	A	Unconsolidated	8.3	13.3	13.5	2.60	16.1	16.40	-0.30	hard
Erie Burning Grounds	EBGmw-123	2380049.21	571747.04	945.59	32.0	947.82	A	Unconsolidated	21.0	31.0	31.5	2.23	33.7	34.80	-1.10	hard
	EBGmw-124	2380030.24	571618.07	939.02	32.0	941.39	A	Unconsolidated	20.0	30.0	30.5	2.37	32.9	32.85	0.05	soft
	EBGmw-125	2379679.20	571655.63	947.55	25.0	949.89	A	Unconsolidated	14.0	24.0	24.5	2.34	26.8	27.60	-0.80	hard
	EBGmw-126	2380307.31	572348.81	938.20	28.0	940.61	A	Unconsolidated	15.2	25.2	25.5	2.41	27.9	27.95	-0.05	hard
	EBGmw-127	2380172.16	571083.61	940.21	30.0	943.07	A	Unconsolidated	19.0	29.0	29.5	2.86	32.4	32.90	-0.50	soft
	EBGmw-128	2379892.79	570970.32	942.47	28.0	945.13	A	Unconsolidated	15.0	25.0	25.3	2.66	28.0	28.34	-0.34	hard
	EBGmw-129	2379240.52	572035.68	941.97	29.0	944.36	A	Unconsolidated	16.0	26.0	26.0	2.39	28.4	30.90	-2.50	soft
	EBGmw-130	2379220.69	570695.61	941.18	26.0	944.00	A	Unconsolidated	15.2	25.2	25.5	2.82	28.3	28.54	-0.24	hard
Fuze and Booster Quarry	FBQmw-166	2349584.33	553123.86	1,104.87	16.0	1,108.86	A	Unconsolidated	5.5	15.5	15.5	3.99	19.5	19.83	-0.33	hard
	FBQmw-167	2349675.45	553556.12	1,112.05	18.0	1,115.90	A	Unconsolidated	5.0	15.0	15.0	3.85	18.9	19.07	-0.17	hard
	FBQmw-168	2350066.87	553620.85	1,131.27	19.5	1,133.91	A	Homewood	9.0	19.0	19.0	2.64	21.6	21.32	0.28	medium
	FBQmw-169	2349730.90	553681.21	1,117.36	16.0	1,120.58	A	Homewood	5.0	15.0	15.0	3.22	18.2	18.18	0.02	medium
	FBQmw-170	2350102.41	553975.40	1,139.67	30.5	1,142.26	A	Homewood	20.0	30.0	30.0	2.59	32.6	32.80	-0.20	soft
	FBQmw-171	2350072.44	554230.93	1,140.49	30.0	1,143.55	A	Homewood	18.0	28.0	28.0	3.06	31.1	31.50	-0.40	hard
	FBQmw-172	2349907.37	554322.17	1,145.71	33.0	1,150.09	A	Homewood	20.0	30.0	30.0	4.38	34.4	34.49	-0.09	medium
	FBQmw-173	2350449.01	554491.35	1,162.43	50.0	1,165.94	A	Homewood	29.5	49.5	49.5	3.51	53.0	53.18	-0.18	soft
	FBQmw-174	2350289.81	554142.44	1,135.78	22.5	1,139.97	A	Homewood	12.0	22.0	22.0	4.19	26.2	23.15	3.05	medium
	FBQmw-175	2350297.98	553989.24	1,137.16	22.5	1,140.73	A	Homewood	12.0	22.0	22.0	3.57	25.6	25.88	-0.28	soft
	FBQmw-176	2350219.45	553273.33	1,129.57	21.5	1,131.91	A	Unconsolidated	11.0	21.0	21.0	2.34	23.3	23.60	-0.30	soft
	FBQmw-177	2350112.18	553321.94	1,125.73	22.5	1,128.57	A	Homewood	12.0	22.0	22.0	2.84	24.8	24.85	-0.05	soft
Landfill North of Winklepeck	LNWmw-024	2358403.21	564825.89	1,035.30	24.0	1,038.00	A	Unconsolidated	10.0	20.0	20.0	2.70	22.7	22.60	0.10	medium
	LNWmw-025	2358417.06	565071.92	1,027.20	19.0	1,029.13	A	Unconsolidated	8.0	18.0	18.0	1.93	19.9	20.41	-0.51	hard
	LNWmw-026	2358952.24	564658.16	1,025.00	24.0	1,027.80	A	Unconsolidated	13.0	23.0	23.0	2.80	25.8	25.98	-0.18	soft
	LNWmw-027	2358628.75	564517.41	1,024.40	25.0	1,027.13	A	Unconsolidated	14.0	24.0	24.0	2.73	26.7	26.98	-0.28	hard
NACA Test Area	NTAmw-107	2345433.40	551697.29	1,077.65	23.0	1,080.30	A	Unconsolidated	12.0	22.0	22.0	2.65	24.6	24.00	0.60	soft
	NTAmw-108	2345781.60	551916.22	1,083.22	23.0	1,085.62	A	Unconsolidated	12.0	22.0	22.0	2.40	24.4	24.39	0.01	medium
	NTAmw-109	2345997.72	551293.25	1,076.89	19.0	1,079.84	A	Unconsolidated	8.0	18.0	18.0	2.95	20.9	20.87	0.03	soft
	NTAmw-110	2346438.94	551351.46	1,080.03	28.0	1,082.62	A	Unconsolidated	17.0	27.0	27.0	2.59	29.6	29.70	-0.10	hard
	NTAmw-111	2346638.01	551538.60	1,078.07	20.0	1,080.94	A	Unconsolidated	9.5	19.5	19.5	2.87	22.4	22.05	0.35	hard
	NTAmw-112	2346889.48	551712.14	1,075.36	23.9	1,078.33	A	Unconsolidated	13.9	23.9	23.9	2.97	26.9	26.53	0.37	medium
	NTAmw-113	2347082.83	551488.52	1,072.61	27.5	1,075.68	A	Unconsolidated	17.0	27.0	27.5	3.07	30.6	29.63	0.97	hard
	NTAmw-114	2347301.57	551592.94	1,075.61	20.0	1,078.71	A	Unconsolidated	9.5	19.5	19.5	3.10	22.6	22.75	-0.15	hard
	NTAmw-115	2347581.16	551791.78	1,086.91	24.0	1,089.65	A	Unconsolidated	12.5	22.5	22.5	2.74	25.2	25.25	-0.05	hard
	NTAmw-116	2348196.39	551748.00	1,091.68	22.0	1,094.33	A	Unconsolidated	10.0	20.0	20.0	2.65	22.6	22.55	0.05	hard
	NTAmw-117	2347994.83	551584.57	1,091.67	25.0	1,094.54	A	Unconsolidated	14.5	24.5	24.5	2.87	27.4	27.50	-0.10	hard
	NTAmw-118	2347609.41	551335.04	1,078.86	22.5	1,081.44	A	Unconsolidated	12.0	22.0	22.0	2.58	24.6	24.69	-0.09	soft

Well Construction Details, Including October 2011 Depth to Bottom Measurements

RVAAP Area	Well ID	Ohio State Plane Easting	Ohio State Plane Northing	Ground Level Elevation[a]	Total Drilled Depth[b]	TOC Elevation[a]	Well Head Type[c]	Monitored Zone	Top of Screen (ft, BGS)	Bottom of Screen (ft, BGS)	Bottom of Inner Casing Plug or End Cap (ft, BGS)	Stickup height (ft, AGS)	Reported Bottom of Inner Casing (ft, BTOC)	Oct 2011 Measured Bottom of Inner Casing (ft, BTOC)	Sediment Accumulation (ft)	Description of Bottom
Ramsdell Quarry Landfill	RQLmw-006	2375927.71	566091.26	993.52	42.1	995.39	A	Sharon	19.4	39.4	39.6	1.87	41.4	42.21	-0.81	hard
	RQLmw-007	2375872.56	566544.36	963.86	18.7	965.91	A	Sharon	6.0	16.0	16.2	2.05	18.2	18.70	-0.50	hard
	RQLmw-008	2376011.08	566327.94	963.82	18.7	966.08	A	Sharon	6.0	16.0	16.2	2.26	18.5	19.74	-1.24	hard
	RQLmw-009	2376253.65	566351.20	962.60	18.8	964.58	A	Sharon	5.9	15.9	16.4	1.98	18.4	18.88	-0.48	hard
	RQLmw-010	2376048.58	566857.39	980.04	35.4	982.14	A	Sharon	12.5	32.5	33.0	2.10	35.1	35.42	-0.32	hard
	RQLmw-011	2376398.19	566819.66	974.60	35.4	976.57	A	Sharon	12.4	32.4	32.6	1.97	34.6	35.46	-0.86	hard
	RQLmw-012	2376558.19	566551.95	975.12	30.5	977.65	A	Sharon	19.8	29.8	30.0	2.53	32.5	32.75	-0.25	hard
	RQLmw-013	2376204.93	566928.09	978.04	34.4	980.71	A	Sharon	23.7	33.7	33.9	2.67	36.6	36.59	0.01	hard
	RQLmw-014	2376519.38	566941.29	970.83	29.4	973.49	A	Sharon	18.6	28.6	28.9	2.66	31.6	31.61	-0.01	hard
	RQLmw-015	2375490.96	566560.90	989.19	40.1	991.26	A	Sharon	29.2	39.2	39.5	2.07	41.6	42.07	-0.47	medium
	RQLmw-016	2375649.55	566177.68	994.02	39.5	996.60	A	Sharon	28.5	38.5	39.0	2.58	41.6	41.70	-0.10	hard
	RQLmw-017	2376124.18	565931.38	988.69	30.5	991.23	A	Sharon	19.8	29.8	30.0	2.54	32.5	32.69	-0.19	hard
Sharon Conglomerate	SCFmw-001	2353178.98	554768.62	1,118.53	230	1,120.71	A	Sharon Conglom	201	211	NA	2.18	213.61	214.50	-0.89	hard
	SCFmw-002	2368927.36	555152.38	982.28	153	984.56	A	Sharon Conglom	137	147	NA	2.28	149.65	150.30	-0.65	hard
	SCFmw-003	2375843.20	557957.67	956.14	140	958.47	A	Sharon Conglom	125.5	135.5	NA	2.33	139.65	139.65	0.00	hard
	SCFmw-004	2378730.23	50361.03	941.87	120	944.17	A	Sharon Conglom	100	110	NA	2.30	112.47	112.50	-0.03	hard
	SCFmw-005	2377014.05	567302.35	958.43	160	960.80	A	Sharon Conglom	139	154	NA	2.37	156.41	156.40	0.01	hard
	SCFmw-006	239394.54	569583.41	963.69	90	965.92	A	Sharon Conglom	76	86	NA	2.23	88.32	87.89	0.43	hard
Winklepeck Burning Grounds	WBGmw-005	2357163.55	563037.18	1,052.20	19.0	1,054.70	A	Unconsolidated	8.3	18.3	18.6	2.50	21.1	21.25	-0.15	hard
	WBGmw-006	2359087.79	563008.87	1,012.16	19.0	1,014.66	A	Unconsolidated	7.6	17.6	17.9	2.50	20.4	20.28	0.12	hard
	WBGmw-007	2360420.44	562479.87	998.09	24.0	1,000.59	A	Unconsolidated	13.5	23.5	23.8	2.50	26.3	26.52	-0.22	hard
	WBGmw-008	2359700.57	562010.35	1,005.71	18.5	1,008.21	A	Unconsolidated	8.1	18.2	18.5	2.50	21.0	20.95	0.05	hard
	WBGmw-009	2357159.20	561603.54	1,045.03	24.0	1,047.53	A	Unconsolidated	11.4	21.4	21.5	2.50	24.0	24.39	-0.39	hard
	WBGmw-010	2356051.96	562893.20	1,067.10	21.0	1,069.85	A	Unconsolidated	10.5	20.5	20.8	2.75	23.6	23.31	0.29	medium
	WBGmw-011	2356187.29	562609.18	1,069.70	22.0	1,072.38	A	Unconsolidated	11.0	21.0	21.3	2.68	24.0	23.93	0.07	soft
	WBGmw-012	2354810.65	562240.90	1,076.50	30.0	1,079.11	A	Unconsolidated	19.0	29.0	29.4	2.61	32.0	31.74	0.26	soft
	WBGmw-013	2355223.25	561518.27	1,069.10	22.0	1,071.70	A	Unconsolidated	11.0	21.0	21.3	2.60	23.9	24.19	-0.29	hard
	WBGmw-014	2360439.22	562061.26	994.10	23.0	996.78	A	Unconsolidated	12.0	22.0	22.3	2.68	25.0	24.95	0.05	hard
	WBGmw-015	2359182.41	562340.12	1,009.10	22.0	1,011.60	A	Unconsolidated	11.0	21.0	21.3	2.50	23.8	23.57	0.23	soft
	WBGmw-016	2360645.88	562709.13	994.90	24.0	997.03	A	Unconsolidated	13.0	23.0	23.3	2.13	25.4	25.22	0.18	soft
	WBGmw-017	2359603.84	562913.24	1,004.00	22.0	1,006.62	A	Unconsolidated	11.0	21.0	21.3	2.62	23.9	23.41	0.49	soft
Suspected Mustard Agent Burial Site	MBS-001	2345323.00	550759.50	1,079.68	30.0	1,082.20	A	Unconsolidated	19	28.7	29	2.52	31.5	30.98	0.52	hard
	MBS-002	2345322.30	550886.20	1,080.50	30.0	1,083.22	A	Unconsolidated	18	27.3	28	2.72	30.7	31.13	-0.43	hard
	MBS-003	2345172.40	550922.80	1,082.45	30.0	1,084.45	A	Unconsolidated	18.5	28.2	28.5	2.00	30.5	30.70	-0.20	hard
	MBS-004	2345134.20	550767.90	1,079.55	26.0	1,081.80	A	Unconsolidated	14.7	24.4	24.7	2.25	27.0	27.27	-0.27	hard
	MBS-005	2345354.10	550800.70	1,080.50	30.0	1,082.42	A	Unconsolidated	18	28	28.08	1.92	30.2	30.06	0.14	soft
	MBS-006	2345282.30	550726.10	1,080.29	28.0	1,081.83	A	Unconsolidated	16.5	26.5	26.56	1.54	28.2	28.10	0.10	hard

a elevations are in feet above mean sea level (amsl)
b total drilled well borehole depth relative to ground surface.
c A = above grade completion; F = flush-mount completion
NA = Not available
AGS = above ground surface
BGS = below ground surface
BTOC = below top of casing



Well ID	Elevation (ft, amsl)
BKGmw-004	954.31
BKGmw-005	1139.60
BKGmw-013	976.38
BKGmw-016	1094.14
BKGmw-017	1117.18
BKGmw-019	1089.20
BKGmw-020	1057.50
BKGmw-021	959.34
CBPmw-001	962.74
CBPmw-002	960.94
CBPmw-003	962.18
CBPmw-004	960.08
CBPmw-005	959.26
CBPmw-006	959.53
CBPmw-007	960.41
CBPmw-008	956.88
CPmw-001	971.30
CPmw-002	972.19
CPmw-003	972.12
CPmw-004	970.36
CPmw-005	962.21
CPmw-006	955.17

Well ID	Elevation (ft, amsl)
DA2mw-104	1051.80
DA2mw-105	1042.10
DA2mw-106	1038.56
DA2mw-107	1033.14
DA2mw-108	1025.41
DA2mw-109	1055.11
DA2mw-110	1053.23
DA2mw-111	1034.71
DA2mw-112	1029.85
DA2mw-113	1029.32
DETmw-001B	1042.14
DETmw-002	1028.46
DETmw-003	1027.16
DETmw-004	1027.94
EBGmw-123	938.52
EBGmw-124	938.42
EBGmw-125	942.46
EBGmw-126	938.63
EBGmw-127	938.98
EBGmw-128	938.67
EBGmw-129	938.77
EBGmw-130	937.95

Well ID	Elevation (ft, amsl)
FBQmw-166	1103.68
FBQmw-167	1110.29
FBQmw-176	1120.96
L L11mw-002	1073.01
LL10mw-006	1109.51
LL11mw-001	1089.90
LL11mw-003	1085.78
LL11mw-004	1082.67
LL11mw-005	1071.29
LL11mw-006	1082.11
LL11mw-007	1067.87
LL11mw-008	1085.94
LL11mw-009	1088.19
LL11mw-010	1077.84
LL12mw-088	973.80
LL12mw-107	969.89
LL12mw-128	968.02
LL12mw-153	971.42
LL12mw-154	969.93
LL12mw-182	973.22
LL12mw-184	969.86
LL12mw-185	971.91

Well ID	Elevation (ft, amsl)
FBQmw-166	1103.47
LL12mw-187	970.13
LL12mw-188	975.93
LL12mw-242	972.40
LL12mw-243	971.24
LL12mw-244	970.29
LL12mw-245	971.36
LL12mw-246	967.67
LL1mw-064	933.38
LL1mw-065	932.79
LL4mw-193	976.08
LL4mw-194	974.49
LL4mw-195	971.31
LL4mw-196	970.95
LL4mw-197	980.64
LL4mw-198	974.42
LL4mw-199	969.37
LL4mw-200	969.67
LL5mw-003	1106.60
LL6mw-001	1108.95
LL6mw-002	1107.10
LL6mw-006	1108.22

Well ID	Elevation (ft, amsl)
LL8mw-001	1108.08
LL8mw-002	1103.67
LL8mw-003	1103.95
LL8mw-004	1102.23
LNWmw-024	1025.64
LNWmw-025	1024.46
LNWmw-026	1022.71
LNWmw-027	1019.91
MBS-001	1064.20
MBS-002	1064.54
MBS-003	1065.13
MBS-004	1064.52
MBS-005	1064.13
MBS-006	1069.04
NTAmw-107	1067.02
NTAmw-108	1067.26
NTAmw-109	1067.29
NTAmw-110	1067.72
NTAmw-111	1076.30
NTAmw-112	1068.66
NTAmw-113	1068.03
NTAmw-114	1071.69

Well ID	Elevation (ft, amsl)
NTAmw-115	1075.20
NTAmw-116	1088.43
NTAmw-117	1080.02
NTAmw-118	1070.81
WBGmw-005	1048.76
WBGmw-006	1008.06
WBGmw-007	982.86
WBGmw-008	993.64
WBGmw-009	1034.13
WBGmw-010	1061.71
WBGmw-011	1061.61
WBGmw-012	1057.29
WBGmw-013	1059.70
WBGmw-014	980.28
WBGmw-015	1000.37
WBGmw-016	979.43
WBGmw-017	996.23

0 50 1000

SCALE (METERS)

LEGEND

- UNCONSOLIDATED WELL
- PROPERTY LINE
- 1100 LINE OF EQUAL GROUNDWATER ELEVATION (ft, amsl)
- GROUNDWATER DIRECTION
- UNCONSOLIDATED AQUIFER MISSING
- INFERRED GROUNDWATER DIVIDE

N

COORDINATE SYSTEM UTM NAD 83 ZONE 17

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

REV	DESCRIPTION	DATE	APPROVED

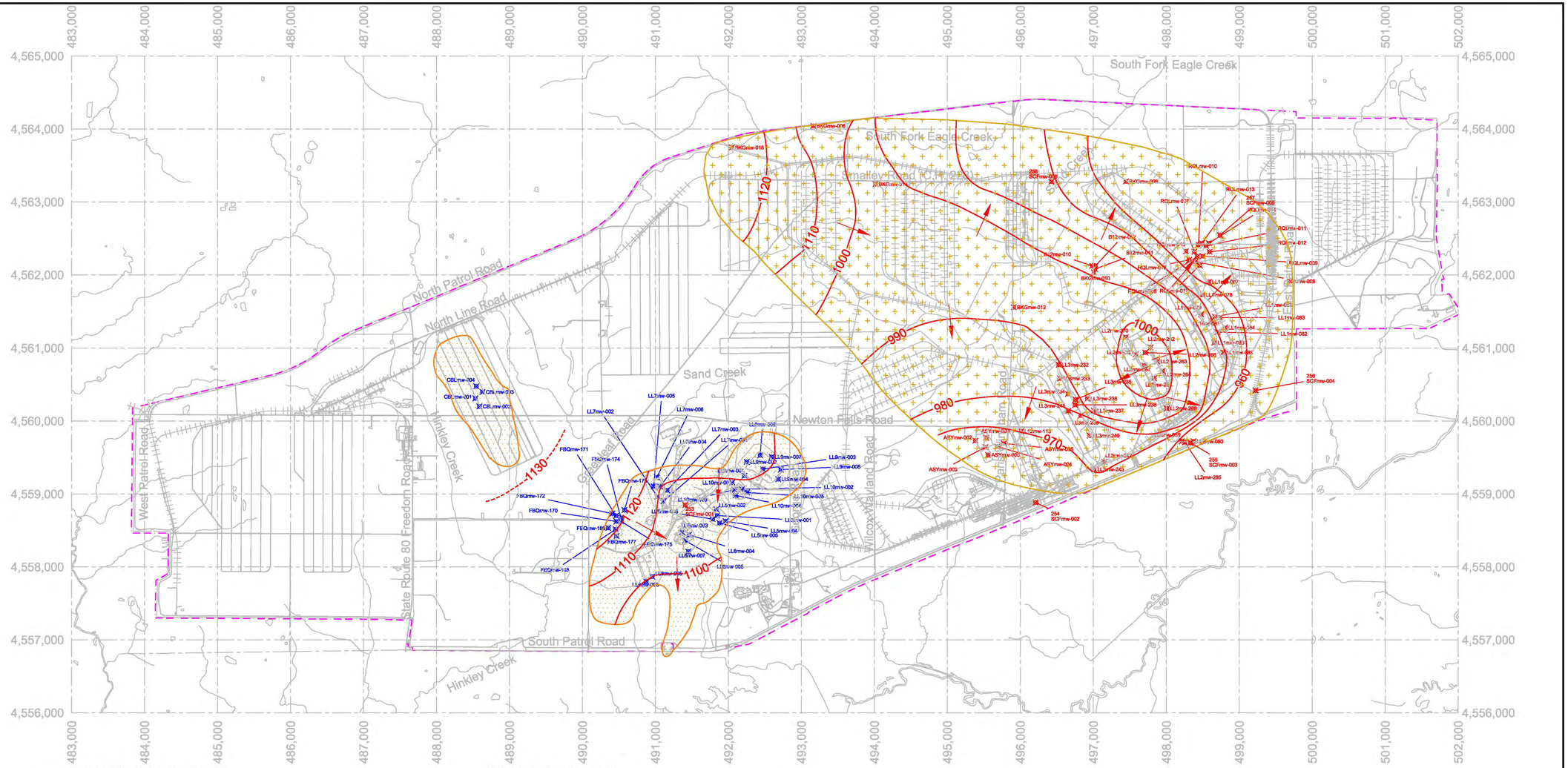
REVISIONS

DRAWN	S.RASOR	11-22-11
CHECKED	W.THOMPSON	11-22-11
APPROVED		

SCALE: NONE

POTENTIOMETRIC SURFACE OF UNCONSOLIDATED AQUIFER (OCT. 2011)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE A	1



HOMEWOOD MEMBER WELLS

Well ID	Elevation (ft, amsl)
CBLmw-001	1137.30
CBLmw-002	1136.99
CBLmw-003	1138.32
CBLmw-004	1138.46
FBQmw-168	1120.72
FBQmw-169	1113.24
FBQmw-170	1122.37
FBQmw-171	1123.42
FBQmw-172	1121.39
FBQmw-173	1121.54
FBQmw-174	1121.26
FBQmw-175	1121.29
FBQmw-177	1113.42
LL10mw-001	1106.93
LL10mw-002	1108.29
LL10mw-003	1108.84
LL10mw-004	1107.57
LL10mw-005	1108.58
LL5mw-001	1106.45
LL5mw-002	1106.42
LL5mw-004	1106.42
LL5mw-005	1106.44

Well ID	Elevation (ft, amsl)
LL5mw-006	1106.41
LL6mw-003	1107.76
LL6mw-004	1107.18
LL6mw-005	1107.27
LL6mw-007	1107.12
LL7mw-001	1107.69
LL7mw-002	1111.55
LL7mw-003	1108.04
LL7mw-004	1110.22
LL7mw-005	1112.95
LL7mw-006	1111.35
LL8mw-005	1100.46
LL8mw-006	1095.67
LL9mw-001	1118.03
LL9mw-002	1114.33
LL9mw-003	1123.12
LL9mw-004	1109.70
LL9mw-005	1113.56
LL9mw-006	1109.53
LL9mw-007	1109.56

SHARON MEMBER WELLS

Well ID	Elevation (ft, amsl)
ASYmw-001	968.74
ASYmw-002	969.45
ASYmw-003	968.78
ASYmw-004	969.58
ASYmw-005	971.24
ASYmw-006	968.37
ASYmw-009	969.76
B12mw-010	987.87
B12mw-011	986.90
B12mw-012	986.35
BKGmw-006	1005.50
BKGmw-008	955.59
BKGmw-010	989.72
BKGmw-012	991.05
BKGmw-015	991.51
BKGmw-018	1029.22
LL1mw-063	968.14
LL1mw-067	960.86
LL1mw-078	962.85
LL1mw-079	964.87
LL1mw-080	986.47
LL1mw-081	969.32

Well ID	Elevation (ft, amsl)
LL1mw-082	978.07
LL1mw-083	961.30
LL1mw-084	970.63
LL1mw-085	960.94
LL2mw-059	952.43
LL2mw-060	950.71
LL2mw-261	1004.41
LL2mw-262	1005.30
LL2mw-263	1004.02
LL2mw-264	1006.33
LL2mw-265	950.62
LL2mw-266	1005.26
LL2mw-267	1005.49
LL2mw-268	1002.80
LL2mw-269	994.97
LL2mw-270	1002.17
LL3mw-232	980.69
LL3mw-233	977.58
LL3mw-234	996.54
LL3mw-235	992.31
LL3mw-236	995.39
LL3mw-237	990.42

Well ID	Elevation (ft, amsl)
LL3mw-238	991.82
LL3mw-239	979.29
LL3mw-240	978.79
LL3mw-241	985.12
LL3mw-242	982.54
LL3mw-243	976.82
RQLmw-006	959.99
RQLmw-007	959.60
RQLmw-008	959.44
RQLmw-009	959.63
RQLmw-010	956.75
RQLmw-011	954.51
RQLmw-012	955.44
RQLmw-013	955.30
RQLmw-014	953.28
RQLmw-015	959.20
RQLmw-016	960.36
RQLmw-017	960.73

SHARON SHALE WELLS

Well ID	Elevation (ft, amsl)
LL12mw-113	974.96
LL12mw-183	969.48
LL12mw-186	972.46
LL12mw-189	973.80

*WELLS NOT USED TO PRODUCE POTENTIOMETRIC MAP

0 50 1000

SCALE (METERS)

LEGEND

- HOMEWOOD MEMBER WELL
- SHARON MEMBER WELL
- PROPERTY LINE
- 1100 / 1030 — LINE OF EQUAL GROUNDWATER ELEVATION (ft,amsl) (INTERMEDIATE DASHED)
- GROUNDWATER DIRECTION
- HOMEWOOD MEMBER
- SHARON MEMBER

N

COORDINATE SYSTEM UTM NAD 83 ZONE 17

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

REV	DESCRIPTION	DATE	APPROVED
1	ADDED SFCmw-001 THRU 006	9-10-09	JM

REVISIONS

DRAWN	S.RASOR	11-22-11
CHECKED	W.THOMPSON	11-22-11
APPROVED		
SCALE:	NONE	

POTENTIOMETRIC SURFACE OF BEDROCK -HOMEWOOD AND SHARON (OCT. 2011)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE B	1

491,000 492,000 493,000 494,000 495,000 496,000 497,000 498,000 499,000

4,564,000 4,563,000 4,562,000 4,561,000 4,560,000 4,559,000

South Fork Eagle Creek

Smalley Road (C.R. 228)

Sand Creek

East Patrol Road

Newton Falls Road

Wilcox Wayland Road

Paris Windham Road

SCFmw-001

SCFmw-002

SCFmw-003

SCFmw-004

SCFmw-005

SCFmw-006

1020 1010 1010 1000 990 980 970 960 950

SHARON CONGLOMERATE WELLS

Well ID	Elevation (ft, amsl)
SCFmw-001	1031.18
SCFmw-002	964.58
SCFmw-003	949.52
SCFmw-004	944.17
SCFmw-005	950.12
SCFmw-006	948.08

0 500 1000

N

LEGEND

PROPERTY LINE

980 LINE OF EQUAL GROUNDWATER ELEVATION (ft,amsl)

GROUNDWATER DIRECTION

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED
	REVISIONS		

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

DRAWN	S.RASOR	11-30-11
CHECKED	W.THOMPSON	11-30-11
APPROVED		

SCALE: NONE

POTENTIOMETRIC SURFACE OF SHARON CONGLOMERATE (OCT.2011)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
B	30174.0016.001	PLATE C	0

APPENDIX E

WELL INSPECTION SHEETS

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 064 Location/Functional Area: BK6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 22 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Lock cap missing
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.28				
Thickness of sediment accumulation (reported depth-present measurement): -0.28				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/23 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: BKGMW-005 Location/Functional Area: Rt 80 north, background BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 21 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			little surface rust
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.88				
Thickness of sediment accumulation (reported depth-present measurement): 0.12				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 37.6 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 37.67				
Thickness of sediment accumulation (reported depth-present measurement):				-0.07
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CaD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: B/C

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: ft

Reported Construction Depth: 27.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion: 3				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Needs new outer casing 1.2
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.48				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/2-3 Inspected by: J

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 21.6 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)				
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.97				
Thickness of sediment accumulation (reported depth-present measurement): -0.37				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 012 Location/Functional Area: BK 6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 21.0 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 62.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?		/		
Is the concrete apron cracked or deteriorated? Frost Heaving?	/			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)				
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 63.26				
Thickness of sediment accumulation (reported depth-present measurement): -0.96				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 9/26 Inspected by: JL

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 013 Location/Functional Area: BKC

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 28 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		Rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.97				
Thickness of sediment accumulation (reported depth-present measurement): 0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 015 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-~~Hole~~ Well Type: Screened Monitor Interval Length: 20 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 52.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 53.10				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: CAP

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: BKGMW-016 Location/Functional Area: South Rtnl Rd BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10.1 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 21.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		light surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		slight heave
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.13				
Thickness of sediment accumulation (reported depth-present measurement): -0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Solid				

Inspection Date: 7/16/12 Inspected by: D. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: BKGMW-017 Location/Functional Area: North Line Rd Background BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10.1 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 36.10 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		slight rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 35.90				
Thickness of sediment accumulation (reported depth-present measurement): 0.20				
Are there an obstructions in the well?				
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 018 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.63				
Thickness of sediment accumulation (reported depth-present measurement): 0.57				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 3RK019 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 35.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		clear maybe mow
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 35.56				
Thickness of sediment accumulation (reported depth-present measurement): 0.14				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

1192

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 20 Location/Functional Area: BKG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 33.20 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 33.31				
Thickness of sediment accumulation (reported depth-present measurement): -0.11				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): hard				

Inspection Date: 7-16-12 Inspected by: gjm

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 021 Location/Functional Area: B1C6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10.1 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: ~~23.20~~ 20.6 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.46				
Thickness of sediment accumulation (reported depth-present measurement):				-0.86
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/23 Inspected by: JP

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: ASP MW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.15				
Thickness of sediment accumulation (reported depth-present measurement): 0.55				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: ASP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			A little rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.94				
Thickness of sediment accumulation (reported depth-present measurement): -0.24				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 023 Location/Functional Area: ASP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.50				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: ASP

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Flap missing on lock
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.80				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: ASP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.2 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?	✓			
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.20				
Thickness of sediment accumulation (reported depth-present measurement):				-1.0
Are there an obstructions in the well? (no)		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: ASP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.90				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: ASY mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion

Reported Construction Depth: 28.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.90				
Thickness of sediment accumulation (reported depth-present measurement):				-0.10
Are there an obstructions in the well?	✓			
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: A54 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.25				
Thickness of sediment accumulation (reported depth-present measurement): 0.45				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: ASP nw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.12				
Thickness of sediment accumulation (reported depth-present measurement):				0.18
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: ASP mw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.8 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.95				
Thickness of sediment accumulation (reported depth-present measurement): -1.15				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: B12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion

Reported Construction Depth: 23.2 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			RUST on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.82				
Thickness of sediment accumulation (reported depth-present measurement): 0.38				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 9-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: ~~OW1~~ 011 Location/Functional Area: B12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.72				
Thickness of sediment accumulation (reported depth-present measurement): 0.18				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 012 Location/Functional Area: B12

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.9 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on post
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓	✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	✓			
Is the well casing loose, (at the surface?)	✓			
Is a measurement point marked a the top of well casing?		✓		
Measured depth of the well from measurement point: 24.81				
Thickness of sediment accumulation (reported depth-present measurement): 0.09				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 013 Location/Functional Area: B12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.25 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.2				
Thickness of sediment accumulation (reported depth-present measurement): 0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: CBL MW-001 Location/Functional Area: C Blocks

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 51.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 50.40				
Thickness of sediment accumulation (reported depth-present measurement): 1.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Sol.				

Inspection Date: 7/16/12 Inspected by: B. Spaulding

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: CBMW-002 Location/Functional Area: C Block

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 47.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 47.30				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): sol.d				

Inspection Date: 7/16/12 Inspected by: B. Upschulte

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: CBCMW-003 Location/Functional Area: C Block

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 45.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 44.70				
Thickness of sediment accumulation (reported depth-present measurement): 1.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): hard				

Inspection Date: 7/16/12 Inspected by: D. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: CBLMW-004 Location/Functional Area: C Block

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 46.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 46.92				
Thickness of sediment accumulation (reported depth-present measurement): -0.12				
Are there an obstructions in the well?				
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: CBL MW-005 Location/Functional Area: C Block

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 8 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 32.42 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.40				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Solid				

Inspection Date: 7/16/12 Inspected by: D. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: CBPmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 34.9 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 34.11				
Thickness of sediment accumulation (reported depth-present measurement): 0.79				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: CBPmw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.2 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Lock cap
Does the well have a weatherproof lock?	✓			missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.68				
Thickness of sediment accumulation (reported depth-present measurement): 0.52				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: ~~008~~ 003 Location/Functional Area: CBP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.1 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.14				
Thickness of sediment accumulation (reported depth-present measurement): -3.04				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, (hard), etc.):				

Inspection Date: 7-16-18 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: CBP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/~~Above-ground~~ Completion:

Reported Construction Depth: 29.5 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.61				
Thickness of sediment accumulation (reported depth-present measurement): -0.11				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: CBPmw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓	✓		
Does vegetation around the well need clearing?				
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			missing lock cap
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.33				
Thickness of sediment accumulation (reported depth-present measurement): -0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: CBP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.20				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: CBP mw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 32.4 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.85				
Thickness of sediment accumulation (reported depth-present measurement): 0.55				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/6/12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: CBP NW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: ~~27.96~~ 27.92 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.92				
Thickness of sediment accumulation (reported depth-present measurement): -0.32				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: CBPmw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 66.55 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 66.56				
Thickness of sediment accumulation (reported depth-present measurement): -0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, (hard) etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: CP

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 15.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓		✓	
Does the well have a flush-mount box?	✓		✓	
Is the traffic cover cracked or broken?	✓		✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓		✓ (N)	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 14.69				
Thickness of sediment accumulation (reported depth-present measurement): 0.61				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): _____				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: CP mw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 15.1 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓		✓	
Does the well have a flush-mount box?	✓		✓ (2)	
Is the traffic cover cracked or broken?	✓		✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓		✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 14.94				
Thickness of sediment accumulation (reported depth-present measurement): 0.16				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: CP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 17.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓		4	
Does the well have a flush-mount box?	✓		4	
Is the traffic cover cracked or broken?	✓		✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓		✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 17.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: CP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.52				
Thickness of sediment accumulation (reported depth-present measurement): -0.32				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard) etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 025 Location/Functional Area: CPmW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount (Above-ground Completion)

Reported Construction Depth: 42.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 43.17				
Thickness of sediment accumulation (reported depth-present measurement): -0.77				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft (hard) etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: CP mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 20.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Lock cap
Does the well have a weatherproof lock?	✓			missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.67				
Thickness of sediment accumulation (reported depth-present measurement):				-0.47
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001B Location/Functional Area: DET

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 40.5 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☐	☑	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☐	
Does the well have a flush-mount box?	☐	☐	☐	
Is the traffic cover cracked or broken?	☐	☐	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☐	☑	☐	needs paint #
Describe labeling: none				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 38.50				
Thickness of sediment accumulation (reported depth-present measurement): 2.00				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

raider#7

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: MW002 Location/Functional Area: DET

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: _____ ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 40.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		X		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	X			
Describe labeling:				
Security:				
Does the well have a cap or lid?	X			
Does the well have a weatherproof lock?	X			
Does the lock secure well?	X			
Does the inner casing have a water-tight cap?	X			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		X		
Is the well casing loose, (at the surface?)		X		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 42.01				
Thickness of sediment accumulation (reported depth-present measurement): -2.01				
Are there an obstructions in the well?		X		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: DET

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 13.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.00				
Thickness of sediment accumulation (reported depth-present measurement): -3.00				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-14 Inspected by: CW

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: MW004 Location/Functional Area: DET

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 12.0 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 13.80				
Thickness of sediment accumulation (reported depth-present measurement): -1.90				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0				

Inspection Date: 7-16-12 Inspected by: Carl Gu

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 104 Location/Functional Area: DAZ

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 29.6 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)			✓	
Is the well casing loose, (at the surface?)			✓	
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.18				
Thickness of sediment accumulation (reported depth-present measurement): 0.42				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 105 Location/Functional Area: DAZ

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 16.2 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☐	☑	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☑	
Does the well have a flush-mount box?	☐	☐	☑	
Is the traffic cover cracked or broken?	☐	☐	☑	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☑	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 16.21				
Thickness of sediment accumulation (reported depth-present measurement): -0.01				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): 0				

Inspection Date: 7-17 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 106 Location/Functional Area: 142

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 7 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 18.1 ft ☐ BGS or ☐ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☒	☐	☐	
Are any of the posts damaged or degraded?	☐	☒	☐	
Is a concrete pad installed?	☒	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☒	☐	
Is steel protective casing installed?	☒	☐	☐	
Does the protective casing have a weep hole?	☒	☐	☐	
Does vegetation around the well need clearing?	☐	☒	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☒	
Does the well have a flush-mount box?	☐	☐	☒	
Is the traffic cover cracked or broken?	☐	☐	☒	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☒	
Identification:				
Is the well labeled with the correct number?	☒	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☒	☐	☐	
Does the well have a weatherproof lock?	☒	☐	☐	
Does the lock secure well?	☒	☐	☐	
Does the inner casing have a water-tight cap?	☒	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☒	☐	
Is the well casing loose, (at the surface?)	☐	☒	☐	
Is a measurement point marked a the top of well casing?	☒	☐	☐	
Measured depth of the well from measurement point: 16.78				
Thickness of sediment accumulation (reported depth-present measurement): 1.32				
Are there an obstructions in the well?	☐	☒	☐	
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: MW107 Location/Functional Area: DA2

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 16.5 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.81				
Thickness of sediment accumulation (reported depth-present measurement): -0.31				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-11-17 Inspected by: Carl Gn

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 108 Location/Functional Area: D47

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

~~Screened~~/Open-Hole Well Type: _____ Monitor Interval Length: 5 ft

Flush-mount/~~Above-ground~~ Completion: _____

Reported Construction Depth: 16.9 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☒	☐	☐	
Are any of the posts damaged or degraded?	☐	☒	☐	
Is a concrete pad installed?	☒	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☒	☐	
Is steel protective casing installed?	☒	☐	☐	
Does the protective casing have a weep hole?	☒	☐	☐	
Does vegetation around the well need clearing?	☐	☒	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☒	
Does the well have a flush-mount box?	☐	☐	☒	
Is the traffic cover cracked or broken?	☐	☐	☒	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☒	
Identification:				
Is the well labeled with the correct number?	☒	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☒	☐	☐	
Does the well have a weatherproof lock?	☒	☐	☐	
Does the lock secure well?	☒	☐	☐	
Does the inner casing have a water-tight cap?	☒	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☒	☐	
Is the well casing loose, (at the surface?)	☐	☒	☐	
Is a measurement point marked a the top of well casing?	☒	☐	☐	
Measured depth of the well from measurement point: 17.13				
Thickness of sediment accumulation (reported depth-present measurement): -0.23				
Are there an obstructions in the well?	☐	☒	☐	
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 109 Location/Functional Area: MZ

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 24.1 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: _____				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 24.31				
Thickness of sediment accumulation (reported depth-present measurement): -0.21				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): _____				

Inspection Date: 7-17 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 110 Location/Functional Area: D42

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 21.9 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		under pad erosion
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 22.33				
Thickness of sediment accumulation (reported depth-present measurement): -0.43				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 111 Location/Functional Area: DA2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 14.8 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 84.77				
Thickness of sediment accumulation (reported depth-present measurement): 0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0				

Inspection Date: 7-17 Inspected by: CAD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 112 Location/Functional Area: DA2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 16.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 17.04				
Thickness of sediment accumulation (reported depth-present measurement): -0.44				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: CAL

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 113 Location/Functional Area: DA 2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 5 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 16.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.28				
Thickness of sediment accumulation (reported depth-present measurement): -0.18				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17 Inspected by: CO

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 114 Location/Functional Area: DAZ

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 21.80 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.73				
Thickness of sediment accumulation (reported depth-present measurement): 0.07				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0				

Inspection Date: 7-17 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 115 Location/Functional Area: DA2

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 46.80 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 46.79				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 123 Location/Functional Area: EBG mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 33.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 34.75				
Thickness of sediment accumulation (reported depth-present measurement): -1.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 124 Location/Functional Area: EBG-mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 32.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.64				
Thickness of sediment accumulation (reported depth-present measurement): 0.26				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 9-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 125 Location/Functional Area: EBGmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.43				
Thickness of sediment accumulation (reported depth-present measurement): -0.63				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 126 Location/Functional Area: EBG mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			no standing water
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.78				
Thickness of sediment accumulation (reported depth-present measurement): 0.12				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: John Miller

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 127 Location/Functional Area: EBGmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction ~~Depth~~: 32.40 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.82				
Thickness of sediment accumulation (reported depth-present measurement): -0.42				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 128 Location/Functional Area: EBGmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.24				
Thickness of sediment accumulation (reported depth-present measurement): -0.24				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: John Miller

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 129 Location/Functional Area: EBGMW

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.4 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.9				
Thickness of sediment accumulation (reported depth-present measurement): -2.50				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-10-12 Inspected by: JHR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 130 Location/Functional Area: EBGmw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.39				
Thickness of sediment accumulation (reported depth-present measurement): -0.09				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-10-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 131R Location/Functional Area: EBGMW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 73.16 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 73.04				
Thickness of sediment accumulation (reported depth-present measurement): 0.06				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: TM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-166 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 19.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Sol.				

Inspection Date: 7/16/12 Inspected by: D. Dyesha

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQmw-167 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 18.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked **a** the top of well casing?	✓			
Measured depth of the well from measurement point: 18.97				
Thickness of sediment accumulation (reported depth-present measurement): -0.07				
Are there an obstructions in the well?				
Description of well bottom conditions (soft, hard, etc.): hard				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-168 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 21.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.20				
Thickness of sediment accumulation (reported depth-present measurement): 0.40				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-169 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 18.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 18.08				
Thickness of sediment accumulation (reported depth-present measurement): 0.12				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): solid				

Inspection Date: 7/16/12 Inspected by: D. Byerhardt

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-170 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 32.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.69				
Thickness of sediment accumulation (reported depth-present measurement): -0.09				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): med. vm				

Inspection Date: 7/16/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQmw-171 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 31.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.40				
Thickness of sediment accumulation (reported depth-present measurement): -0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): hard				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-172 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 34.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: fair, "MW" faded				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 34.40				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Solid (trace sediment)				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-173 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 53 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: ~~52.95~~ 53.08				~~0.05~~
Thickness of sediment accumulation (reported depth-present measurement): ~ 0.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-174 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 26.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.04 23.12				
Thickness of sediment accumulation (reported depth-present measurement): 3.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: K. Dyer

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQMW-175 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 25.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.78 25.89				
Thickness of sediment accumulation (reported depth-present measurement): -0.29				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: D. Bjorkedal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQ MW-176 Location/Functional Area: Fuze & Booster

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 23.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.61				
Thickness of sediment accumulation (reported depth-present measurement): -0.31				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium/soft				

Inspection Date: 7/16/12 Inspected by: S. Spesshardt

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FBQmw-177 Location/Functional Area: Fuze & Booster Quad

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 24.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good, "FBQ" slightly faded				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.75				
Thickness of sediment accumulation (reported depth-present measurement): 0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/16/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: FWC

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 20.05 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: Painted				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.04				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/23 Inspected by: JR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 062 Location/Functional Area: FWG

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 70.05 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 68.52				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/23 Inspected by: JR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-003 Location/Functional Area: N/Th Line Rd. Coal Tipple FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 21.10 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: Unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.08				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: B. Bjorkquist

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-004 Location/Functional Area: Admin Area, west of Guard Post FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.60 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.58				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: B. Hernandez

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-005 Location/Functional Area: Newton Falls West, Logging Rd FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 31.90 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.80				
Thickness of sediment accumulation (reported depth-present measurement): 0.10				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: B. Yeshardt

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-006 Location/Functional Area: McCormick Rd FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 19.25 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?	✓			
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.21				
Thickness of sediment accumulation (reported depth-present measurement): 0.04				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: FWG

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 32.35 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?		✓		
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.32				
Thickness of sediment accumulation (reported depth-present measurement): 0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/21 Inspected by: JH

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-008 Location/Functional Area: Rt 80 Tank Farm (South) FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.10 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.28				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/16/12 Inspected by: B. Upshaw

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-009 Location/Functional Area: Rt 80 Tank Farm (North) FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 20.40 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.38				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?				
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: V. Granado

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: FWG

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: ~~20.40~~ 19.10 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.09				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, ~~hard~~, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 011 Location/Functional Area: FWG mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 17.80 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 17.79				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 012 Location/Functional Area: FWGmw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 42.45 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 42.45				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft hard etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 113 Location/Functional Area: FWC

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 36.70 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?	✓			
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 36.69				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: JW

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-014 Location/Functional Area: ~~Munitions~~ FWG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 21.15 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.11				
Thickness of sediment accumulation (reported depth-present measurement): 0.04				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: B. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-015 Location/Functional Area: FWG Admin Area, east of guard Post 1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 26.35 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.31				
Thickness of sediment accumulation (reported depth-present measurement): 0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: A. Quesada

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: FWGMW-016 Location/Functional Area: Admin Area, paired w/ FWGMW-015 FWG7

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 67.50 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 67.47				
Thickness of sediment accumulation (reported depth-present measurement): 0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/16/12 Inspected by: M. Mendoza

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-063 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10. ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: ~~20.0~~ 30.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.13				
Thickness of sediment accumulation (reported depth-present measurement): -0.13				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 064 Location/Functional Area: LL1 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 21.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Lots of rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.05				
Thickness of sediment accumulation (reported depth-present measurement): 0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-1-02 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 065 Location/Functional Area: LL/MW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			A lot of rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.09				
Thickness of sediment accumulation (reported depth-present measurement): 0.31				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 067 Location/Functional Area: LL

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.7 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25.6 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.69				
Thickness of sediment accumulation (reported depth-present measurement): -0.09				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-078 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.15				
Thickness of sediment accumulation (reported depth-present measurement): -0.05				
Are there an obstructions in the well?	✓			Extra tubing (SAID?) pulled ✓
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LLP 079 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.4 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 42.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.95				
Thickness of sediment accumulation (reported depth-present measurement): 0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-08D Location/Functional Area: LL-1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			flap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.40				-0.40
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-081 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 49 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.88				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-082 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			flap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 42.44				
Thickness of sediment accumulation (reported depth-present measurement): -0.64				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-083 Location/Functional Area: LL1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.5 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			flap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.45				
Thickness of sediment accumulation (reported depth-present measurement): 0.25				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-084 Location/Functional Area: LL-1

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.6 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 39.03 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			flap missing
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 39.10				
Thickness of sediment accumulation (reported depth-present measurement): 0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Huge open manhole on drive approaching this well. Proceed w/ caution LL

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL1-085 Location/Functional Area: LL1

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.4 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 44.7 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			missing flap
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 45.30				
Thickness of sediment accumulation (reported depth-present measurement): -0.60				
Are there an obstructions in the well?	✓			Sample bailer suspended in well
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 086 Location/Functional Area: LL/mw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported ~~Construction Depth~~: 77.38 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 77.15				
Thickness of sediment accumulation (reported depth-present measurement): 0.23				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 087 Location/Functional Area: LL1 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion

Reported Construction Depth: 18.55 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: ~~18.85~~ 18.55 rechecked ok ✓				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft/ hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-059 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 9.8 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 21.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.78				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 060 Location/Functional Area: LL2 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/~~Open-Hole~~ Well Type: Screened Monitor Interval Length: 9.8 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 20.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.79				
Thickness of sediment accumulation (reported depth-present measurement): 0.11				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-261 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 21.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.52				
Thickness of sediment accumulation (reported depth-present measurement): -0.62				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Active Yellow Jacket nest destroyed

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-262 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.3 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.40				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-263 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.45				
Thickness of sediment accumulation (reported depth-present measurement):				-0.45
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-264 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/~~Above-ground~~ Completion:

Reported Construction Depth: 21.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.42				
Thickness of sediment accumulation (reported depth-present measurement): -0.72				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-765 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 2 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.45				
Thickness of sediment accumulation (reported depth-present measurement): -0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-266 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.75				
Thickness of sediment accumulation (reported depth-present measurement): -0.55				
Are there an obstructions in the well?	✓			Extra tubing (SAEC)
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-267 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.65				
Thickness of sediment accumulation (reported depth-present measurement): ~0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-268 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.95				
Thickness of sediment accumulation (reported depth-present measurement): -0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL2-269 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.40 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			flap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.32				
Thickness of sediment accumulation (reported depth-present measurement): -0.92				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: ~~LL2-267~~ LL2-270 Location/Functional Area: LL2

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 20.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.45				
Thickness of sediment accumulation (reported depth-present measurement): -2.15				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3 MW-232 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 38.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 39.78				
Thickness of sediment accumulation (reported depth-present measurement): -0.98				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3MW-233 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 32.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: Good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Lock cap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.76				
Thickness of sediment accumulation (reported depth-present measurement): 0.44				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: B. Spurlock

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3mw-234 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.10 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			wxsps
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.61				
Thickness of sediment accumulation (reported depth-present measurement): -0.51				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3 MW-235 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.93				
Thickness of sediment accumulation (reported depth-present measurement): -0.73				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Solid				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3mw-236 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: ~~2226.2~~ ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.57				
Thickness of sediment accumulation (reported depth-present measurement): -0.37				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/17/12 Inspected by: D. Dyshart

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3MW-237 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 24.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			corroded
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.51				
Thickness of sediment accumulation (reported depth-present measurement): -0.61				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Sol.				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3mw-238 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Lock cap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.33				
Thickness of sediment accumulation (reported depth-present measurement): ~0.43				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3MW-239 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 36.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 36.90				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3 MW-240 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 36.50 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 36.65				
Thickness of sediment accumulation (reported depth-present measurement): -0.15				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: D. Hershelman

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3 MW-241 Location/Functional Area: Load Line 3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 25.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: Good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.53				
Thickness of sediment accumulation (reported depth-present measurement): -0.43				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: S. Speechley

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 242 Location/Functional Area: LL3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported ~~Construction~~ Depth: 24.90 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.54				
Thickness of sediment accumulation (reported depth-present measurement):				-0.64
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: SM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 243 Location/Functional Area: LL3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.33				
Thickness of sediment accumulation (reported depth-present measurement): -0.53				
Are there an obstructions in the well?	✓			
Description of well bottom conditions (soft [hard] etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 244 Location/Functional Area: LL3 MW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 47.25 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 47.1				
Thickness of sediment accumulation (reported depth-present measurement): 0.15				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 9-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL3-245 Location/Functional Area: LL3

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 48.90 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 48.80				
Thickness of sediment accumulation (reported depth-present measurement): 0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 193 Location/Functional Area: LL4 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported ~~Construction Depth~~: 23.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.18				
Thickness of sediment accumulation (reported depth-present measurement): ~0.68				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Medium				

Inspection Date: 7-16-12 Inspected by: JW

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 194 Location/Functional Area: LL4 MW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			needs a new
Does the well have a weatherproof lock?	✓			lock cap
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.42				
Thickness of sediment accumulation (reported depth-present measurement): -0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard etc.):				

Inspection Date: 7-16-12 Inspected by: JMC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 195 Location/Functional Area: LL4 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.74				
Thickness of sediment accumulation (reported depth-present measurement): -0.44				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 196 Location/Functional Area: LL4 MW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 21.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓	N/A		
Is the pad cracked or deteriorated? Frost Heaving?	✓	✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft [hard] etc.):				

Inspection Date: 7-16-12 Inspected by: TJM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 197 Location/Functional Area: LL4 mw

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.7 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			One post leaning but stable
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.58				
Thickness of sediment accumulation (reported depth-present measurement): -0.88				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 198 Location/Functional Area: LL4 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.3 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)	✓	✓		
Is a measurement point marked a the top of well casing?				
Measured depth of the well from measurement point: 21.68				
Thickness of sediment accumulation (reported depth-present measurement): 0.62				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 199 Location/Functional Area: LL4 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction ~~Depth~~: 22.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	NA		✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.14				
Thickness of sediment accumulation (reported depth-present measurement): -0.54				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 200 Location/Functional Area: LL4

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion/

Reported Construction Depth: 25 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓	✓		
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.08				
Thickness of sediment accumulation (reported depth-present measurement): -0.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft hard, etc.):				

Inspection Date: 7-16-12 Inspected by: TJA

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 201 Location/Functional Area: LL4

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 70.72 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 69.78 recheck 70.72				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: LL5

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.10				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Med				

Inspection Date: 7-16 Inspected by: Cal

2.42

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: LL5

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 27.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?				
Does the lock secure well?				
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.56				
Thickness of sediment accumulation (reported depth-present measurement): 0.34				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CW

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL5

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.0 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?				lock tab missing
Does the lock secure well?				
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.04				
Thickness of sediment accumulation (reported depth-present measurement): -0.40				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: LL5

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.39				
Thickness of sediment accumulation (reported depth-present measurement): -0.49				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): ~~Med~~				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: 225

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?				
Does the well have a weatherproof lock?				
Does the lock secure well?				
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 29.74				
Thickness of sediment accumulation (reported depth-present measurement): 0.16				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 706 Location/Functional Area: LL 5

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 29.9 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?				lock tab missing
Does the lock secure well?				
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.10				
Thickness of sediment accumulation (reported depth-present measurement):				-0.20
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: LL6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 17 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?			✓	
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 17.54				
Thickness of sediment accumulation (reported depth-present measurement): -0.54				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: MC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: 26

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported ~~Construction Depth~~: 22.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			A little rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.43				
Thickness of sediment accumulation (reported depth-present measurement): -1.93				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, (hard), etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported ~~Construction~~ Depth: 25.9 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts.
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		Needs sand around inner casing
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.6				
Thickness of sediment accumulation (reported depth-present measurement): 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: LL6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25.1 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			A little rust
Are any of the posts damaged or degraded?		✓		on well casing
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.48				
Thickness of sediment accumulation (reported depth-present measurement): 0.62				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): ?				

Inspection Date: 7-20-12 Inspected by: AML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: LL6

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			Needs sand around inner casing
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.03				
Thickness of sediment accumulation (reported depth-present measurement): 0.47				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: L26

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 17.0 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			lots of rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?			✓	
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 17.72				
Thickness of sediment accumulation (reported depth-present measurement): -0.72				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): _____				

Inspection Date: 7-20-12 Inspected by: JMC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: LLB

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported ~~Construction~~ Depth: 19.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓		✓	
Does the protective casing have a weep hole?	✓		✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.36				
Thickness of sediment accumulation (reported depth-present measurement): 0.14				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Medium				

Inspection Date: 7-20-11 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: LL6

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 20.20 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: ~~21.5~~ recheck 20.20 Cal				
Thickness of sediment accumulation (reported depth-present measurement): ~~-1.30~~ 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Medium				

Inspection Date: 7-20-12 Inspected by: MC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: L26

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.40 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.34				
Thickness of sediment accumulation (reported depth-present measurement): 0.06				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: MZ

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 33.2 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 33.02				
Thickness of sediment accumulation (reported depth-present measurement):				-0.82
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion?

Reported Construction Depth: 27.8 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.18				
Thickness of sediment accumulation (reported depth-present measurement):				0.62
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: 47

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 33.49 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 33.49				
Thickness of sediment accumulation (reported depth-present measurement): 0.11				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft (hard) etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.18				
Thickness of sediment accumulation (reported depth-present measurement): 0.32				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 30.6 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.31				
Thickness of sediment accumulation (reported depth-present measurement): 0.29				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 30.4 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.27				
Thickness of sediment accumulation (reported depth-present measurement): 0.13				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: LL8

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.8 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			A little rust on post
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.47				− 0.67
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: 448

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.8 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			A little rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.55				
Thickness of sediment accumulation (reported depth-present measurement): 0.25				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL8

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.00				
Thickness of sediment accumulation (reported depth-present measurement): 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: LL8

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.7				
Thickness of sediment accumulation (reported depth-present measurement): 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: UP

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.2 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on post
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.74				
Thickness of sediment accumulation (reported depth-present measurement): -0.54				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft) hard, etc.):				

Inspection Date: 7-20-12 Inspected by: VML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: LL7

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.8 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.05				
Thickness of sediment accumulation (reported depth-present measurement): -0.25				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-20-12 Inspected by: ML

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: U9

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 23.3 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusting
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?				
Does the well have a weatherproof lock?				
Does the lock secure well?				
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)				2¾' Sand Needed
Is the well casing loose, (at the surface?)				
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.38				-0.08
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

16-92

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: LL9

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: C

Reported Construction Depth: 22.4 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: paint				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)			✓	
Is the well casing loose, (at the surface?)			✓	
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.79				
Thickness of sediment accumulation (reported depth-present measurement): -0.39				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL9

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: C

Reported Construction Depth: 23.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 24.26				
Thickness of sediment accumulation (reported depth-present measurement): -0.46				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): C				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: LL9

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-~~Hole~~ Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 34.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusting
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: paint, fading				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		has wasps
Is the well casing loose, (at the surface?)		✓		needs sand.
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 34.73				
Thickness of sediment accumulation (reported depth-present measurement):				0.17
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: LL9

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: C

Reported Construction Depth: 23.3 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusted
Is a concrete pad installed?	✓			wobbly post
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: faded				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)			✓	needs 1.5-2' sand
Is the well casing loose, (at the surface?)			✓	
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.55				
Thickness of sediment accumulation (reported depth-present measurement):				-0.25
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): C				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: LL9

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusting
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: little fading				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.88				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-14 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: U9

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported Construction Depth: 18.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion: Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓	Cell?		
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?			✓	
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?			✓	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 18.20				
Thickness of sediment accumulation (reported depth-present measurement): 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: U10

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 29.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusted
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.63				
Thickness of sediment accumulation (reported depth-present measurement): 0.17				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: LL10

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 29.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.84				
Thickness of sediment accumulation (reported depth-present measurement): -0.14				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL10

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 28.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling: _____				
Security:				
Does the well have a cap or lid?				
Does the well have a weatherproof lock?				
Does the lock secure well?				
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 28.59				
Thickness of sediment accumulation (reported depth-present measurement): 0.31				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): _____				

Inspection Date: 7-16 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: 410

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 33.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Lock tab missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 33.57				
Thickness of sediment accumulation (reported depth-present measurement):				0.23
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cel

19.61

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: LL10

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: (A)

Reported Construction Depth: 29.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion: Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?	✓			VGY
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.29				
Thickness of sediment accumulation (reported depth-present measurement): 5.01				
Are there an obstructions in the well?				
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-14 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: LL10

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 26.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?	/			
Does the protective casing have a weep hole?	/			
Does vegetation around the well need clearing?		/		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 26.52				
Thickness of sediment accumulation (reported depth-present measurement): -0.42				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.): Med				

Inspection Date: 7.16 Inspected by: CeD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: LL11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 24.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		2.5' Sand needed
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.45				
Thickness of sediment accumulation (reported depth-present measurement): 0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: LL11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported Construction Depth: 16.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?				
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?				
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			surverged w/ water
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.51				
Thickness of sediment accumulation (reported depth-present measurement): -0.51				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-14 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: LL11

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported Construction Depth: ~~15.9~~ 16.09 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?			✓	
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?			✓	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.09				
Thickness of sediment accumulation (reported depth-present measurement): -0.19				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CaD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: LL11

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

~~Flush-mount~~/Above-ground Completion: F

Reported Construction Depth: ~~16.2~~ ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			water filled
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?				
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?				
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			missing 1 bolt no bolt hole
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			cap crack but still secure
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 16.24				-0.04
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

2.96

Inspection Date: 7-14 Inspected by: CAL

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: WELL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported Construction Depth: 16.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?			/	
Does the protective casing have a weep hole?			/	
Does vegetation around the well need clearing?			/	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	/			
Does the well have a flush-mount box?	/			
Is the traffic cover cracked or broken?		/		
Is the concrete apron cracked or deteriorated? Frost Heaving?		/		
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 16.48				
Thickness of sediment accumulation (reported depth-present measurement): -0.48				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CAD

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: LL11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: F

Reported Construction Depth: 15.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?			✓	
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?			✓	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	✓			
Does the well have a flush-mount box?	✓			
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?		✓		
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 15.58				
Thickness of sediment accumulation (reported depth-present measurement): -0.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: LL11

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/~~Above-ground~~ Completion:

Reported Construction Depth: 25.2 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Lock cap missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.40				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0				

Inspection Date: 7-16 Inspected by: Cal

F593C
CK

Ravenna Army Ammunition Plant
WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: LL11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 15.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	/			
Are any of the posts damaged or degraded?		/		
Is a concrete pad installed?	/			
Is the pad cracked or deteriorated? Frost Heaving?		/		
Is steel protective casing installed?			/	
Does the protective casing have a weep hole?			/	
Does vegetation around the well need clearing?			/	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	/			
Does the well have a flush-mount box?	/			
Is the traffic cover cracked or broken?		/		
Is the concrete apron cracked or deteriorated? Frost Heaving?		/		
Identification:				
Is the well labeled with the correct number?	/			
Describe labeling:				
Security:				
Does the well have a cap or lid?	/			
Does the well have a weatherproof lock?	/			
Does the lock secure well?	/			
Does the inner casing have a water-tight cap?	/			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		/		
Is the well casing loose, (at the surface?)		/		
Is a measurement point marked a the top of well casing?	/			
Measured depth of the well from measurement point: 15.78				
Thickness of sediment accumulation (reported depth-present measurement): -0.38				
Are there an obstructions in the well?		/		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Carl

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: well

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: ~~19.58~~ 16.6 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☐	☐	☐	
Are any of the posts damaged or degraded?	☐	☐	☐	
Is a concrete pad installed?	☐	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Is steel protective casing installed?	☐	☐	☐	
Does the protective casing have a weep hole?	Cal	X	☐	
Does vegetation around the well need clearing?	☐	☐	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☐	
Does the well have a flush-mount box?	☐	☐	☐	
Is the traffic cover cracked or broken?	☐	☐	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☐	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☐	☐	☐	
Does the well have a weatherproof lock?	☐	☐	☐	
Does the lock secure well?	☐	☐	☐	
Does the inner casing have a water-tight cap?	☐	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☐	☐	
Is the well casing loose, (at the surface?)	☐	☐	☐	
Is a measurement point marked a the top of well casing?	☐	☐	☐	
Measured depth of the well from measurement point: 19.58				
Thickness of sediment accumulation (reported depth-present measurement): -2.98				
Are there an obstructions in the well?	☐	☐	☐	
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: U11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			lock tab missing
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		Needs Sand 3+'
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.52				
Thickness of sediment accumulation (reported depth-present measurement): -0.12				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16 Inspected by: CAP

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LLIMW5-01 Location/Functional Area: Load Line 11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 20.45 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?				
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.44				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/16/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL11MW-012 Location/Functional Area: Load Line 11

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 119.45 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 119.2				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-088 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 27.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.45				
Thickness of sediment accumulation (reported depth-present measurement):				-0.35
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-107 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 33.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 33.75				
Thickness of sediment accumulation (reported depth-present measurement): -0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

EC 7/17/12

Inspection Date: ~~7/16~~ 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 113 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.80				
Thickness of sediment accumulation (reported depth-present measurement): 5.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12 - 128 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 33.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 34.03				
Thickness of sediment accumulation (reported depth-present measurement): -0.73				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-153 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.80				
Thickness of sediment accumulation (reported depth-present measurement): 0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-154 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 28.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.65				
Thickness of sediment accumulation (reported depth-present measurement): 0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-182 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 37.7 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 38.02				
Thickness of sediment accumulation (reported depth-present measurement): -0.32				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-182 SS Location/Functional Area: LL12

Casing Type: [ ] Steel [X] Stainless Steel [ ] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 38.50 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 38.50				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 183 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 36.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 36.35				
Thickness of sediment accumulation (reported depth-present measurement): -0.35				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 184 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 31.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?	✓			
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.10				
Thickness of sediment accumulation (reported depth-present measurement): 0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 185 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.30				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 186 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported ~~Construction Depth~~: 21.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 21.05				
Thickness of sediment accumulation (reported depth-present measurement): -0.05				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 187 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported ~~Construction Depth~~: 29.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.95				
Thickness of sediment accumulation (reported depth-present measurement): -0.55				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 188 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.2 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.10				
Thickness of sediment accumulation (reported depth-present measurement): 0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 189 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion

Reported Construction Depth: 19.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 19.64				
Thickness of sediment accumulation (reported depth-present measurement): -0.04				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 242 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion

Reported Construction Depth: 28.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.80				
Thickness of sediment accumulation (reported depth-present measurement): -0.50				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft/hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-243 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 25.7 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.40				
Thickness of sediment accumulation (reported depth-present measurement): 1.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 244 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above-ground Completion

Reported Construction Depth: 32.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Some rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.70				
Thickness of sediment accumulation (reported depth-present measurement): 1.40				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: LL12-245 Location/Functional Area: LL12

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 30.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: ~~29.55~~ 30.44 gw				0.06
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 246 Location/Functional Area: LL12

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 34.3 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓			Alot of rust on posts
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Lock flap is missing
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 35.05				
Thickness of sediment accumulation (reported depth-present measurement): -0.75				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard etc.):				

Inspection Date: 7-17-12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 247 Location/Functional Area: LL2 mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 22.60 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.58				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 024 Location/Functional Area: LNW

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 22.7 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?	✓	"		Rusty SWS
Is a concrete pad installed?		✓		
Is the pad cracked or deteriorated? Frost Heaving?	✓	✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.50				
Thickness of sediment accumulation (reported depth-present measurement): 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: J

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 025 Location/Functional Area: LNW

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 19.9 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.34				
Thickness of sediment accumulation (reported depth-present measurement): -0.44				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 026 Location/Functional Area: LNW

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Scr Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Ac

Reported Construction Depth: 25.9 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		Rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.99				
Thickness of sediment accumulation (reported depth-present measurement):				-0.13
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):	H			

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 027 Location/Functional Area: LNW

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Scr Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 26.7 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☐	☑	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☑	
Does the well have a flush-mount box?	☐	☑	☐	
Is the traffic cover cracked or broken?	☐	☑	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 26.80				-0.14
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: J

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA mw-107 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 24.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.10				
Thickness of sediment accumulation (reported depth-present measurement):				0.50
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/17/12 Inspected by: B. Ingersoll

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTAMW-108 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 24.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?				
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.41				
Thickness of sediment accumulation (reported depth-present measurement): -0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA mw-109 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 20.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.38				
Thickness of sediment accumulation (reported depth-present measurement): 0.52				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/17/12 Inspected by: JS Gerardo

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA mw-110 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 29.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.74				-0.14
Thickness of sediment accumulation (reported depth-present measurement):				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): solid				

Inspection Date: 7/17/12 Inspected by: D. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA MW-111 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.02				
Thickness of sediment accumulation (reported depth-present measurement): 0.38				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): soft				

Inspection Date: 7/17/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTAMW-112 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 26.9 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		Some surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.56				
Thickness of sediment accumulation (reported depth-present measurement): 0.34				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: S. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTAMW-113 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 30.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 29.60				
Thickness of sediment accumulation (reported depth-present measurement): 1.00				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Soft				

Inspection Date: 7/17/12 Inspected by: S. Sperhac

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTAMW-114 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		rusty
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.55				
Thickness of sediment accumulation (reported depth-present measurement):				~0.05
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):	sol.d (trace silt)			

Inspection Date: 7/17/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA MW-115 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 25.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		some surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.29				
Thickness of sediment accumulation (reported depth-present measurement): -0.09				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Solid				

Inspection Date: 7/17/12 Inspected by: B. Gronlund

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA MW-116 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 22.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		slight rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 22.54				
Thickness of sediment accumulation (reported depth-present measurement): 0.06				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): solid				

Inspection Date: 7/17/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTAmw-117 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 27.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: paint				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.50				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA MW-118 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 24.6 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		surface rust
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: good				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Cap is missing
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.62				
Thickness of sediment accumulation (reported depth-present measurement): ~0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium				

Inspection Date: 7/17/12 Inspected by: D. Eyerdam

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: NTA MW-119 Location/Functional Area: NACA

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: Above

Reported Construction Depth: 104.60 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?		✓		
Describe labeling: unlabeled				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 104.68				
Thickness of sediment accumulation (reported depth-present measurement): -0.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): medium hard				

Inspection Date: 7/17/12 Inspected by: B. Sparks

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL-006 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 20 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 4.1.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			flap missing
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 42.05				
Thickness of sediment accumulation (reported depth-present measurement): -0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL mw-007 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 18.2 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Flap on lock missing
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 18.60				
Thickness of sediment accumulation (reported depth-present measurement): -0.40				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Wasp nest destroyed & removed.

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL-007 (9) Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 18.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?	✓			
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			flap missing
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 18.68				
Thickness of sediment accumulation (reported depth-present measurement): -0.18				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RAL-009 Location/Functional Area: RAL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 18.4 ft [ ] BGS or [X] BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			Rusted, flap missing
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 18.85				
Thickness of sediment accumulation (reported depth-present measurement):				-0.45
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 010 Location/Functional Area: KQL mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 20 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 35.1 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			Replaced outer casing lid
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 35.26				
Thickness of sediment accumulation (reported depth-present measurement): -0.16				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, (hard) etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL-011 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 20 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 34.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?	✓			Wiggly Pad
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?		✓		
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)	✓	✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 35.36				
Thickness of sediment accumulation (reported depth-present measurement): -0.76				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL-012 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 013 Location/Functional Area: BQL mw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 36.40				
Thickness of sediment accumulation (reported depth-present measurement): ~~0.88~~ 0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 014 Location/Functional Area: RQLmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 316 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 310.48				
Thickness of sediment accumulation (reported depth-present measurement): 0.12				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL-015 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			Rusted
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 42.05				
Thickness of sediment accumulation (reported depth-present measurement): -0.45				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: RQL 016 Location/Functional Area: RQL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 41.6 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 41.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.10				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): Hard				

Inspection Date: 7/16/12 Inspected by: EC

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 017 Location/Functional Area: RALmw

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 32.5 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 32.70				
Thickness of sediment accumulation (reported depth-present measurement): -0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, (hard), etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: SCF

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 16 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 213.61 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	☒	☐	☐	
Are any of the posts damaged or degraded?	☐	☒	☐	
Is a concrete pad installed?	☒	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☒	☐	
Is steel protective casing installed?	☒	☐	☐	
Does the protective casing have a weep hole?	☒	☐	☐	
Does vegetation around the well need clearing?	☐	☒	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☒	
Does the well have a flush-mount box?	☐	☐	☒	
Is the traffic cover cracked or broken?	☐	☐	☒	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☒	
Identification:				
Is the well labeled with the correct number?	☒	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☒	☐	☐	
Does the well have a weatherproof lock?	☒	☐	☐	
Does the lock secure well?	☒	☐	☐	
Does the inner casing have a water-tight cap?	☒	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☒	☐	
Is the well casing loose, (at the surface?)	☐	☒	☐	
Is a measurement point marked a the top of well casing?	☒	☐	☐	
Measured depth of the well from measurement point: 214.50				
Thickness of sediment accumulation (reported depth-present measurement): -0.89				
Are there an obstructions in the well?	☐	☒	☐	
Description of well bottom conditions (soft, hard, etc.): Q				

Inspection Date: 7-16-12 Inspected by: Cal

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: SCF

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 149.65 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 150.30				
Thickness of sediment accumulation (reported depth-present measurement): -0.65				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: SCF mW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/~~Above-ground~~ Completion: [ ]

Reported Construction Depth: 139.65 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 139.65				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 098 004 Location/Functional Area: SCFMW

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/~~Above-ground~~ Completion:

Reported Construction Depth: 112.47 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 112.50				
Thickness of sediment accumulation (reported depth-present measurement): -0.03				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7-16-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: SCT 005 Location/Functional Area: SCTMU

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 15 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 156.41 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: ~~n.a.~~ 156.40				
Thickness of sediment accumulation (reported depth-present measurement): 0.01				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/6-12 Inspected by: JM

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: SCI- Location/Functional Area: 006

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 88.32 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well:				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 87.89				
Thickness of sediment accumulation (reported depth-present measurement): 0.43				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/23 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: WB6

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: _____ Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: _____

Reported Construction Depth: 21.1 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: _____				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☐	☑	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☑	
Does the well have a flush-mount box?	☐	☐	☐	
Is the traffic cover cracked or broken?	☐	☐	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling: _____				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 21.14				
Thickness of sediment accumulation (reported depth-present measurement): -0.04				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: _____

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: WBG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 20.4 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓	✓		
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			/	
Does the well have a flush-mount box?			/	
Is the traffic cover cracked or broken?			/	
Is the concrete apron cracked or deteriorated? Frost Heaving?			/	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.14				
Thickness of sediment accumulation (reported depth-present measurement): 0.26				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 007 Location/Functional Area: WBG

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 24.3 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 26.38				
Thickness of sediment accumulation (reported depth-present measurement): -0.08				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: JR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 008 Location/Functional Area: WBC

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 21.0 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?		/		
Is the traffic cover cracked or broken?	/			
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 20.82				
Thickness of sediment accumulation (reported depth-present measurement): 0.18				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): X				

Inspection Date: 7/17 Inspected by: JZ

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 009 Location/Functional Area: WBG

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 24 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 3				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?				
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.26				
Thickness of sediment accumulation (reported depth-present measurement): -0.26				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: G10 Location/Functional Area: CWB6

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: ☑

Reported Construction Depth: 23.6 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☐	☑	☐	Trees 11
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☐	
Does the well have a flush-mount box?	☐	☐	☐	
Is the traffic cover cracked or broken?	☐	☐	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 23.24				
Thickness of sediment accumulation (reported depth-present measurement): 0.36				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: OW1 Location/Functional Area: WBL

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 24.0 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.84				
Thickness of sediment accumulation (reported depth-present measurement): 0.16				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 012 Location/Functional Area: WBG

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 32.0 ft ☐ BGS or ☐ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☑	☐	☐	Post Bent Steel
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☑	☐	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☑	
Does the well have a flush-mount box?	☐	☐	☑	
Is the traffic cover cracked or broken?	☐	☐	☑	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 31.68				
Thickness of sediment accumulation (reported depth-present measurement): 0.32				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 013 Location/Functional Area: WB-

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: 23.9 ft ☐ BGS or ☑ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?	✓			
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.04				
Thickness of sediment accumulation (reported depth-present measurement): -0.14				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/17 Inspected by: J

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 014 Location/Functional Area: WB 6

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 25 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.98				
Thickness of sediment accumulation (reported depth-present measurement): 0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 015 Location/Functional Area: UBE

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 23.8 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 23.46				
Thickness of sediment accumulation (reported depth-present measurement): 0.32				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): lt				

Inspection Date: 7/12 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 016 Location/Functional Area: WBC

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 25.4 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		Rusted
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 25.24				
Thickness of sediment accumulation (reported depth-present measurement): 0.19				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 017 Location/Functional Area: AOC

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion:

Reported Construction Depth: ~~24.0~~ 23.9 ft ☐ BGS or ☑ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	☑	☐	☐	
Are any of the posts damaged or degraded?	☐	☑	☐	
Is a concrete pad installed?	☑	☐	☐	
Is the pad cracked or deteriorated? Frost Heaving?	☐	☑	☐	
Is steel protective casing installed?	☑	☐	☐	
Does the protective casing have a weep hole?	☑	☐	☐	
Does vegetation around the well need clearing?	☑	☐	☐	
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?	☐	☐	☐	
Does the well have a flush-mount box?	☐	☐	☐	
Is the traffic cover cracked or broken?	☐	☐	☐	
Is the concrete apron cracked or deteriorated? Frost Heaving?	☐	☐	☐	
Identification:				
Is the well labeled with the correct number?	☑	☐	☐	
Describe labeling:				
Security:				
Does the well have a cap or lid?	☑	☐	☐	
Does the well have a weatherproof lock?	☑	☐	☐	
Does the lock secure well?	☑	☐	☐	
Does the inner casing have a water-tight cap?	☑	☐	☐	
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)	☐	☑	☐	
Is the well casing loose, (at the surface?)	☐	☑	☐	
Is a measurement point marked a the top of well casing?	☑	☐	☐	
Measured depth of the well from measurement point: 23.35				
Thickness of sediment accumulation (reported depth-present measurement): 0.55				
Are there an obstructions in the well?	☐	☑	☐	
Description of well bottom conditions (soft, hard, etc.): N				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 018 Location/Functional Area: WBC

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 24.80 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0				Earther Ber
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 24.81				
Thickness of sediment accumulation (reported depth-present measurement):				-0.01
Are there an obstructions in the well?	NA	✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 019 Location/Functional Area: WBG

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 5050 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0 Earth Berm				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?		✓		
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 50.44				
Thickness of sediment accumulation (reported depth-present measurement):				0.06
Are there an obstructions in the well?	✓	✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by: [signature]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 020 Location/Functional Area: WBT

Casing Type: ☐ Steel ☐ Stainless Steel ☑ PVC

Screened/Open-Hole Well Type: Screen Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AC

Reported Construction Depth: 43.80 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0 Earth Berm				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 43.80				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): ht				

Inspection Date: 7/17 Inspected by: JR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 021 Location/Functional Area: WB6

Casing Type: [ ] Steel [ ] Stainless Steel [X] PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: AG

Reported Construction Depth: 43.10 ft [ ] BGS or [X] BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 0 Earthen Berm				
Are the posts positioned to prevent collision damage to the well?			✓	
Are any of the posts damaged or degraded?			✓	
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?			✓	
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 43.12				
Thickness of sediment accumulation (reported depth-present measurement): -0.02				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/17 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 001 Location/Functional Area: MB5

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 31.5 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	INSPECTION ITEMS YES	NO	N/A	COMMENTS
Above-ground completion:				well pad not under water
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?				
Measured depth of the well from measurement point: 31.04				
Thickness of sediment accumulation (reported depth-present measurement): 0.42				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/24 Inspected by: JR

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 002 Location/Functional Area: MBS

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: ~~4~~ 30.7 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 31.24				
Thickness of sediment accumulation (reported depth-present measurement): -0.54				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: 7/24 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 003 Location/Functional Area: MBS

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 30.5 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.56				
Thickness of sediment accumulation (reported depth-present measurement): -0.03 0.30				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0 H				

Inspection Date: 7/24 Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 004 Location/Functional Area: NBS

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 27.0 ft ☐ BGS or ☒ BTOC (chose one only)

INSPECTION ITEMS

Well-Head Completion:	YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?			✓	
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 27.24				
Thickness of sediment accumulation (reported depth-present measurement):				-0.24
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): H				

Inspection Date: [illegible] Inspected by: [illegible]

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 005 Location/Functional Area: NBS

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

Reported Construction Depth: 30.2 ft ☐ BGS or ☒ BTOC (chose one only)

Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?				
Does the well have a flush-mount box?				
Is the traffic cover cracked or broken?				
Is the concrete apron cracked or deteriorated? Frost Heaving?				
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling:				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 30.00				
Thickness of sediment accumulation (reported depth-present measurement): 0.20				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.):				

Inspection Date: 7/12 Inspected by:

Ravenna Army Ammunition Plant

WELL INSPECTION CHECKLIST

WELL INFORMATION:

Well Number: 006 Location/Functional Area: MB5

Casing Type: ☐ Steel ☐ Stainless Steel ☒ PVC

Screened/Open-Hole Well Type: Screened Monitor Interval Length: 10 ft

Flush-mount/Above-ground Completion: A

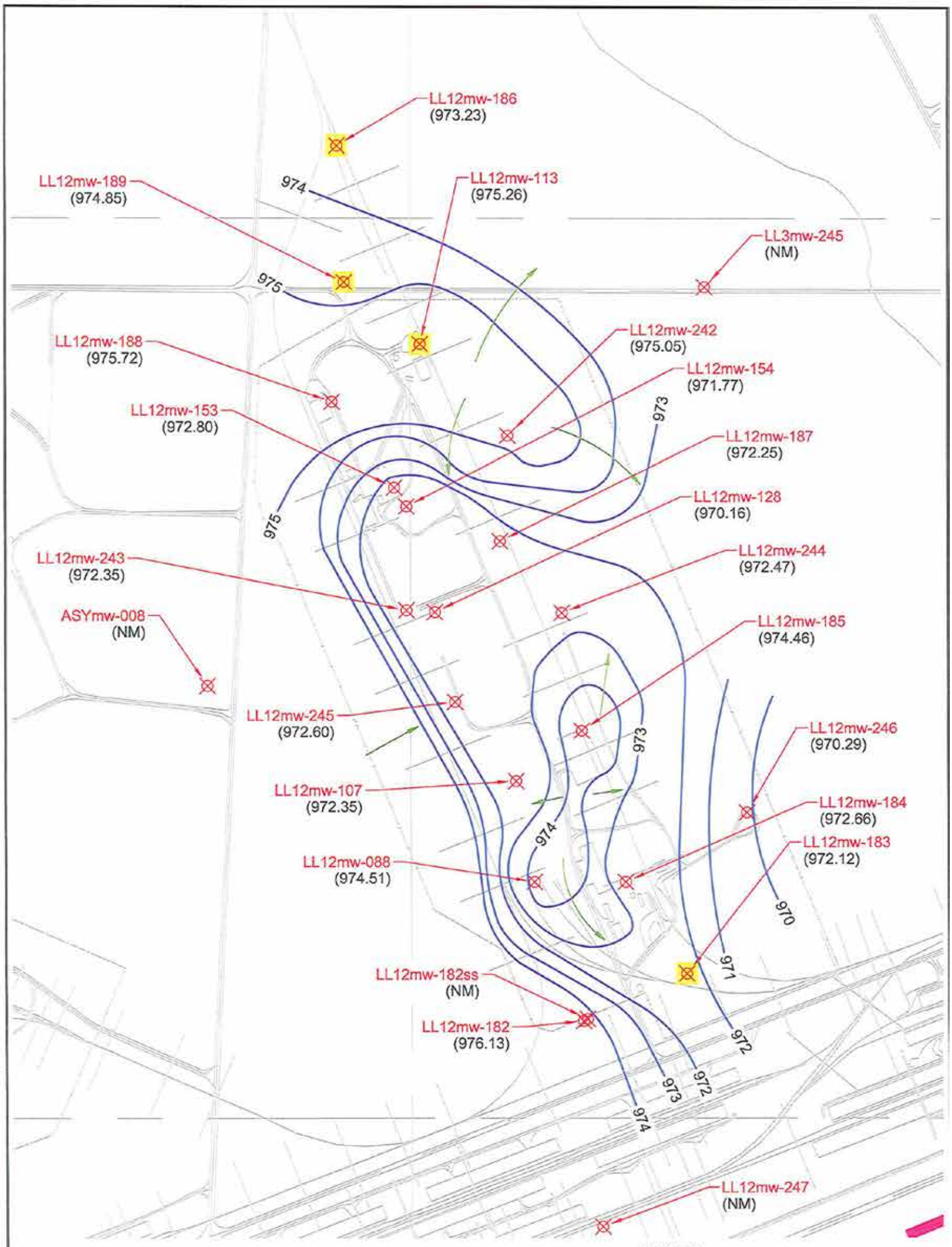
Reported Construction Depth: 28.2 ft ☐ BGS or ☒ BTOC (chose one only)

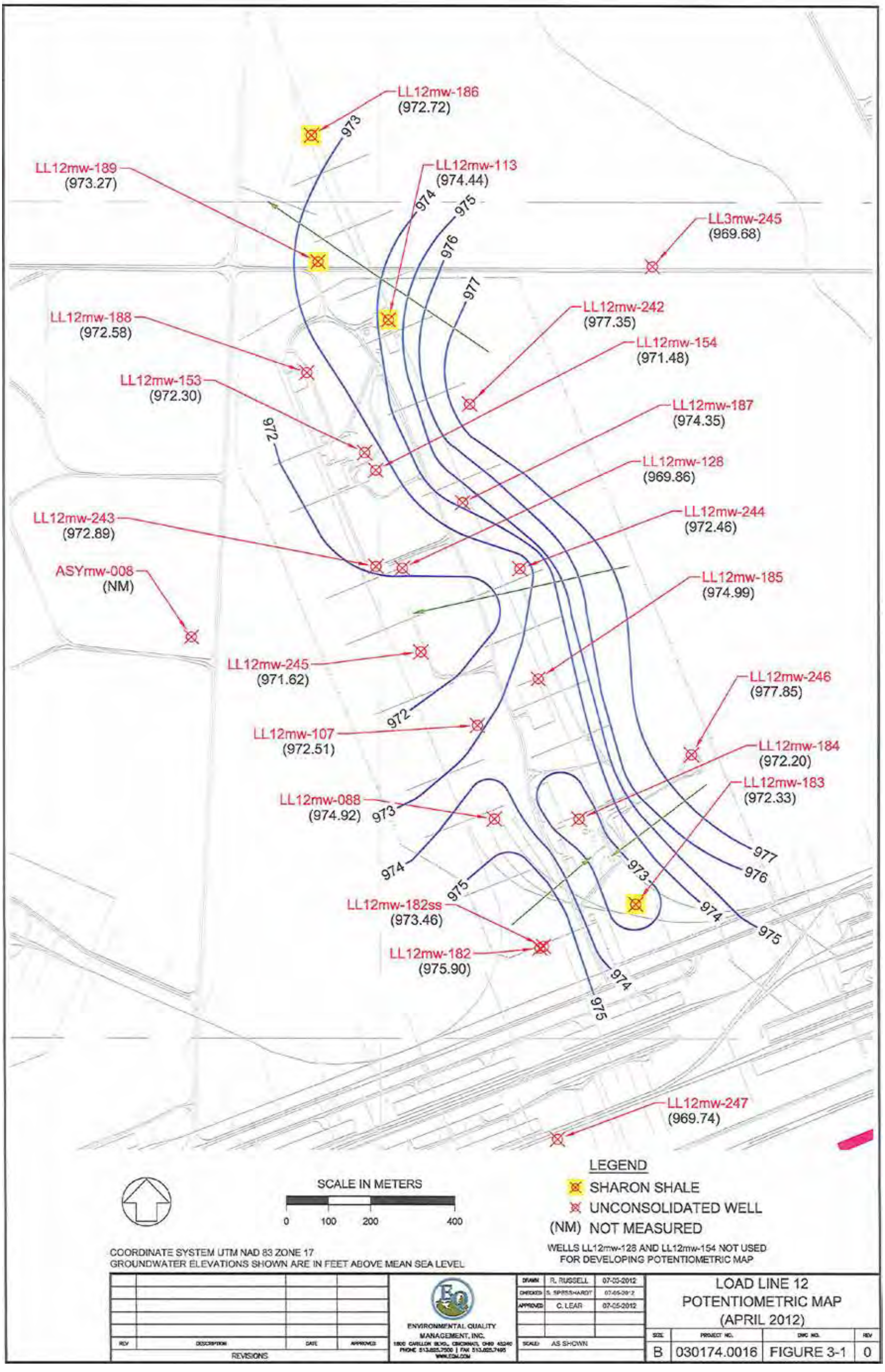
Well-Head Completion:	**INSPECTION ITEMS** YES	NO	N/A	COMMENTS
Above-ground completion:				
Number of Guard posts at well: 4				
Are the posts positioned to prevent collision damage to the well?	✓			
Are any of the posts damaged or degraded?		✓		
Is a concrete pad installed?	✓			
Is the pad cracked or deteriorated? Frost Heaving?		✓		
Is steel protective casing installed?	✓			
Does the protective casing have a weep hole?	✓			
Does vegetation around the well need clearing?		✓		
Flush-mount completion:				
Is the traffic cover securely bolted to the flush-mount box?			✓	
Does the well have a flush-mount box?			✓	
Is the traffic cover cracked or broken?			✓	
Is the concrete apron cracked or deteriorated? Frost Heaving?	✓			
Identification:				
Is the well labeled with the correct number?	✓			
Describe labeling: Well # needs repainting				
Security:				
Does the well have a cap or lid?	✓			
Does the well have a weatherproof lock?	✓			
Does the lock secure well?	✓			
Does the inner casing have a water-tight cap?	✓			
Down-hole Condition:				
Is the well casing bent, corroded, or broken (at the surface?)		✓		
Is the well casing loose, (at the surface?)		✓		
Is a measurement point marked a the top of well casing?	✓			
Measured depth of the well from measurement point: 28.20				
Thickness of sediment accumulation (reported depth-present measurement): 0				
Are there an obstructions in the well?		✓		
Description of well bottom conditions (soft, hard, etc.): 0				

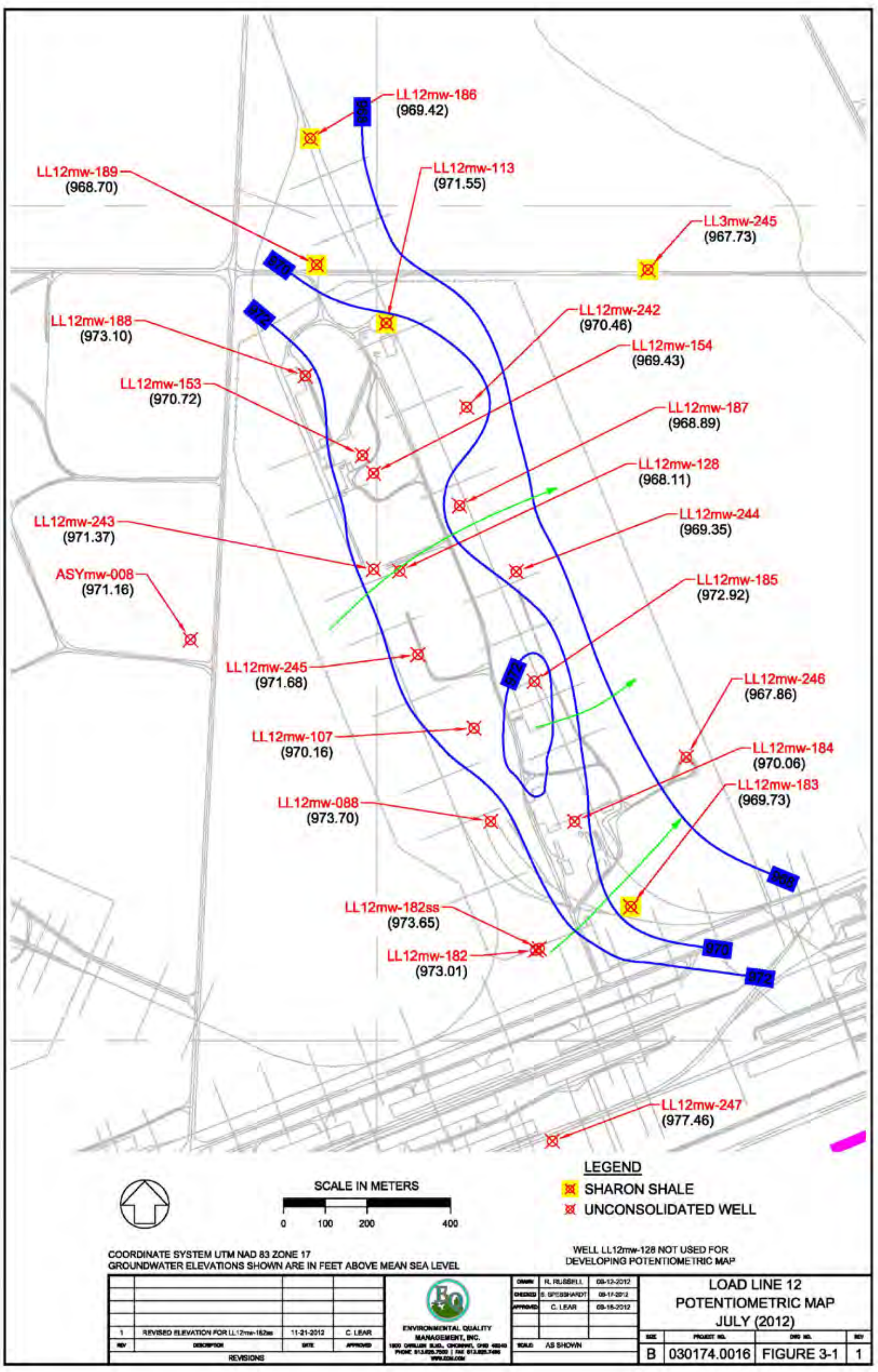
Inspection Date: 7/24 Inspected by: JR

APPENDIX F

LOAD LINE 12
POTENTIOMETRIC MAPS


LL12mw-186
(973.23)
LL12mw-189
(974.85)
LL12mw-113
(975.26)
LL3mw-245
(NM)
LL12mw-188
(975.72)
LL12mw-242
(975.05)
LL12mw-154
(971.77)
LL12mw-153
(972.80)
LL12mw-187
(972.25)
LL12mw-128
(970.16)
LL12mw-244
(972.47)
LL12mw-243
(972.35)
ASYmw-008
(NM)
LL12mw-185
(974.46)
LL12mw-245
(972.60)
LL12mw-246
(970.29)
LL12mw-107
(972.35)
LL12mw-184
(972.66)
LL12mw-183
(972.12)
LL12mw-088
(974.51)
LL12mw-182ss
(NM)
LL12mw-182
(976.13)
LL12mw-247
(NM)
974
975
973
975
973
974
971
970
972
973
972
974
SCALE IN METERS
0 100 200 400
LEGEND
SHARON SHALE
UNCONSOLIDATED WELL
(NM) NOT MEASURED
WELLS LL12mw-128 AND LL12mw-154 NOT USED FOR DEVELOPING POTENTIOMETRIC MAP
COORDINATE SYSTEM UTM NAD 83 ZONE 17
GROUNDWATER ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL
REV DESCRIPTION DATE APPROVED
REVISIONS
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
DRAWN R. RUSSELL 07-03-2012
CHECKED S. SPESSHARDT 07-05-2012
APPROVED C. LEAR 07-05-2012
SCALE: AS SHOWN
LOAD LINE 12
POTENTIOMETRIC MAP
(JANUARY 2012)
SIZE PROJECT NO. DWG NO. REV
B 030174.0016 FIGURE 3-2 0


LL12mw-186
(972.72)
LL12mw-189
(973.27)
LL12mw-113
(974.44)
LL3mw-245
(969.68)
LL12mw-188
(972.58)
LL12mw-242
(977.35)
LL12mw-154
(971.48)
LL12mw-153
(972.30)
LL12mw-187
(974.35)
LL12mw-128
(969.86)
LL12mw-243
(972.89)
LL12mw-244
(972.46)
ASYmw-008
(NM)
LL12mw-185
(974.99)
LL12mw-245
(971.62)
LL12mw-246
(977.85)
LL12mw-107
(972.51)
LL12mw-184
(972.20)
LL12mw-088
(974.92)
LL12mw-183
(972.33)
LL12mw-182ss
(973.46)
LL12mw-182
(975.90)
LL12mw-247
(969.74)
973
974
975
976
977
972
SCALE IN METERS
0
100
200
400
LEGEND
SHARON SHALE
UNCONSOLIDATED WELL
(NM) NOT MEASURED
WELLS LL12mw-123 AND LL12mw-154 NOT USED FOR DEVELOPING POTENTIOMETRIC MAP
COORDINATE SYSTEM UTM NAD 83 ZONE 17
GROUNDWATER ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL
REV
DESCRIPTION
DATE
APPROVED
REVISIONS
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM
DRAWN R. RUSSELL 07-03-2012
CHECKED S. SPRESSHAROT 07-05-2012
APPROVED C. LEAR 07-05-2012
SCALE AS SHOWN
LOAD LINE 12
POTENTIOMETRIC MAP
(APRIL 2012)
SIZE B
PROJECT NO. 030174.0016
DWG NO. FIGURE 3-1
REV 0


LL12mw-186
(969.42)
LL12mw-189
(968.70)
LL12mw-113
(971.55)
LL3mw-245
(967.73)
LL12mw-188
(973.10)
LL12mw-242
(970.46)
LL12mw-154
(969.43)
LL12mw-153
(970.72)
LL12mw-187
(968.89)
LL12mw-128
(968.11)
LL12mw-243
(971.37)
LL12mw-244
(969.35)
ASYmw-008
(971.16)
LL12mw-185
(972.92)
LL12mw-245
(971.68)
LL12mw-246
(967.86)
LL12mw-107
(970.16)
LL12mw-184
(970.06)
LL12mw-088
(973.70)
LL12mw-183
(969.73)
LL12mw-182ss
(973.65)
LL12mw-182
(973.01)
LL12mw-247
(977.46)
SCALE IN METERS
0 100 200 400
LEGEND
SHARON SHALE
UNCONSOLIDATED WELL
COORDINATE SYSTEM UTM NAD 83 ZONE 17
GROUNDWATER ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL
WELL LL12mw-128 NOT USED FOR DEVELOPING POTENTIOMETRIC MAP
1 REVISED ELEVATION FOR LL12mw-182ss 11-21-2012 C. LEAR
REV DESCRIPTION DATE APPROVED
REVISIONS
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
DRAWN R. RUSSELL 09-12-2012
CHECKED S. SPESSHARDT 09-17-2012
APPROVED C. LEAR 09-18-2012
SCALE AS SHOWN
LOAD LINE 12
POTENTIOMETRIC MAP
JULY (2012)
SIZE PROJECT NO. DWG NO. REV
B 030174.0016 FIGURE 3-1 1

APPENDIX G

RATIONALE FOR THE USE OF FILTERED METALS

Regarding filtered vs. unfiltered GW samples for risk assessment purposes

Comment 1a: Ohio EPA recommended that USACE/OHARNG provide rationale and clarification for filtering GW samples for inorganic compounds in ground water sampled at RVAAP. The documentation provided did not indicate if the decision to filter ground water was for the unconsolidated aquifer that was evaluated early in the RVAAP assessment process, or if the decision was valid for all aquifers identified at the former RVAAP.

Response 1a: Prior to the December 1998 Memorandum to John Jent, there were a total of 14 unconsolidated and 17 bedrock wells completed at RVAAP. As a result, it seems likely that this decision was deemed valid for all aquifers at the facility.

Comment 1b: At a minimum, three aquifers have been evaluated to some extent in subsequent evaluations and details regarding their turbidity were not provided in the 25 October memorandum. Please clarify the turbidity levels of the various aquifers and whether the decision to filter groundwater is valid for all aquifers at RVAAP. The rationale should include clarification concerning whether turbidity levels >10 NTUs are consistently found in all unconsolidated wells as well as the bedrock wells in the Homewood, Sharon and basal unit of the Sharon.

Response 1b: Between January 2008 and October 2012, EQM collected 1365 groundwater samples for metals analysis at RVAAP (i.e., multiple samplings of the 281 new and existing wells at the facility). During this period, turbidity readings <10 NTU were associated with a total of 148 samples (10.8% of the total number of samples) from 98 wells; 65 of these only had one occurrence in which the turbidity readings were <10 NTU. The remaining 33 wells had two or more occasions in which the measured turbidity value was <10 NTU, and five of these wells (SCFmw-001, SCFmw-002, SCFmw-005, BKGmw-010, and MBSmw-003) had turbidity readings below 10 NTU between 70-75% of the time since 2008. Based on our review, there does not appear to be a correlation between turbidity and whether the well is screened in the unconsolidated or bedrock zones, although three of the deep Sharon Conglomerate wells have consistently been below 10 NTU during the recent EQM sampling events. (However, note that during the first four quarters of sampling of the deep Sharon Conglomerate wells, the turbidity values were generally above 10 NTU; EQM did not sample the SCF wells during the first four quarters following their installation.) Overall, there do not appear to be any wells that are consistently (i.e., >75% of the time) below 10 NTUs during sampling. Consequently, there is no justification for not filtering the groundwater samples for metals analysis in the RVAAP wells.

Comment 1c: The memorandum should discuss if turbidity is attributable to well construction and/or development.

Response 1c: In accordance with the United States Geological Survey (National Field Manual for the Collection of Water-Quality Data): "Turbidity, which can make water appear cloudy or muddy, is caused by the presence of suspended and dissolved matter,

such as clay, silt, finely divided organic matter, plankton and other microscopic organisms, organic acids, and dyes (ASTM International, 2003a). The color of water, whether resulting from dissolved compounds or suspended particles, can affect a turbidity measurement." Turbidity may be due to inadequate well construction, development, or improper sampling procedures, although it may also be a naturally occurring phenomena if suspended particles are colloidal or regularly agitated (e.g., via groundwater infiltration or flow). Turbidity is not an indicator of ground water chemical stabilization and does not distinguish between stagnant casing water and formation water.

When sampling for contaminants or parameters that may be biased by turbidity, Ohio EPA recommends stabilizing the turbidity readings at or below 10 NTUs (Yeskis and Zavala, 2002). However, it is recognized that some ground water zones may have natural turbidity higher than 10 NTUs. If turbidity is being used as a stabilization parameter, it may be necessary to evaluate the stabilization criteria on a site-by-site basis. The stabilization criteria would be 10 percent (Ohio EPA, 2012). Therefore, turbidity values of less than or equal to 10 NTUs, or ±10% if turbidity is >10 NTUs, are both acceptable when sampling.

Comment 1d: Also the response should include a discussion on how turbidity was measured for samples during each sampling event and if they are included in each quarterly sampling event report.

Response 1d: As per the Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring and the FWGWMP SAP, EQM follows low flow procedures for purging and sampling, which lessens the volume of water to be purged and disposed of, reduces aeration or degassing, maintains the integrity of the filter pack, and minimizes disturbance within the well water column and surrounding materials, thus reducing turbidity. Turbidity readings are obtained during purging using a Horiba U-22/U-52 with flow cells or equivalent. Groundwater parameter measurements, including turbidity readings, obtained during micropurging are presented in an appendix to the quarterly report.

In addition, EQM includes the following statement regarding turbidity in the quarterly reports: "It should be noted that high turbidity readings are not necessarily an indicator of nonrepresentative (i.e., formation) groundwater as stated in the Ohio EPA Technical Guidance Manual for groundwater: ***"Turbidity****, which is the visible presence of suspended mineral and organic particles in a ground water sample, also is not an indicator of ground water chemical stabilization and does not distinguish between stagnant casing water and formation water*." EQM continued purging after the normal stabilization parameters had stabilized (turbidity is not a stabilization parameter) in an attempt to reach turbidity values that were within 10% of each other. Additionally, the groundwater samples for metals analysis were filtered as part of the FWGWMP sampling, thereby reducing the effect of suspended particles in the groundwater."

Comment 2: One point raised by the October 25th memorandum is that of interference or reliability issues with turbid samples and the need to filter ground water when analyzing

metals. However, if the interference from the suspended particles was so great, then why was only the analysis for metals affected? Please clarify why VOCs, SVOCs, explosives, and other compounds could be analyzed without filtering ground water samples but metal analysis required filtering to produce reliable data. Historically, does data exist that could compare filtered vs. unfiltered for other constituents?

Response 2: As per Chapter 10 of the Technical Guidance manual: "Ground water samples collected from monitoring wells may contain noticeable amounts of sediment. This sample 'turbidity' is an important field concern for samples to be analyzed for metals (e.g., cadmium, nickel, zinc) or metalloids (e.g., arsenic, selenium). If large, immobile particles to which metals are bound are allowed to remain in field-acidified samples, laboratory 'total' analyses will overestimate the true concentration of mobile species because acidification dissolves precipitates or causes adsorbed metals to desorb. Additionally, changes in the relative degree of sedimentation over time (due to changes in well performance, sampling device, or sampling personnel) and space (due to natural hydrogeologic variations) can result in data interpretation difficulties.

Significant turbidity is sometimes unavoidable, and filtration may be necessary to remove immobile particles. For example, reducing turbidity may be difficult when a clay-rich glacial deposit is monitored. Clay and natural organic matter can attract contaminants and physically retard particle movement. Therefore, particles in ground water may be presumed to be immobile in formations primarily containing natural organic material and clays. Additionally, while unfiltered data generally would be preferred for a risk assessment of the drinking water pathway, filtered data may be used if there is an obvious discrepancy between filtered and unfiltered data or if secondary maximum contaminant levels MCLs are exceeded (USEPA, 1991). In this case, unfiltered samples might be too turbid to represent drinking water. It is recommended that entities work closely with the Agency to define project requirements."

Review of the Ohio EPA's general recommendations on whether and how to filter indicate the following:

- The samples have been collected from monitoring wells that are properly designed, installed, and developed.
- The samples have been collected using procedures that minimize disturbance.
- Turbidity has been demonstrated to stabilize above 10 NTU, trying to reach $\pm$10%.
- Professional judgment indicates that the formations sampled do not exhibit a high degree of particle mobility, making it reasonable to assume that a portion of the sediment in the samples may be attributable to immobile particles. Note that professional judgment is exercised when applying this approach since deviations may be necessary if the practices would cause undesirable problems in data interpretation. Additionally, if the historical data for metals has been based on analyses of filtered samples, filtration could be continued to ensure data consistency and comparability. Recommendations state "if a single zone is monitored both by wells that are capable of providing samples that meet the

> turbidity criterion and wells that are not capable of meeting it, it may be prudent to filter all of the samples to ensure spatial consistency and valid statistical comparisons."

The USEPA analytical method SW-846 suggests filtering of inorganics only. Filtration of other analytes (non-metals) is not usual practice for the following reasons:

Base Neutral and Acid Extractable Organics
Since the analytical method for base neutral and acid extractable organic analysis involves solvent extraction of the aqueous phase, any organics absorbed on sediment in the ground water will be co-extracted. This may introduce a bias in the reported organic concentration in water. On the other hand, filtration of the water sample will generate a decrease in the dissolved organic content because of adsorption on the filter matrix. Since there is no simple experimental way to resolve these unknowns, filtration is not recommended.

Volatile Organic Compounds
Volatile organic compounds (VOCs) are low molecular weight species and their soil adsorption coefficients are correspondingly low. For a ground water sample containing sediment under equilibrium conditions, the VOC will remain predominantly in the aqueous phase. Therefore, field filtration of VOC water samples is unnecessary and should be avoided to prevent loss of VOCs from the sample by adsorption and stripping.

No filtered groundwater samples have been collected of non-metals constituents at RVAAP; consequently, no comparison of filtered versus unfiltered non-metals data is available.

Comment 3: The October 2009 sampling event data, that analyzed filtered and unfiltered GW from selected wells indicated some significant differences. Therefore, Ohio EPA is concerned that appropriate sampling data and well construction/development both have been addressed for decision making under the facility-wide groundwater remedial investigation.

Response 3: The reported differences between filtered and unfiltered data are not unexpected. Unfiltered samples generally have turbidity values >10 NTU indicating the presence of suspended particulates. These particulates tend to sorb metals. If these particles are allowed to remain in field-acidified samples, laboratory 'total' analyses will overestimate the true concentration of mobile species because acidification dissolves precipitates or causes adsorbed metals to desorb. Conversely, filtering generally removes particulates from groundwater. Therefore, only dissolved-phase metals and colloidal material less than the filter mesh size (0.45 micron) are extracted for analysis from the sample. Consequently, contaminant concentrations will tend to be lower.

There is no indication that any of the new or existing wells have been inadequately constructed or developed. The filter pack placed around the well screens comprises fine (#5) or very fine (#7) sand designed to control infiltration of particulates into the well

screen. Wells were developed until stabilization parameters equilibrated, and for some wells, additional water was removed to attempt to reduce the turbidity in the well even though turbidity was not considered a stabilization parameter. In addition, EQM annually monitors sediment accumulation in all RVAAP wells; in general, most wells contain less than 0.20 feet of sediment accumulation and exhibit a hard bottom. The wells with more than 0.20 feet of sediment or have soft bottoms are monitored for additional accumulation and redeveloped as necessary. Groundwater is purged and sampled using low-flow sampling techniques to reduce the turbidity of the samples.

From a hydrogeologic stand point, the overburden at RVAAP is predominated by glacial-derived materials comprising fine-grained silts and clays, with occasional sand. Due to the presence of the finer-grained sediments, shallow groundwater contains colloidal material and suspended particulates, which can infiltrate most filter packs. Similarly, interbedded clayey shale layers are common throughout the upper bedrock formations beneath RVAAP. These clay beds also tend to produce a colloidal fraction, thereby increasing the turbidity of the groundwater.

APPENDIX H

REPORTING LIMITS THAT CURRENTLY DO NOT MEET THE RVAAP QAPP PROJECT ACTION REQUIRMENTS, MCLS, AND/OR RSLs

VOCs

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
79-34-5	1,1,2,2-Tetrachloroethane	µg/L	0.18	0.25	1	1	NS	0.066
79-00-5	1,1,2-Trichloroethane	µg/L	0.27	0.5	1	1	5	0.24
106-93-4	1,2-Dibromoethane	µg/L	0.24	0.25	1	1	NS	0.0065
107-06-2	1,2-Dichloroethane	µg/L	0.22	0.25	1	1	5	0.15
75-27-4	Bromodichloromethane	µg/L	0.15	0.25	1	1	NS	0.12
124-48-1	Dibromochloromethane	µg/L	0.18	0.25	1	1	NS	0.15
127-18-4	Tetrachloroethene	µg/L	0.29	0.5	1	1	5	0.072

SVOCS

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
121-14-2	2,4-Dinitrotoluene	µg/L	0.27	0.8	5	10	NS	0.2
91-94-1	3,3'-Dichlorobenzidine	µg/L	0.37	0.8	5	5	NS	0.11
534-52-1	4,6-Dinitro-2-methylphenol	µg/L	2.4	2.4	5	25	NS	1.2
106-47-8	4-Chloroaniline	µg/L	0.8	0.8	2	10	NS	0.32
56-55-3	Benzo(a)anthracene	µg/L	0.1	0.1	0.2	0.2	NS	0.029
50-32-8	Benzo(a)pyrene	µg/L	0.1	0.1	0.2	0.2	0.2	0.0029
205-99-2	Benzo(b)fluoranthene	µg/L	0.1	0.1	0.2	0.2	NS	0.029
111-44-4	bis(2-Chloroethyl)ether	µg/L	0.1	0.1	1	1	NS	0.012
117-81-7	bis(2-Ethylhexyl)phthalate	µg/L	0.8	0.8	2	10	6	0.071
53-70-3	Dibenzo(a,h)anthracene	µg/L	0.1	0.1	0.2	50	NS	0.0029
118-74-1	Hexachlorobenzene	µg/L	0.1	0.1	0.2	10	1	0.042
87-68-3	Hexachlorobutadiene	µg/L	0.27	0.8	1	10	NS	0.26
67-72-1	Hexachloroethane	µg/L	0.8	0.8	1	10	NS	0.79
193-39-5	Indeno(1,2,3-cd)pyrene	µg/L	0.1	0.1	0.2	0.2	NS	0.029
621-64-7	N-Nitroso-di-n-propylamine	µg/L	0.8	0.8	1	10	NS	0.0093
87-86-5	Pentachlorophenol	µg/L	2.4	2.4	5	5	1	0.17

Pesticides

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
309-00-2	Aldrin	µg/L	0.0082	0.01	0.03	0.03	NS	0.0002
319-84-6	alpha-BHC	µg/L	0.007	0.01	0.03	0.03	NS	0.0062
60-57-1	Dieldrin	µg/L	0.0075	0.01	0.03	0.03	NS	0.0015
76-44-8	Heptachlor	µg/L	0.008	0.01	0.03	0.03	0.4	0.0018
1024-57-3	Heptachlor epoxide	µg/L	0.0071	0.01	0.03	0.03	0.2	0.0033
8001-35-2	Toxaphene	µg/L	0.32	0.5	2	2	3	0.013

PCB

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
11104-28-2	PCB- 1221	µg/L	0.13	0.2	0.5	0.2	0.5	0.0043
11141-16-5	PCB- 1232	µg/L	0.16	0.2	0.5	0.2	0.5	0.0043
53469-21-9	PCB- 1242	µg/L	0.22	0.4	0.5	0.2	0.5	0.034
12672-29-6	PCB- 1248	µg/L	0.1	0.2	0.5	0.2	0.5	0.034
11097-69-1	PCB- 1254	µg/L	0.16	0.2	0.5	0.2	0.5	0.034
11096-82-5	PCB- 1260	µg/L	0.17	0.2	0.5	0.2	0.5	0.034

Inorganics

CAS No.	Analyte Name	Units	MDL	LOD[1]	RL	PAR[2]	MCL	RSL
7440-38-2	Arsenic	µg/L	3.28	10	10	5	10	0.045
7440-70-2	Calcium	µg/L	634	1000	5000	100	NS	NS
7439-95-4	Magnesium	µg/L	122	300	5000	100	NS	NS
7440-09-7	Potassium	µg/L	300	900	5000	200	NS	NS
7440-28-0	Thallium	µg/L	0.32	1	2	1	2	0.16
18540-29-9	Hexavalent Chromium[3]	ug/L	2	NS	20	20	NS	0.031

Notes:

1- LOD= The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate is 1%.

2- Project Action Requirements from table 4 of the Facility Wide QAPP

3-Hexavalent Chromium by EPA method 7196 only.

NS= No Standard

APPENDIX I

TIME-TREND GRAPHS

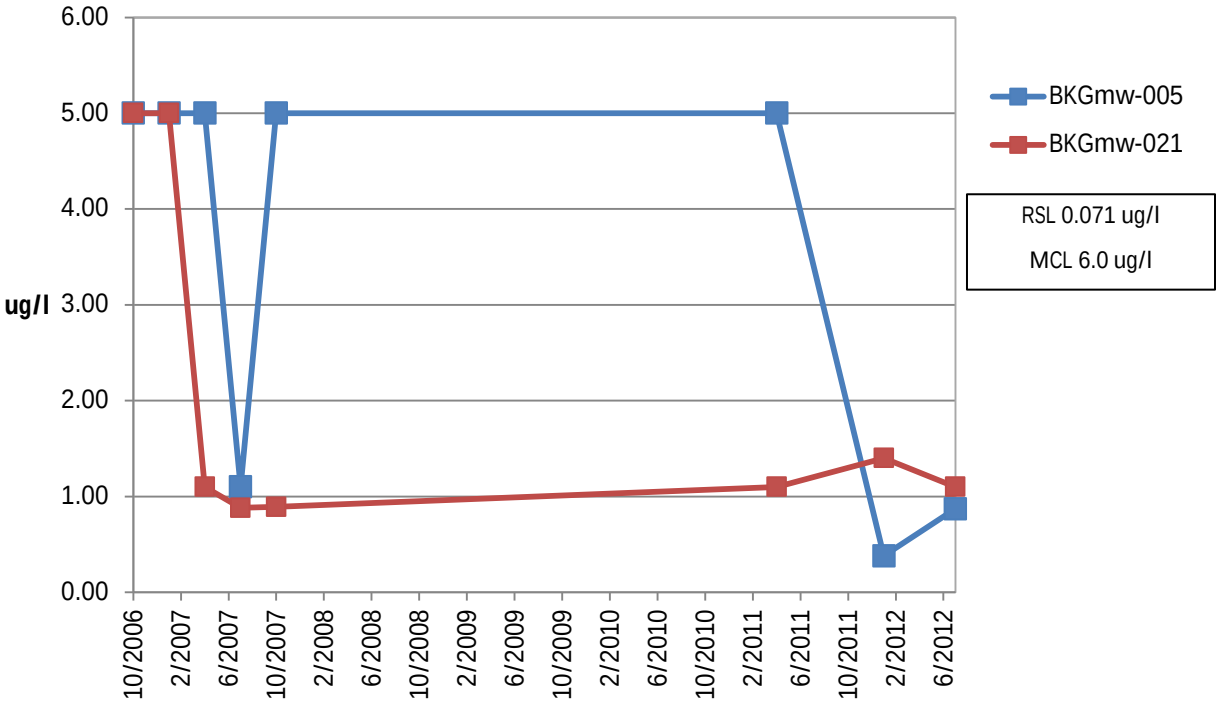
Time Trend Graphs for Groundwater 2011-2012

Approach:

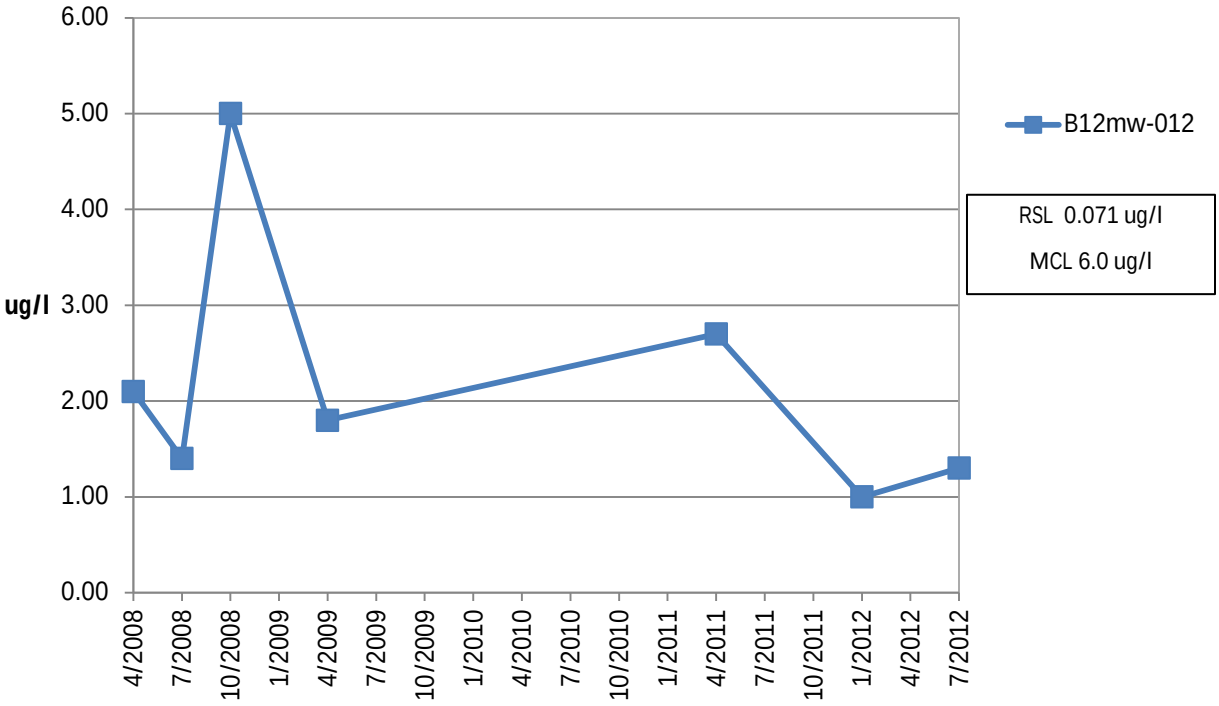
Time-trend graphs were generated to display the groundwater sampling results for the wells sampled October 2011, January 2012, April 2012, and July 2012. The following guidelines were applied to produce the graphs:

1. Only wells sampled during this reporting period with at least one detection of an organic, explosive, or inorganic above the MCL or RSL and that have been sampled a minimum of three times since 2006 were graphed.
2. Values reported as "non-detect" are shown as one-half the reporting limit.
3. Essential nutrients (i.e., calcium, magnesium, potassium, and sodium) were not graphed.
4. The graphs are organized by AOC (alphabetically ordered beginning with Background Wells).

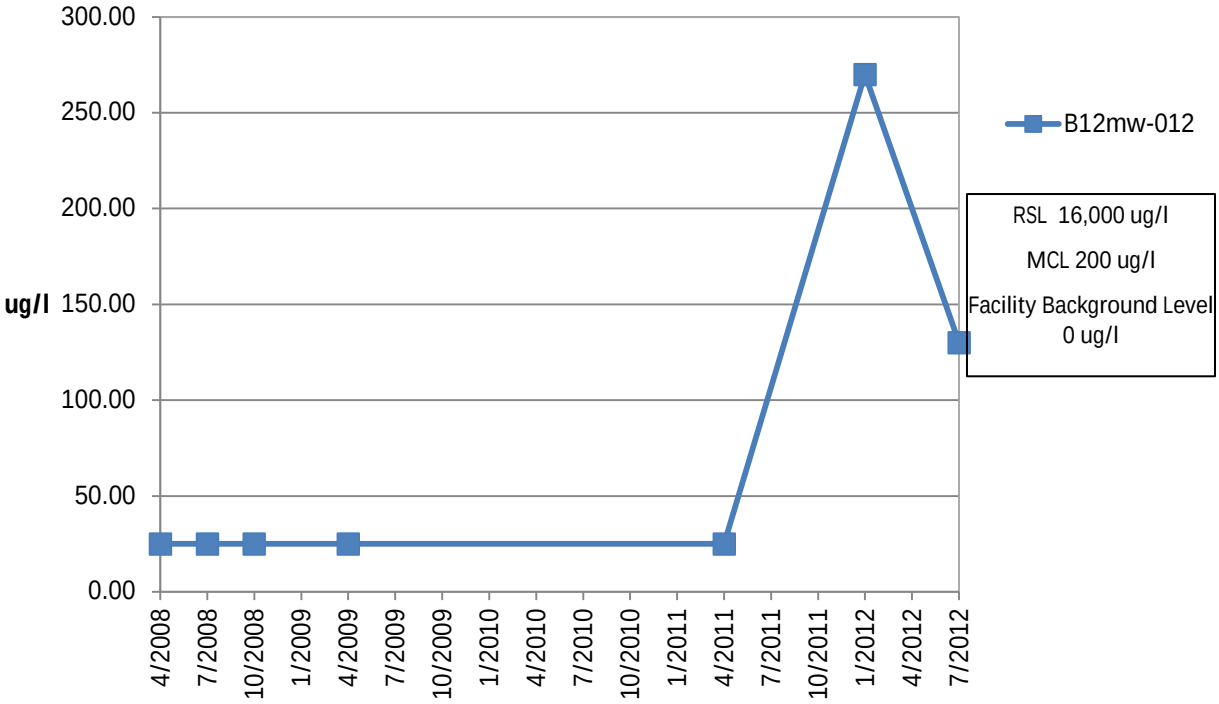
Background
Bis(2-ethylhexyl)phthalate



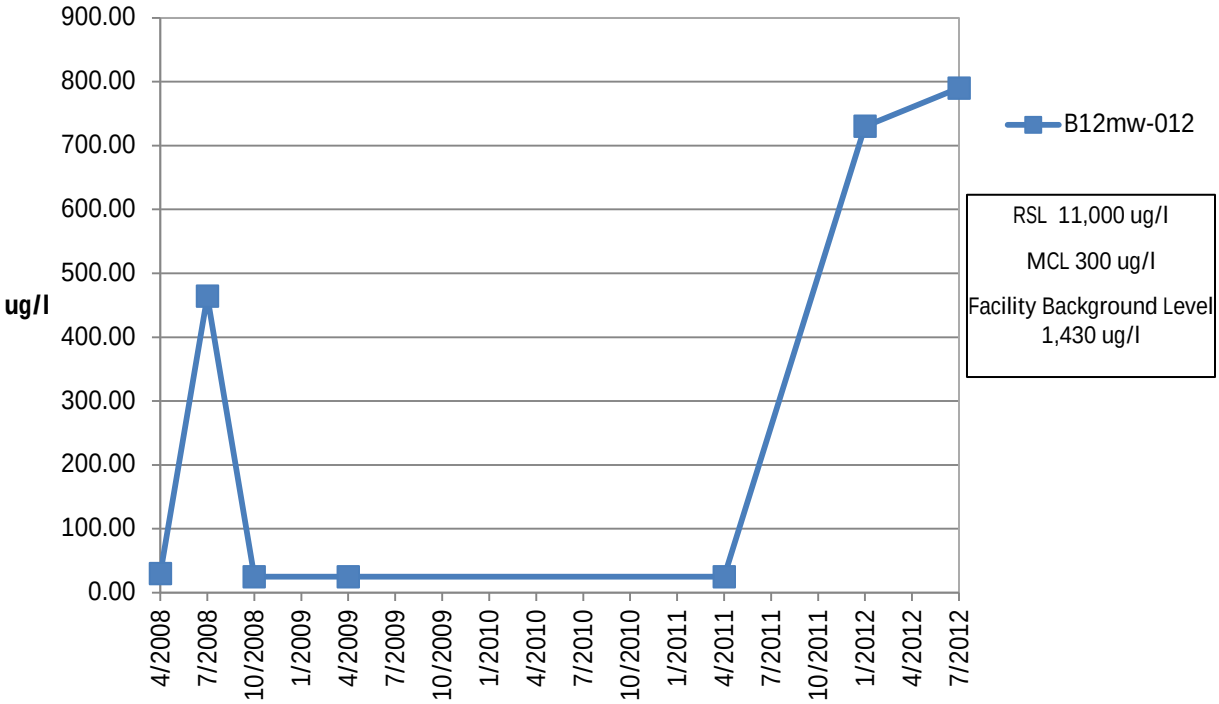
Building 1200
Bis(2-ethylhexyl)phthalate



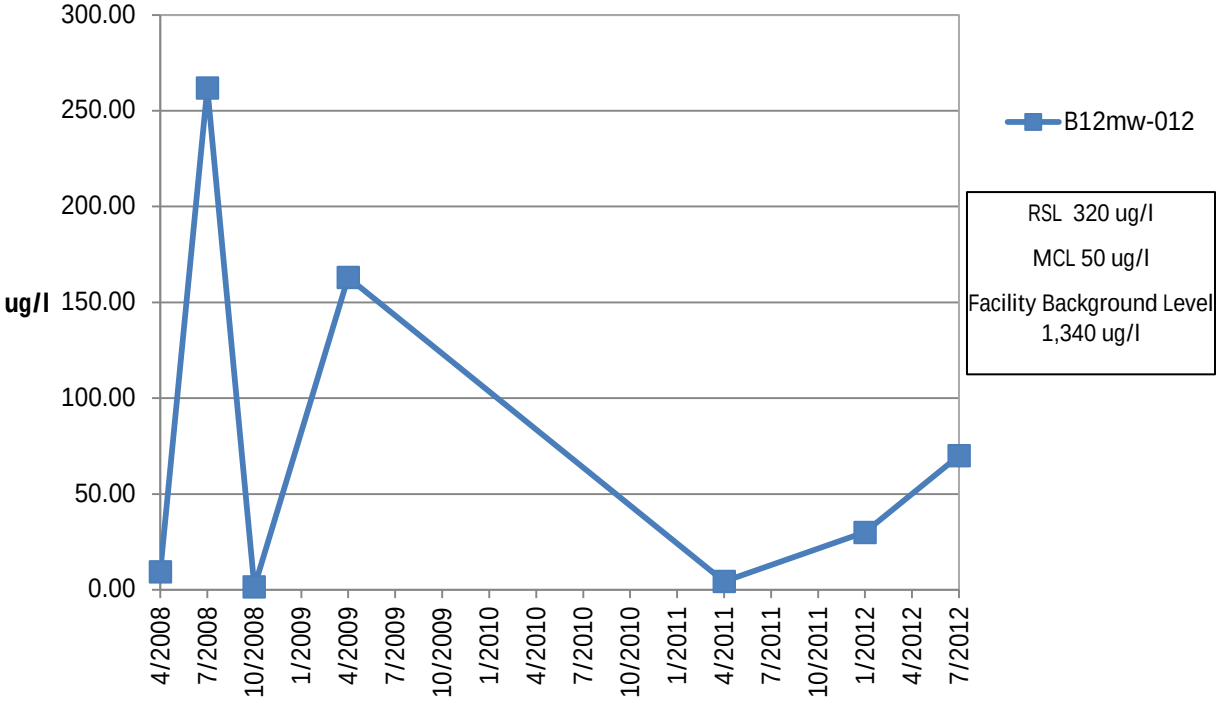
Building 1200
Aluminum (Bedrock)

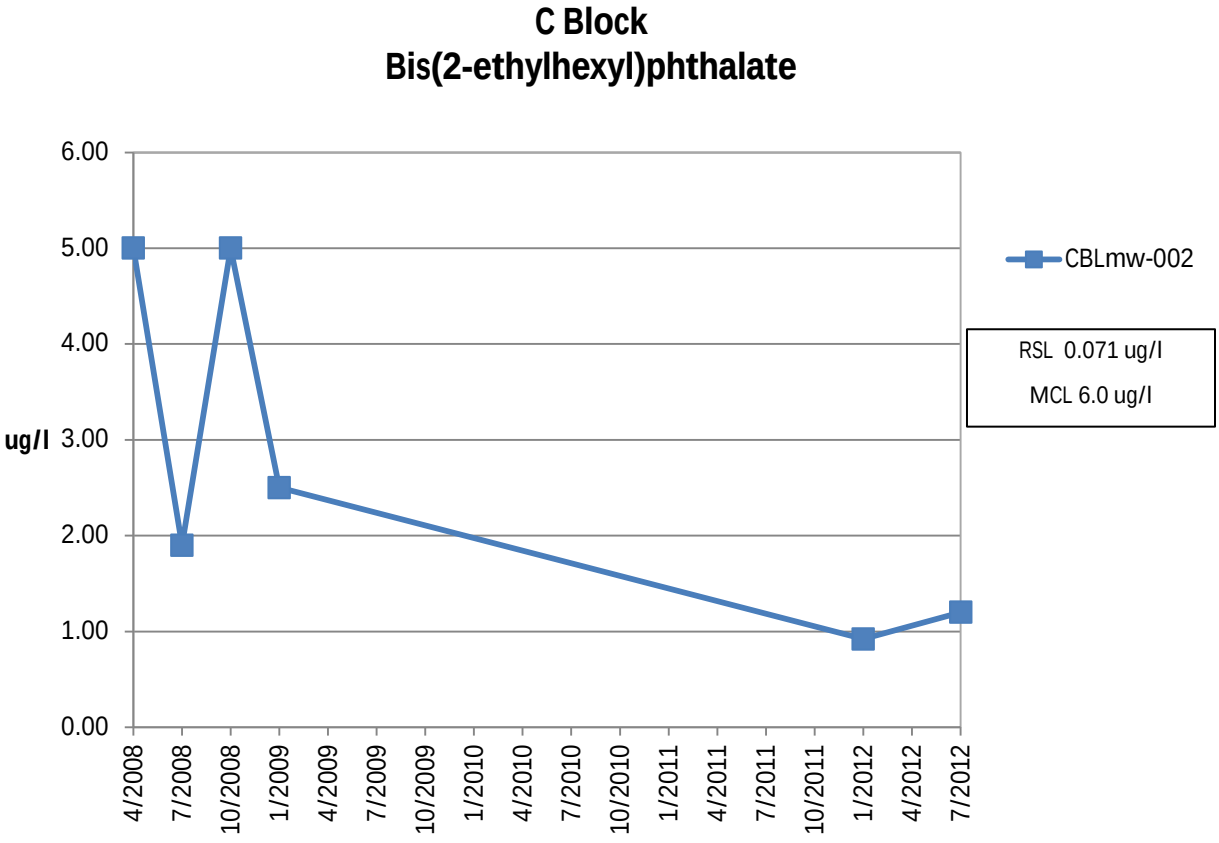


Building 1200
Iron (Bedrock)

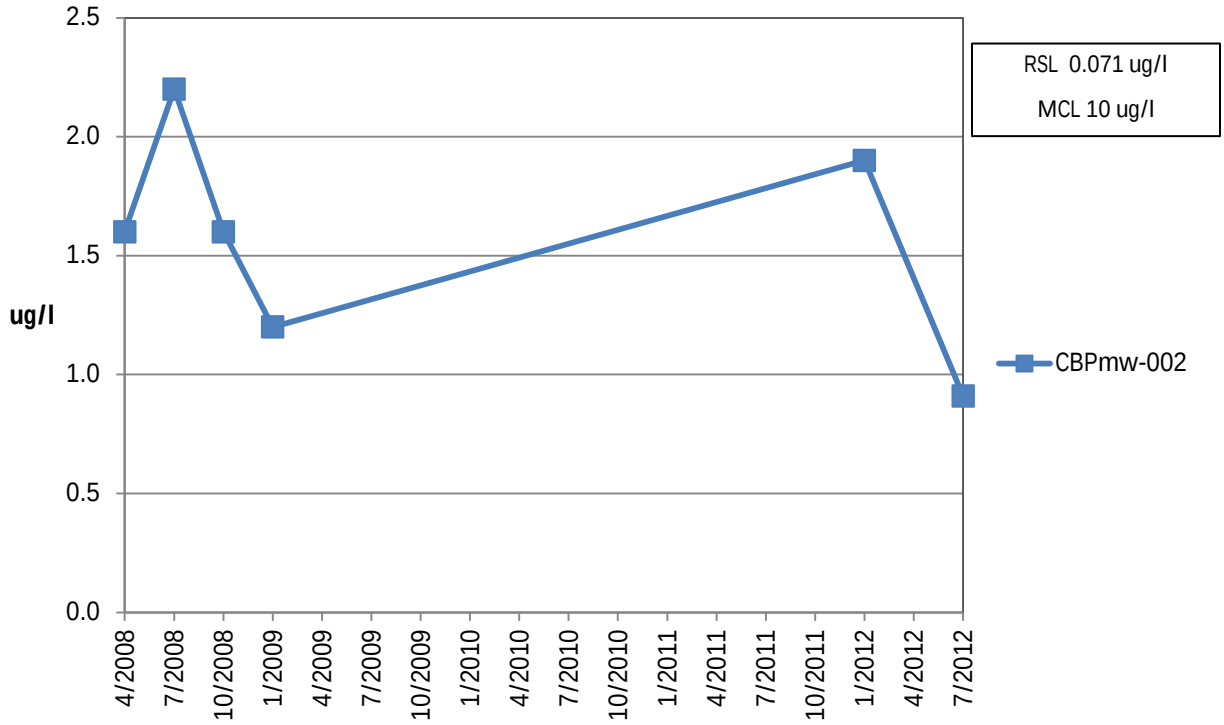


Building 1200
Manganese (Bedrock)

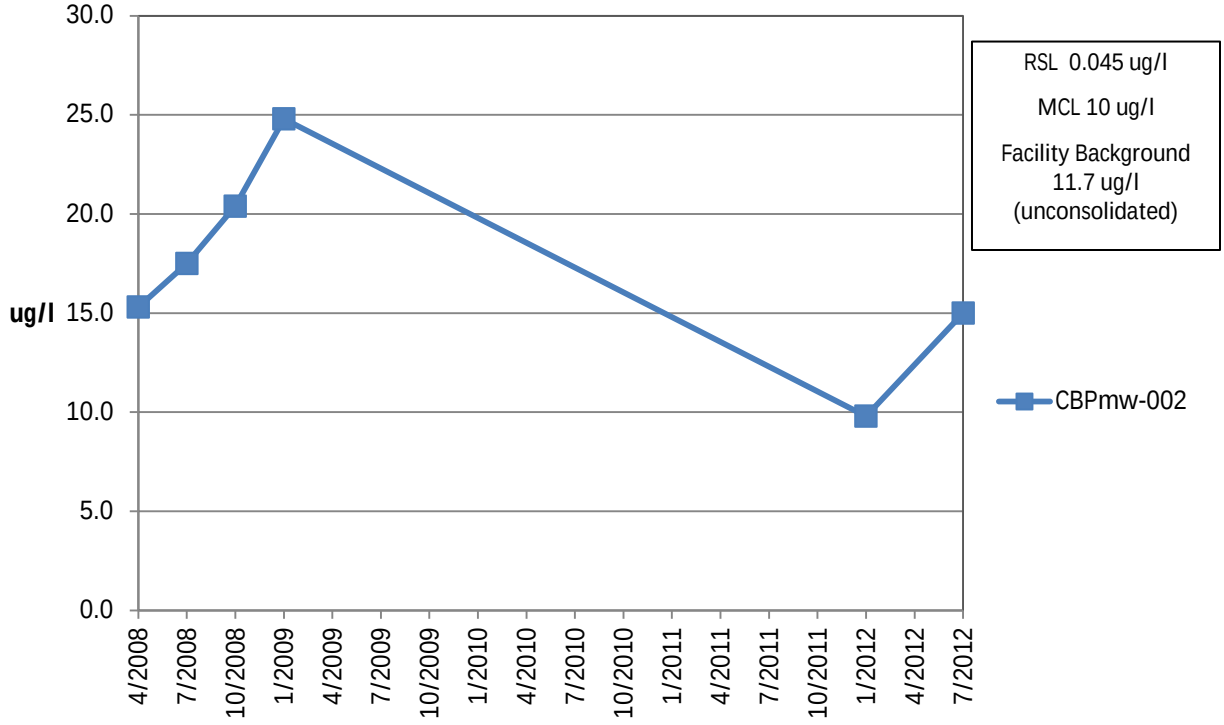



C Block
Bis(2-ethylhexyl)phthalate
6.00
5.00
4.00
3.00
2.00
1.00
0.00
ug/l
4/2008
7/2008
10/2008
1/2009
4/2009
7/2009
10/2009
1/2010
4/2010
7/2010
10/2010
1/2011
4/2011
7/2011
10/2011
1/2012
4/2012
7/2012
CBLmw-002
RSL 0.071 ug/l
MCL 6.0 ug/l

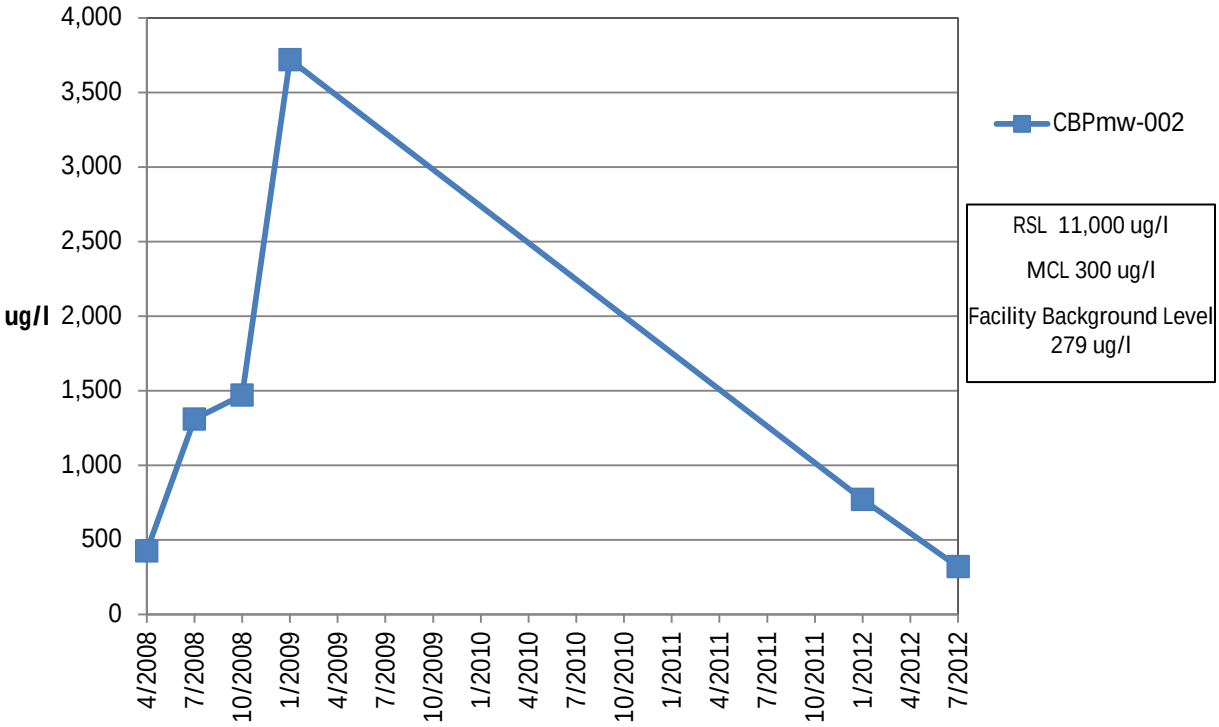
Central Burn Pits
Bis(2-ethylhexyl)phthalate



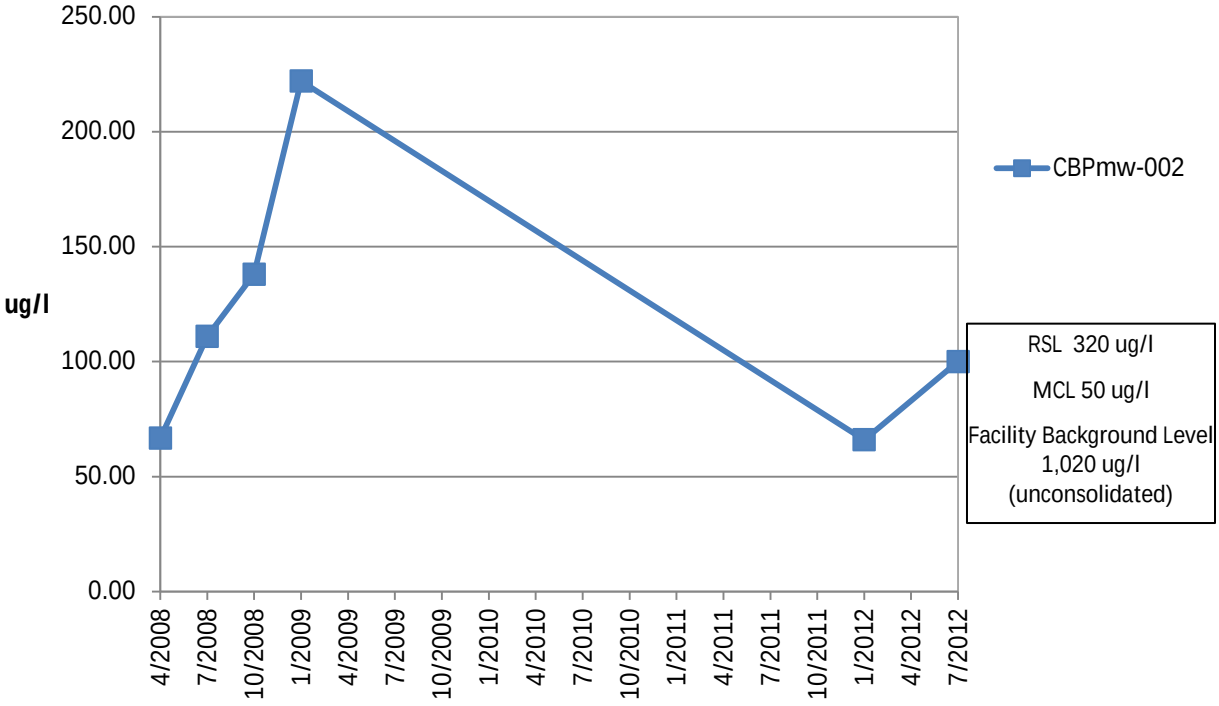
Central Burn Pits
Arsenic



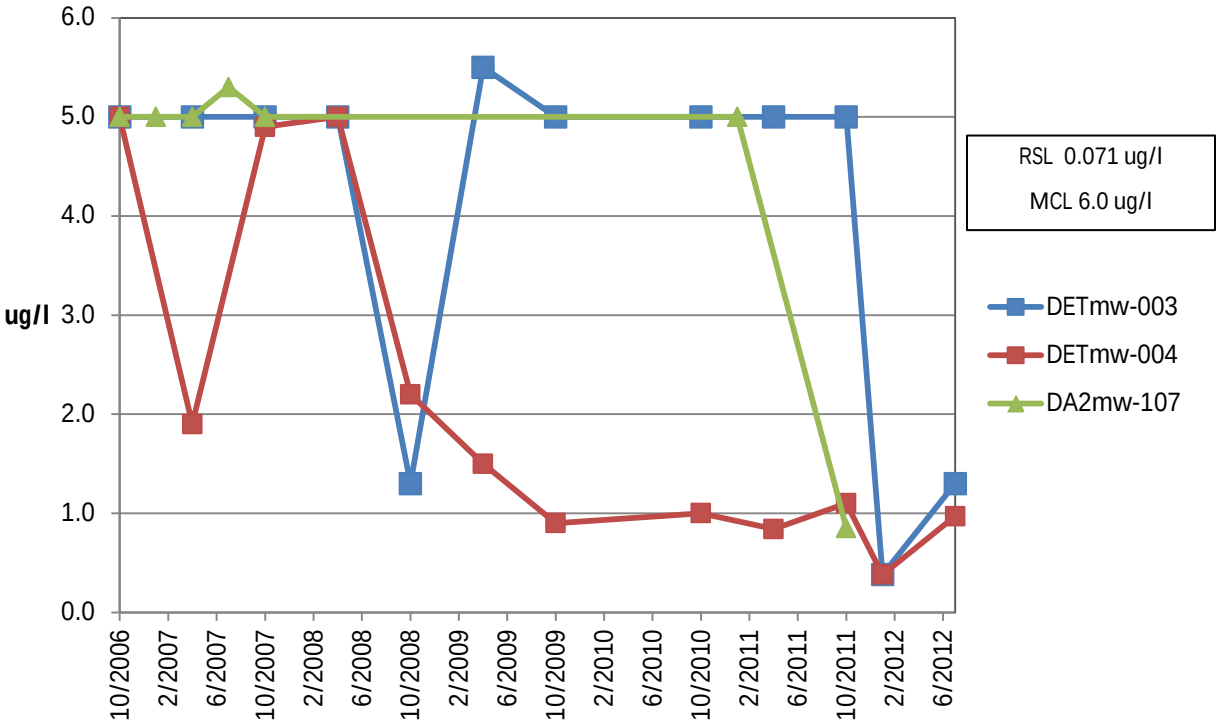
Central Burn Pits
Iron



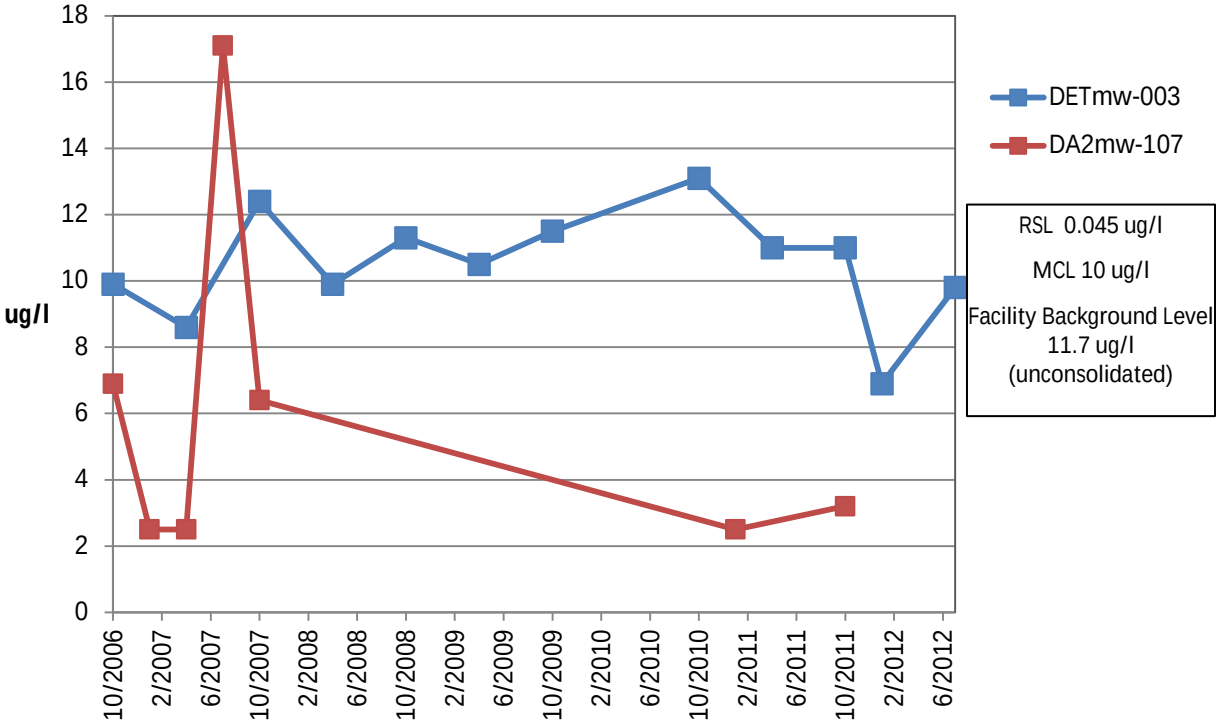
Central Burn Pits
Manganese



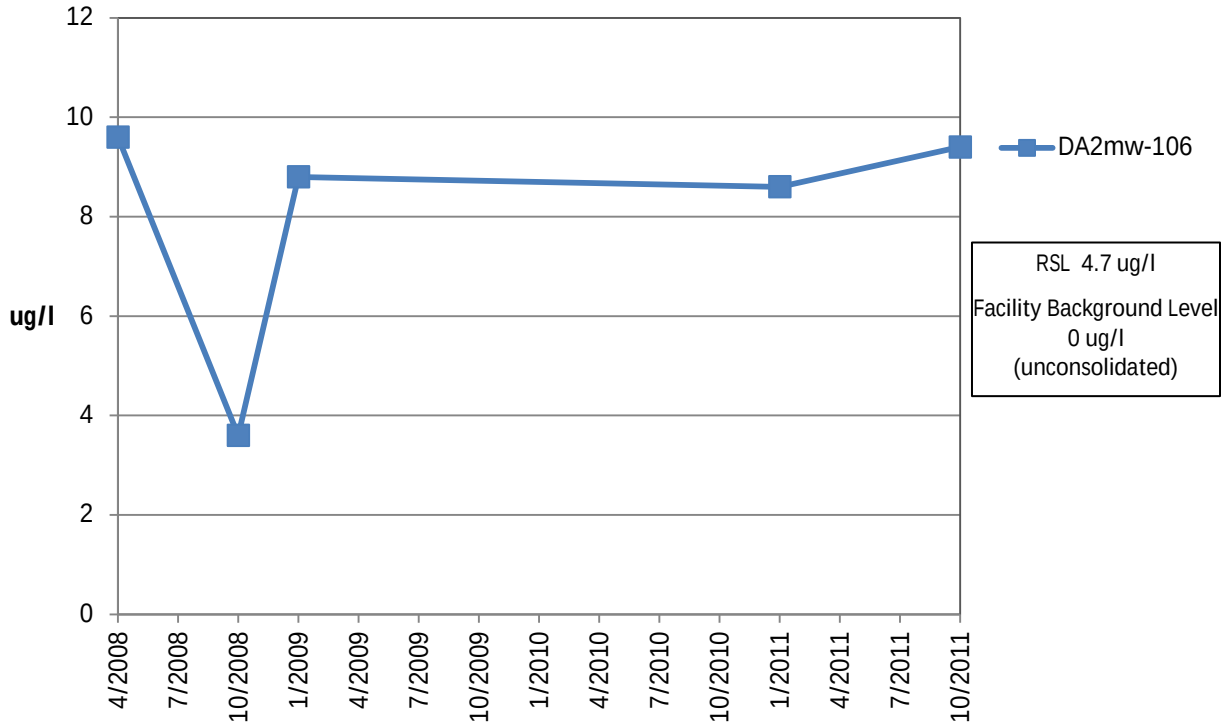
Demolition Area 2
Bis(2-ethylhexyl)phthalate



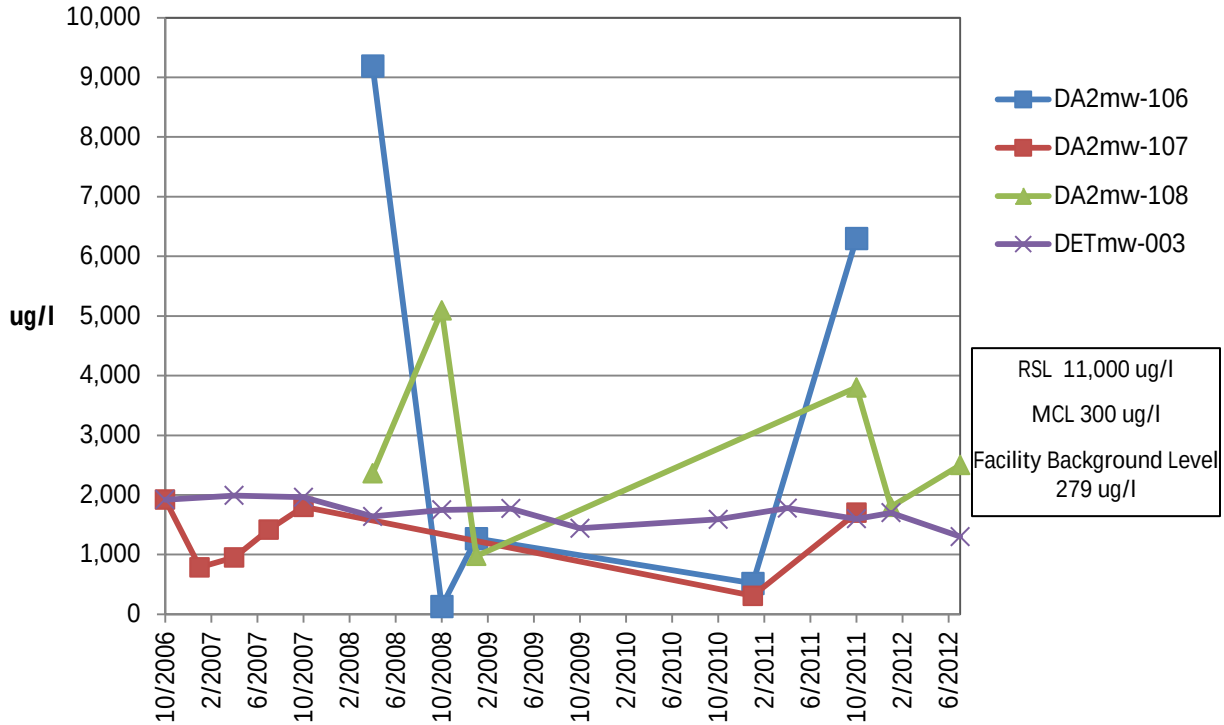
Demolition Area 2
Arsenic



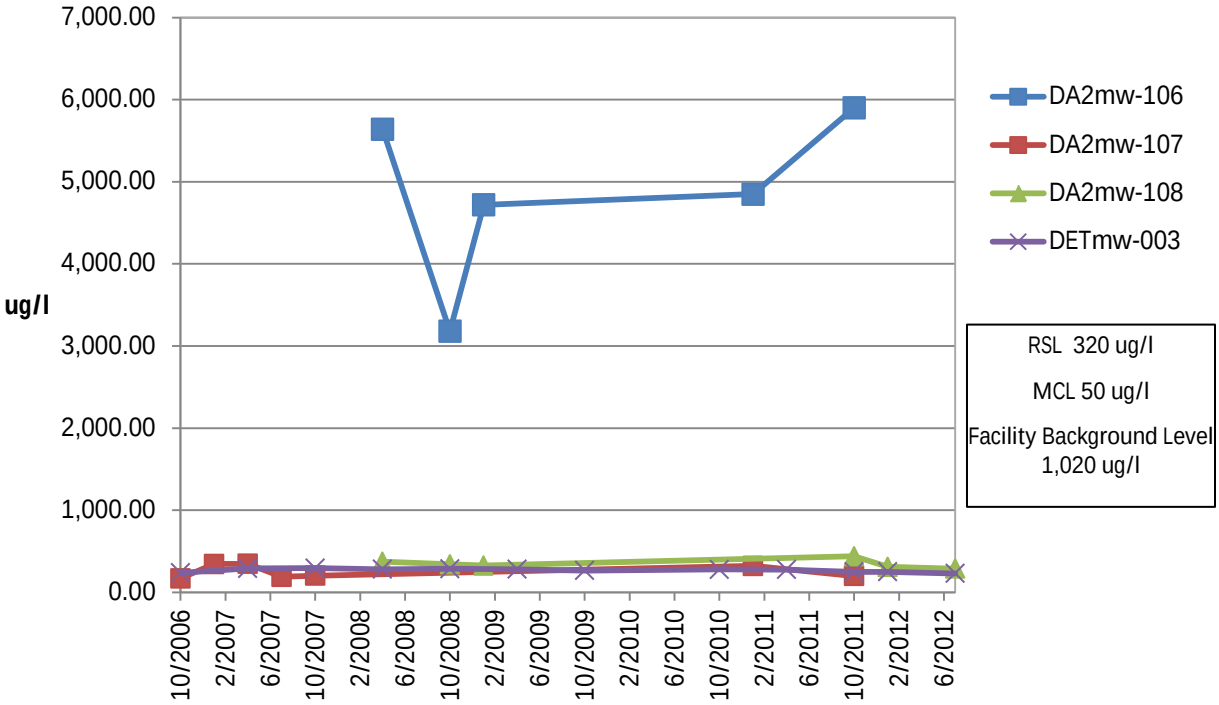
Demolition Area 2
Cobalt



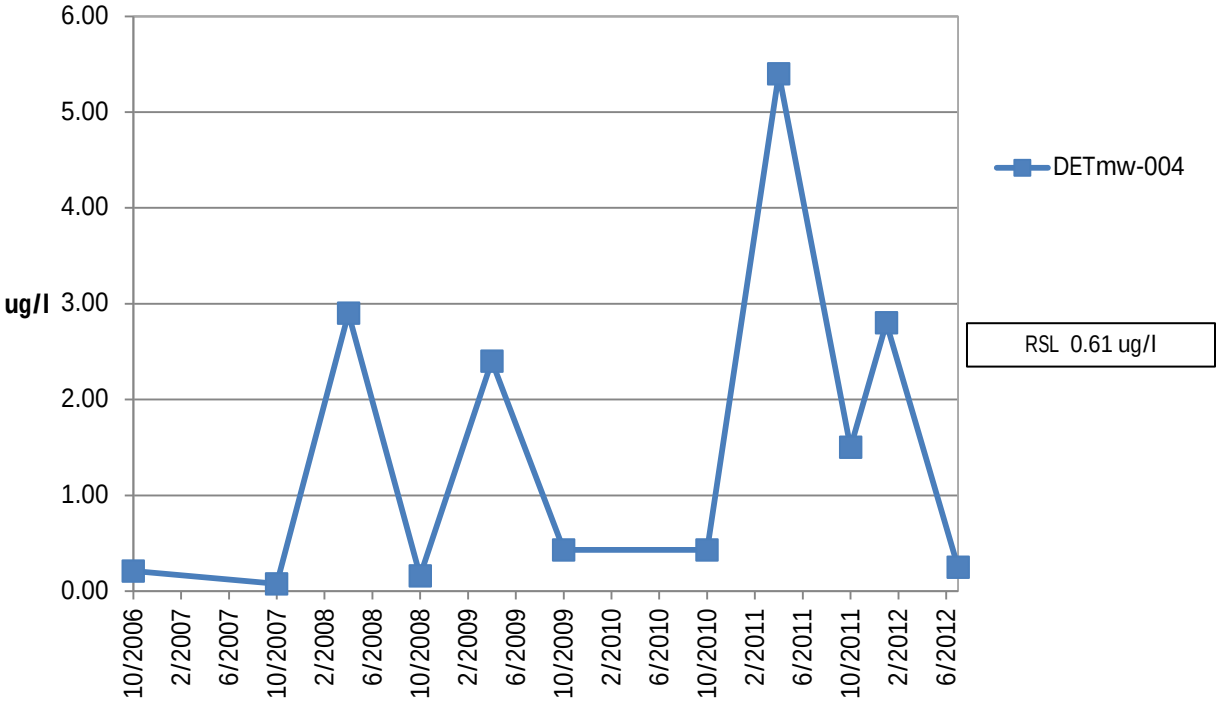
Demolition Area 2
Iron



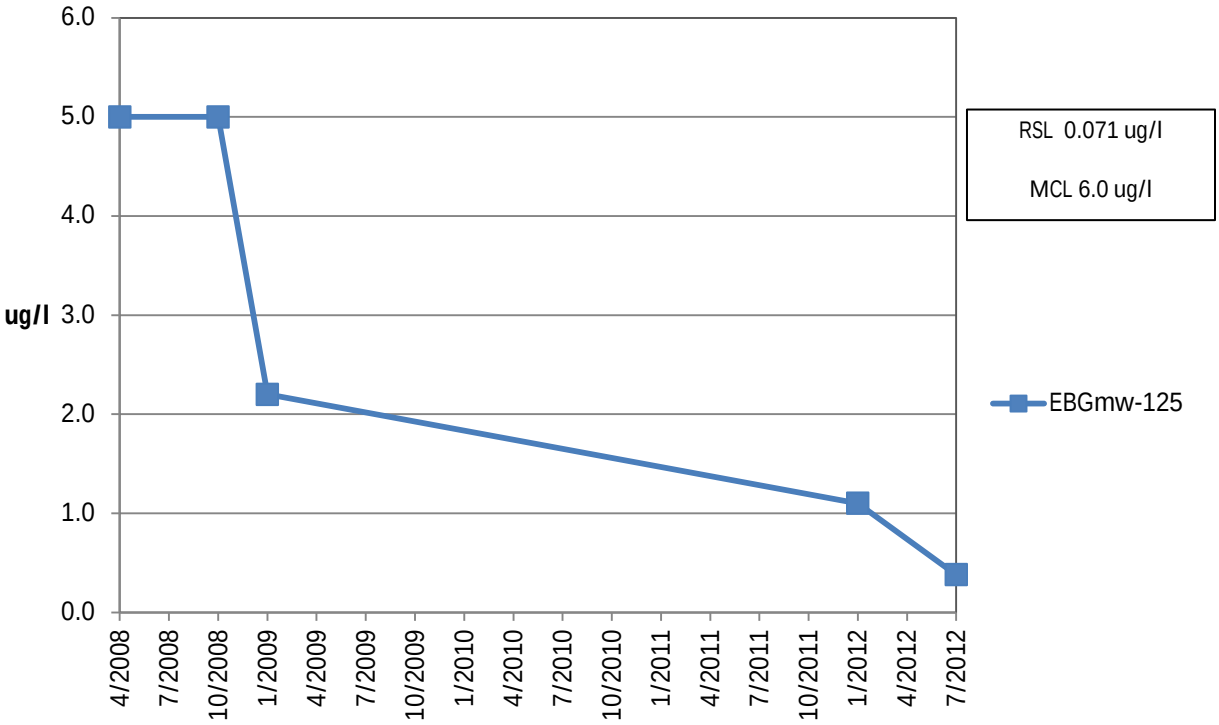
Demolition Area 2
Manganese



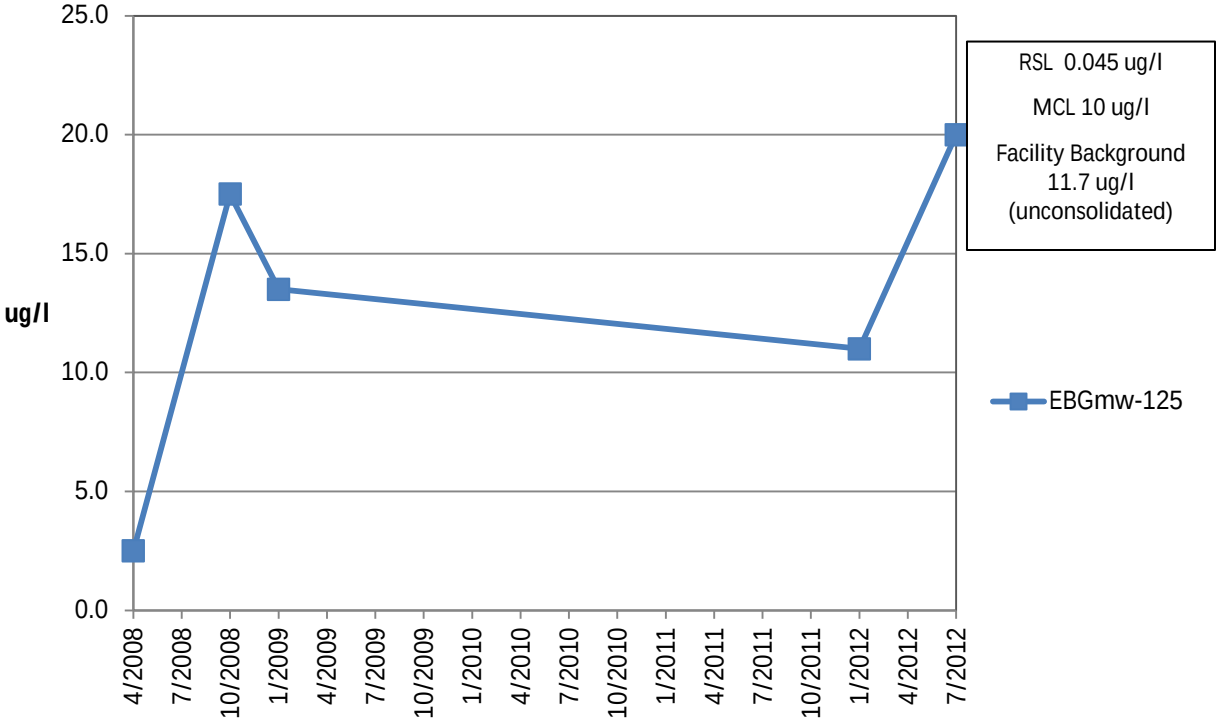
Demolition Area 2
RDX



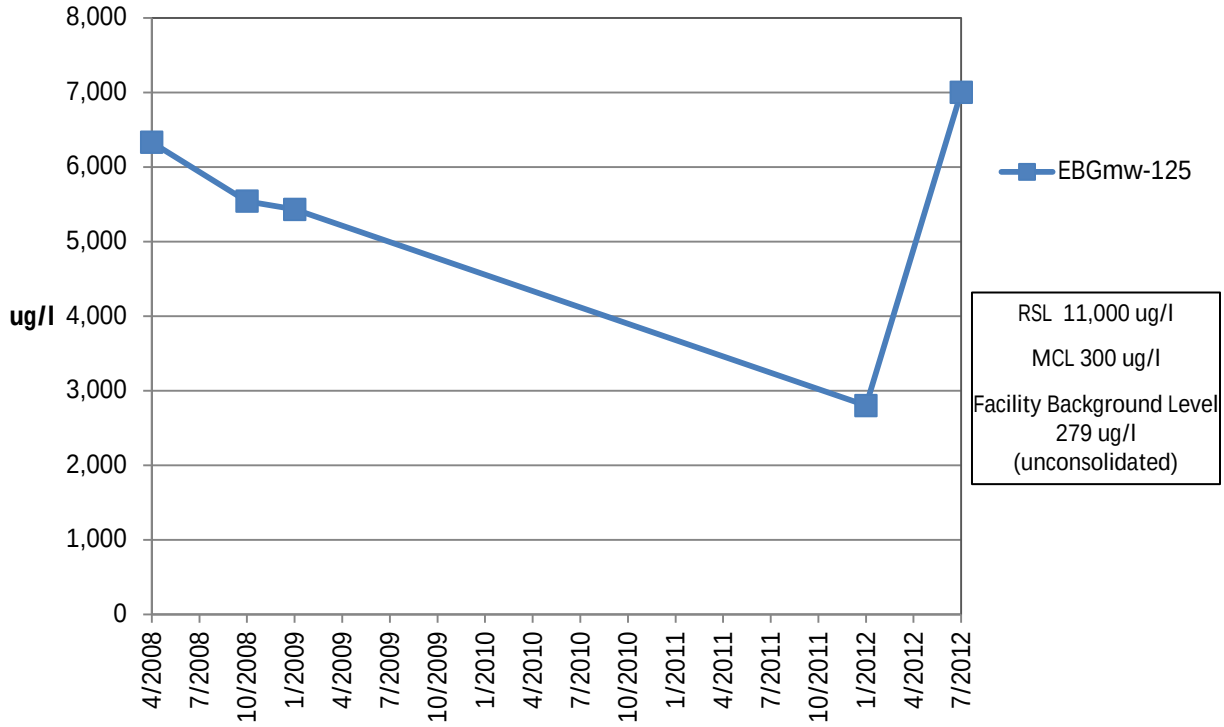
Erie Burning Grounds
Bis(2-ethylhexyl)phthalate



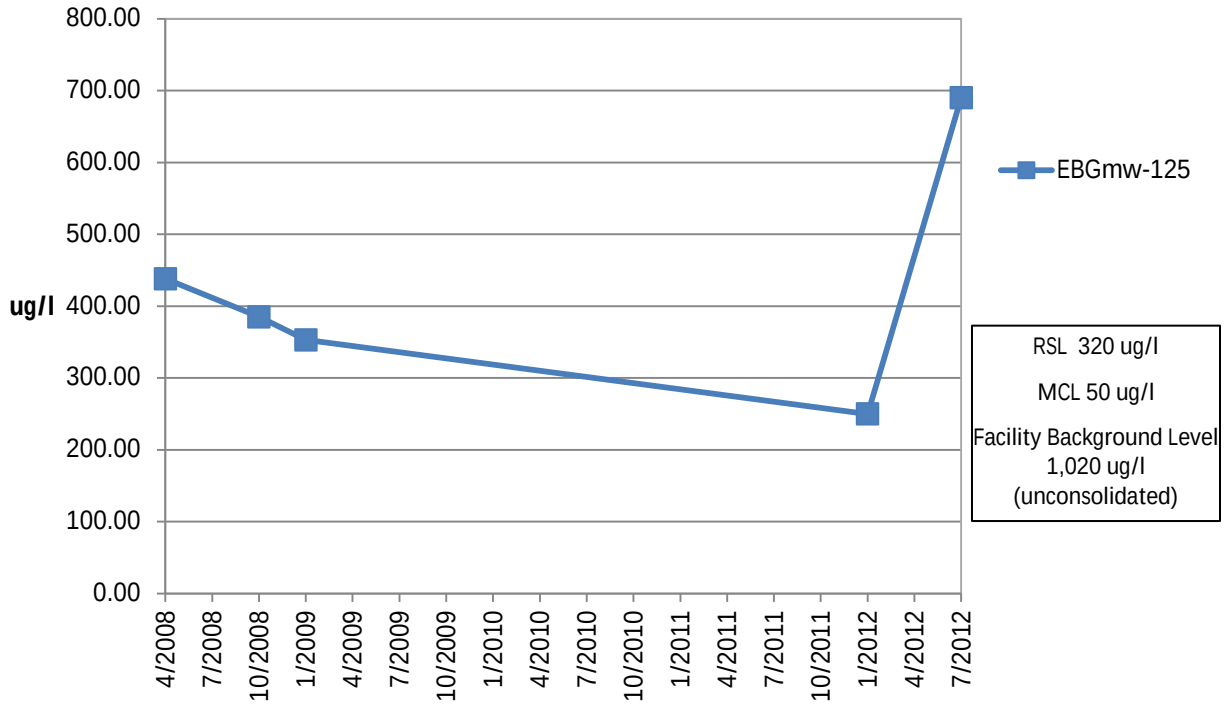
Erie Burning Grounds
Arsenic



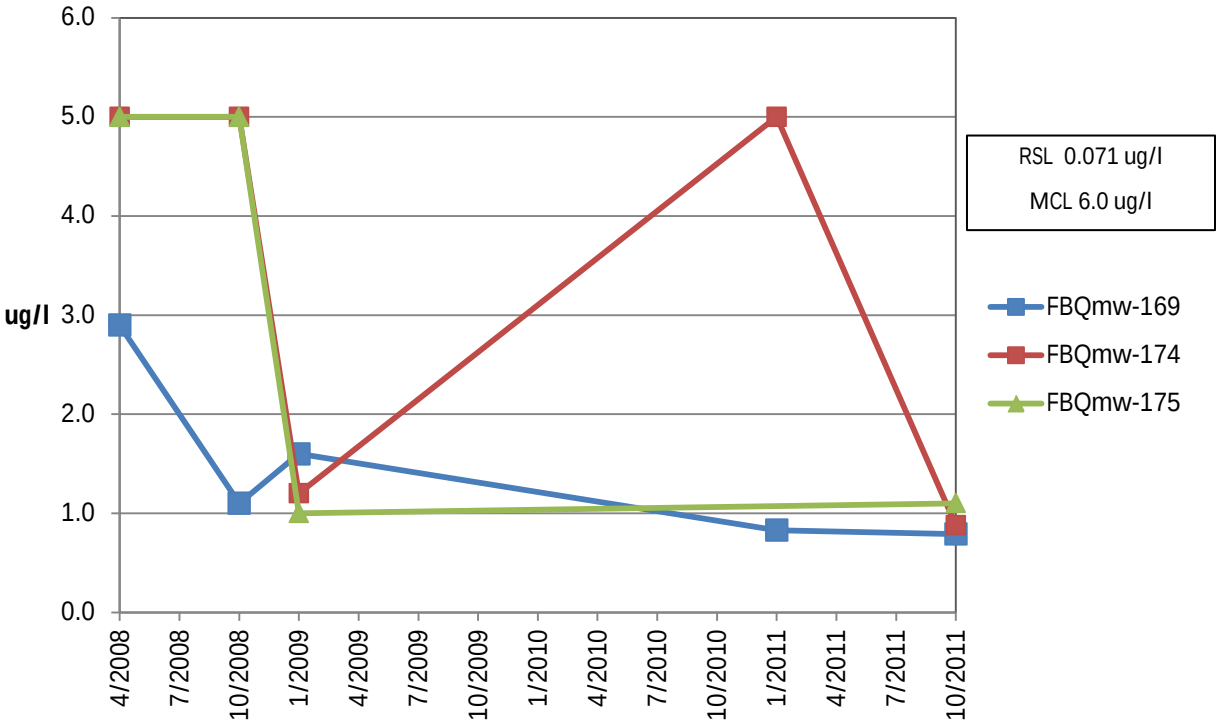
Erie Burning Grounds
Iron



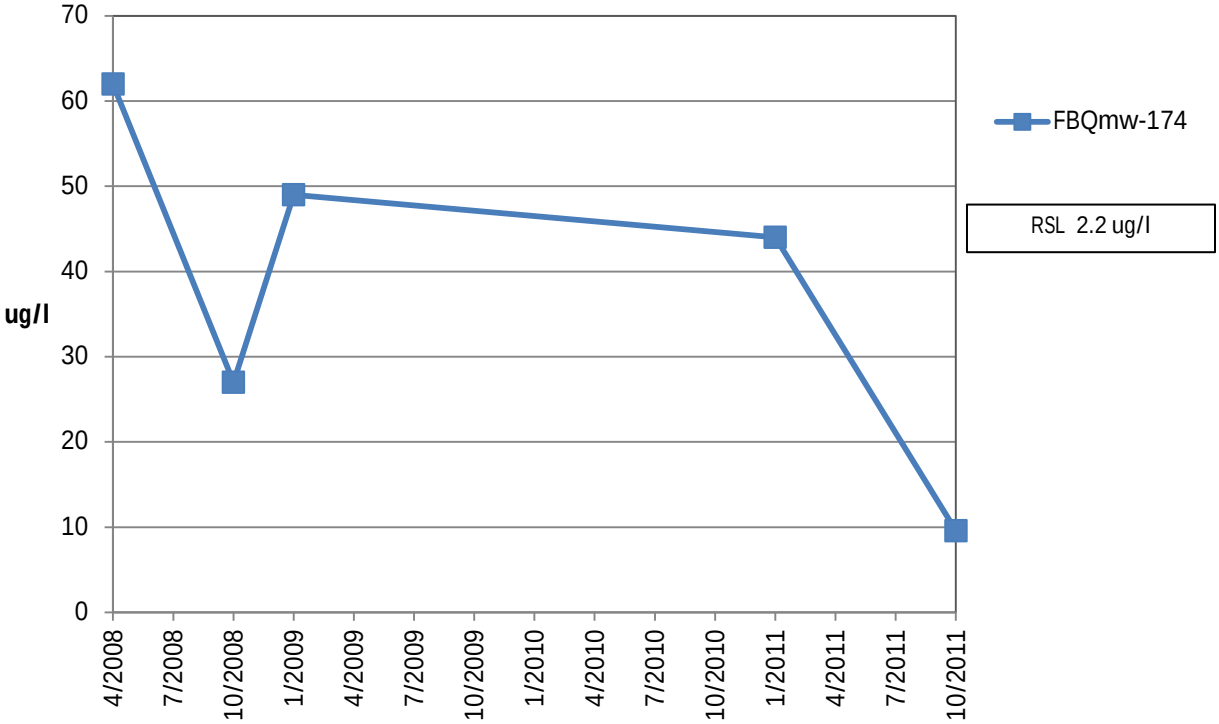
Erie Burning Grounds
Manganese

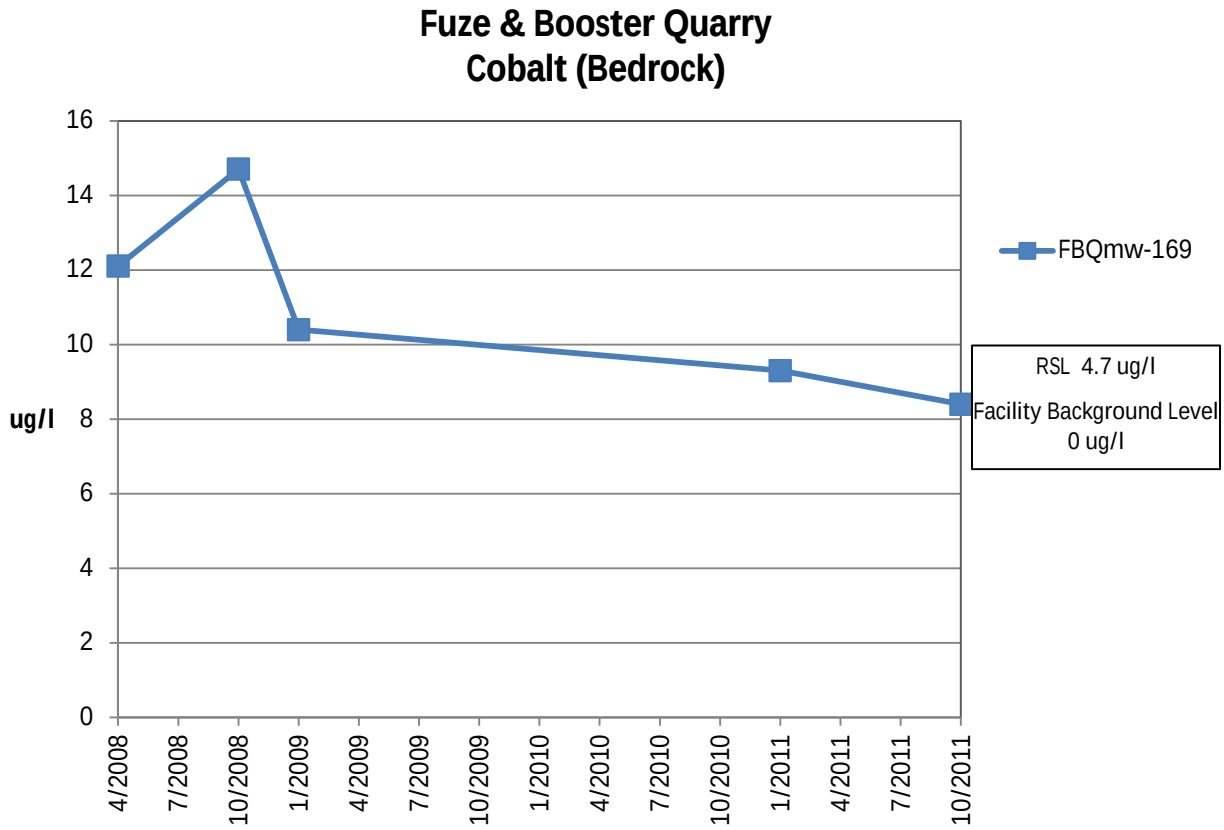


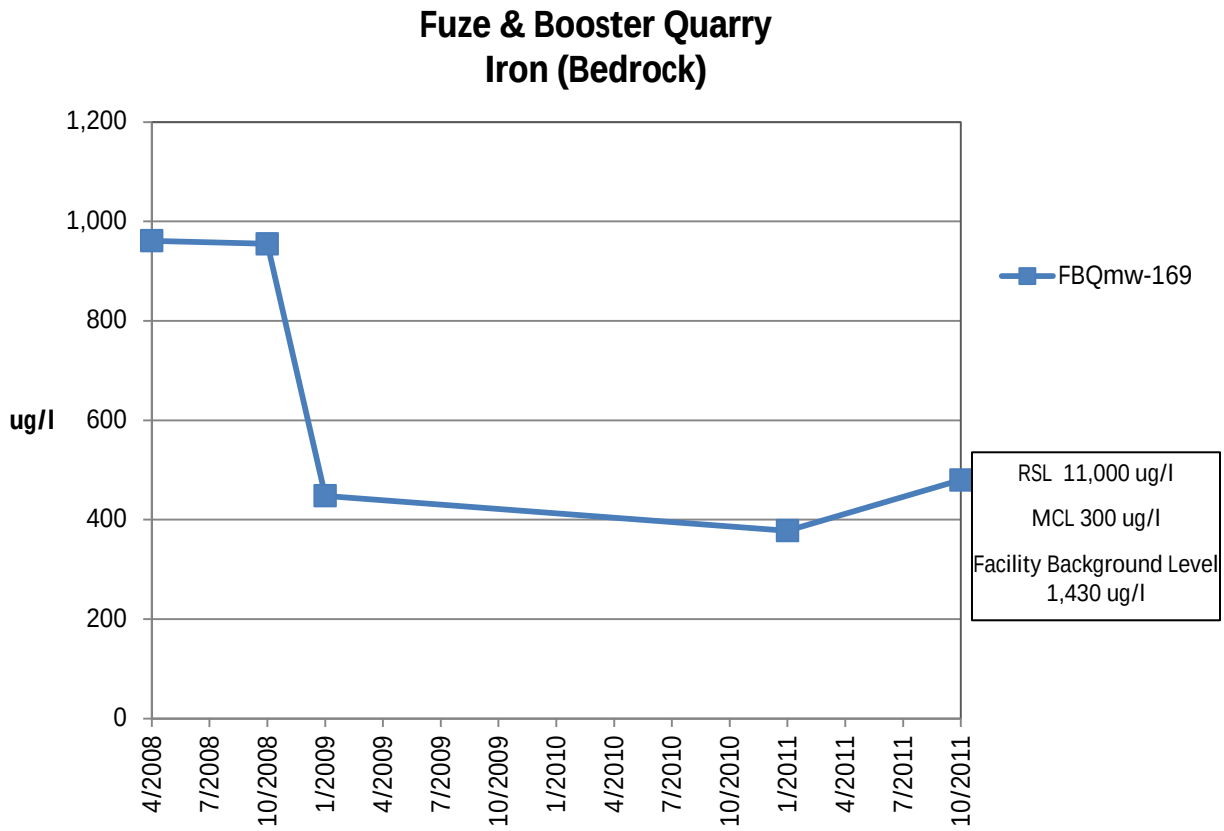
Fuze & Booster Quarry
Bis(2-ethylhexyl)phthalate

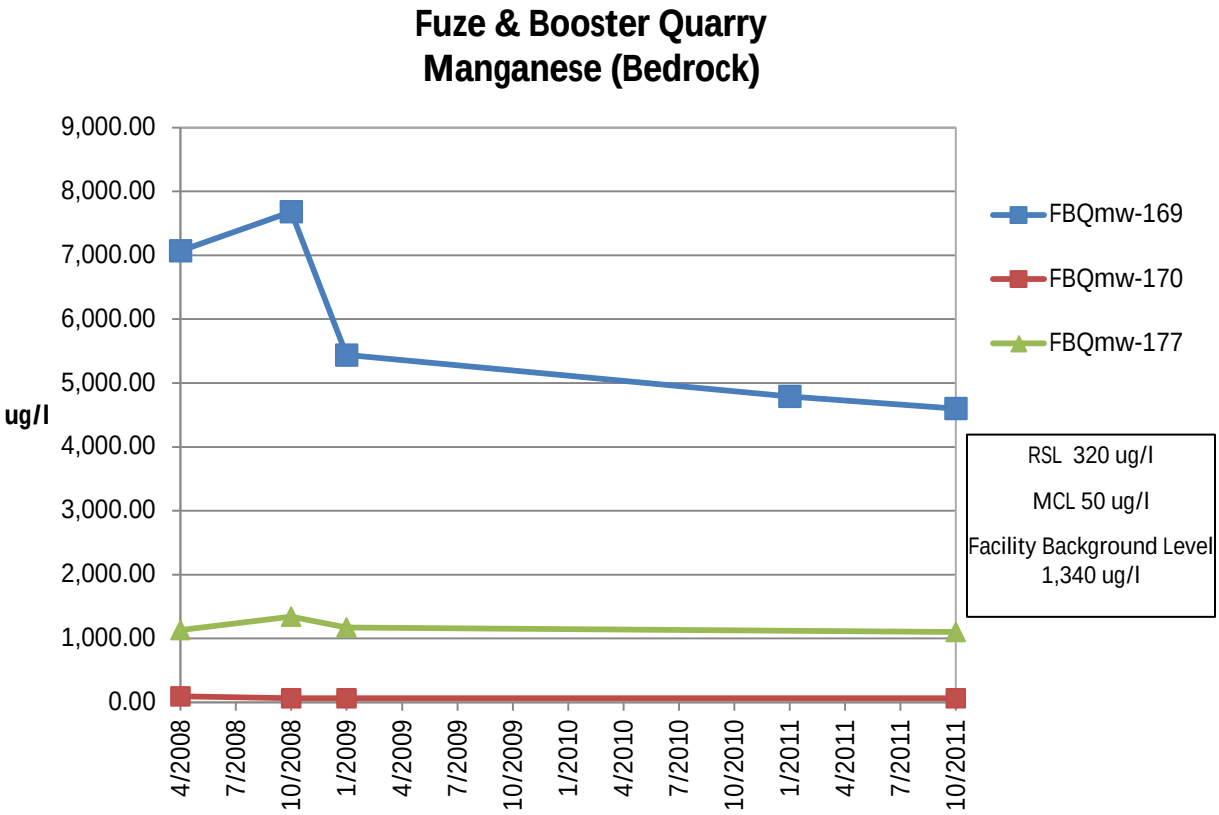


Fuze & Booster Quarry
2,4,6-TNT

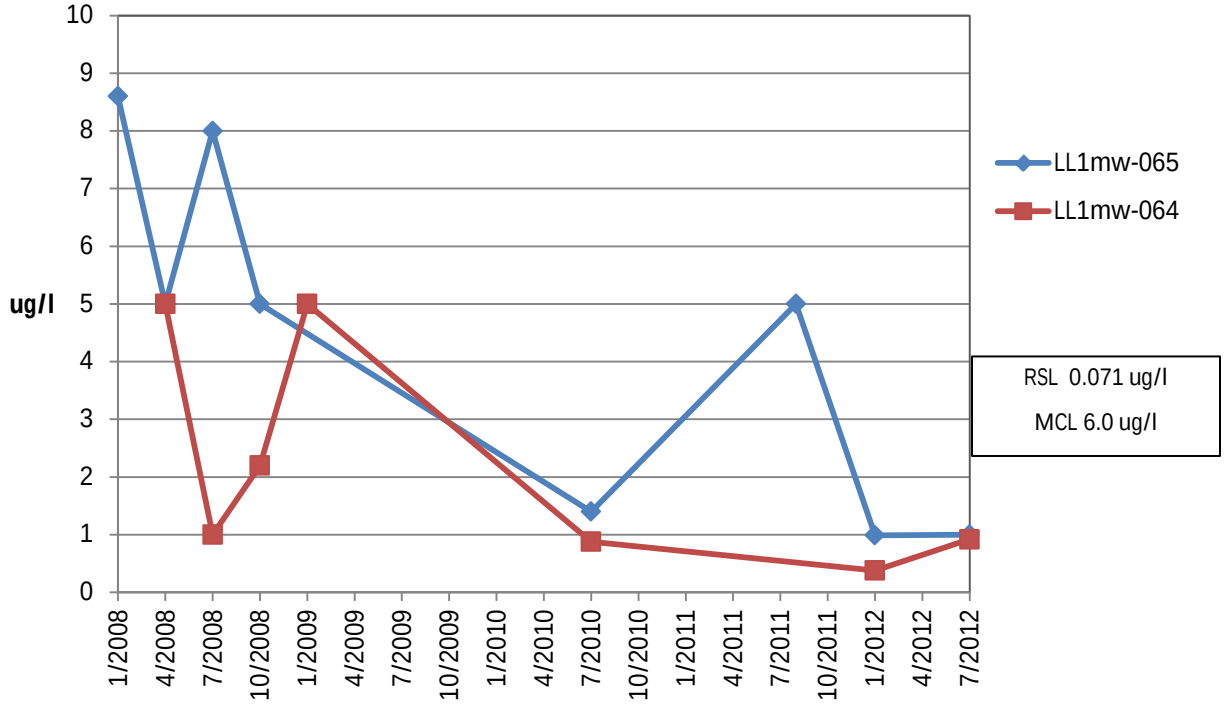



Fuze & Booster Quarry
Cobalt (Bedrock)
ug/l
16
14
12
10
8
6
4
2
0
4/2008
7/2008
10/2008
1/2009
4/2009
7/2009
10/2009
1/2010
4/2010
7/2010
10/2010
1/2011
4/2011
7/2011
10/2011
FBQmw-169
RSL 4.7 ug/l
Facility Background Level
0 ug/l

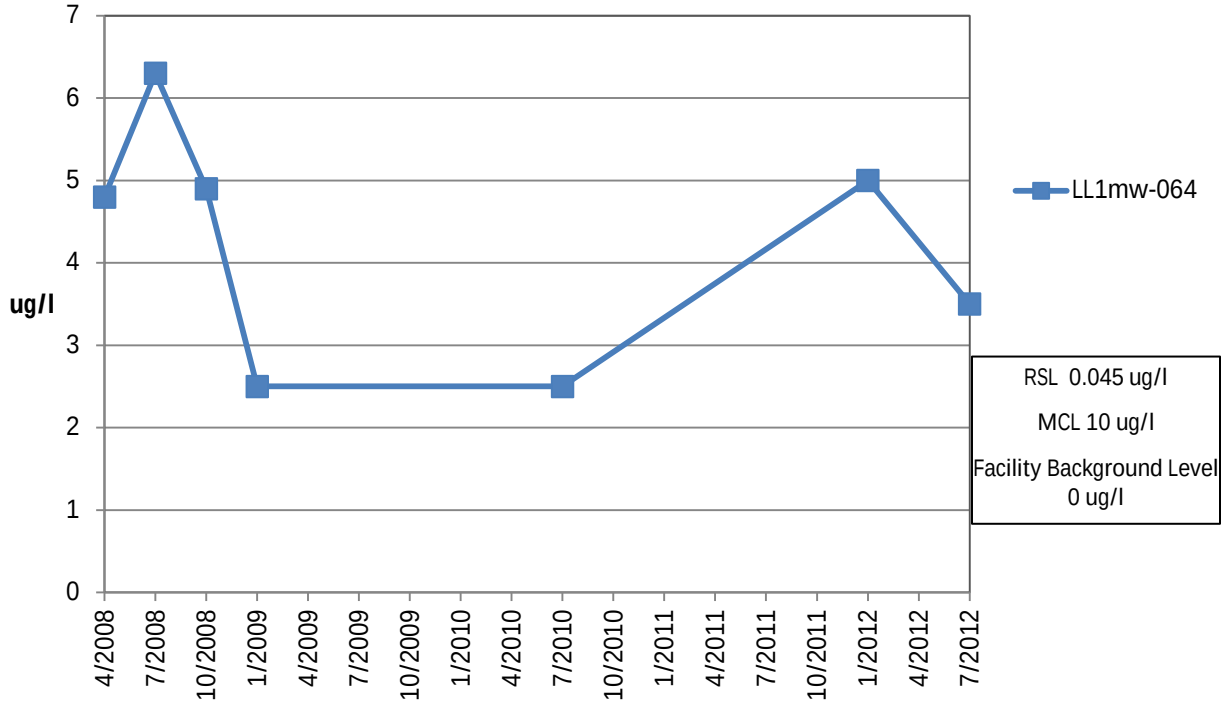

Fuze & Booster Quarry
Iron (Bedrock)
ug/l
1,200
1,000
800
600
400
200
0
4/2008
7/2008
10/2008
1/2009
4/2009
7/2009
10/2009
1/2010
4/2010
7/2010
10/2010
1/2011
4/2011
7/2011
10/2011
FBQmw-169
RSL 11,000 ug/l
MCL 300 ug/l
Facility Background Level
1,430 ug/l


Fuze & Booster Quarry
Manganese (Bedrock)
9,000.00
8,000.00
7,000.00
6,000.00
5,000.00
4,000.00
3,000.00
2,000.00
1,000.00
0.00
ug/l
4/2008
7/2008
10/2008
1/2009
4/2009
7/2009
10/2009
1/2010
4/2010
7/2010
10/2010
1/2011
4/2011
7/2011
10/2011
FBQmw-169
FBQmw-170
FBQmw-177
RSL 320 ug/l
MCL 50 ug/l
Facility Background Level
1,340 ug/l

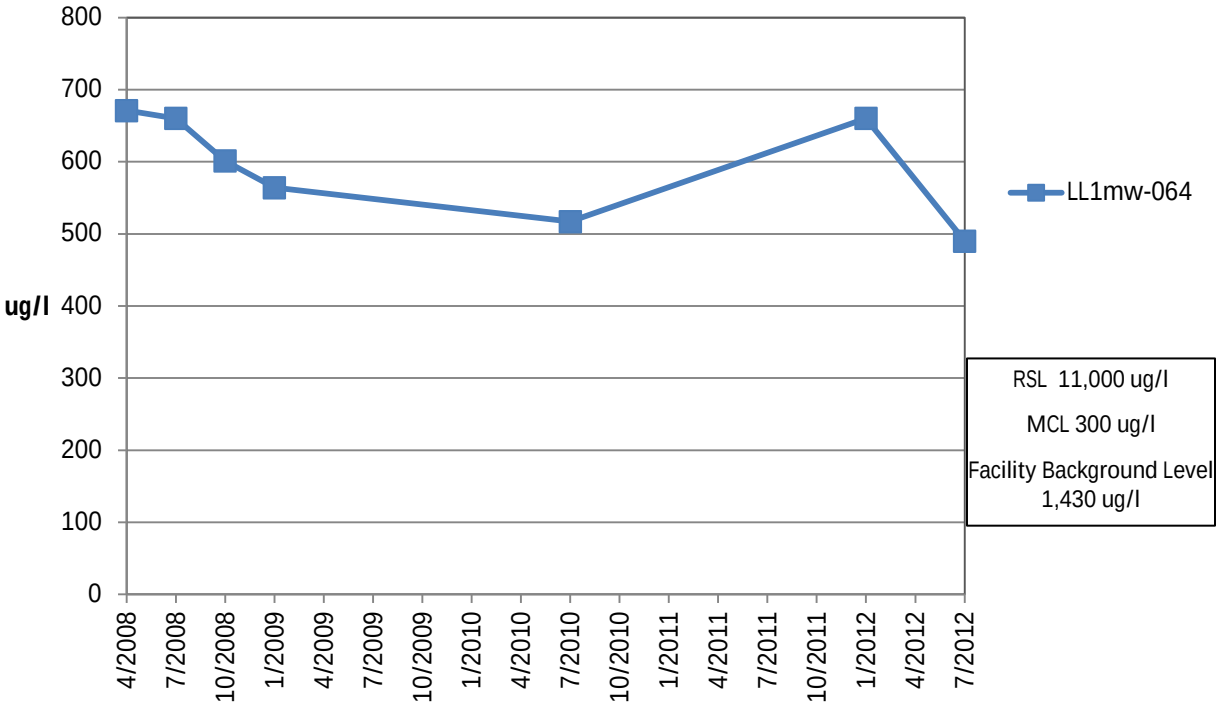
Load Line 1
Bis(2-ethylhexyl)phthalate



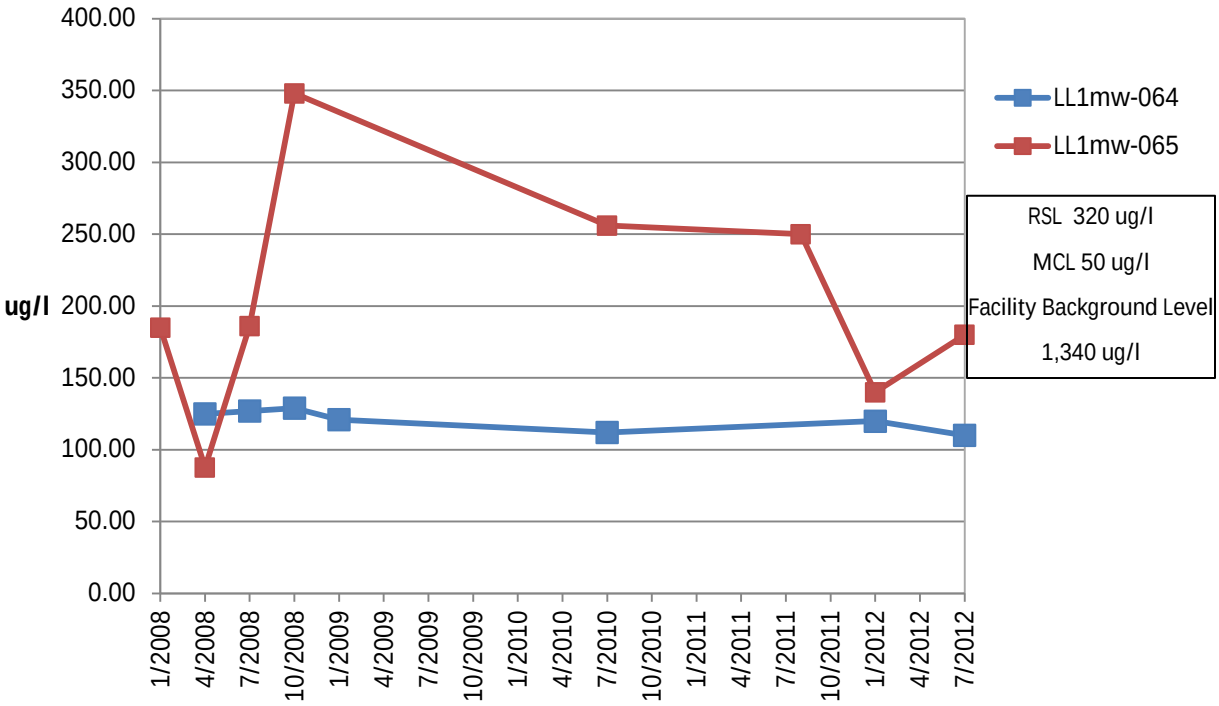
Load Line 1
Arsenic



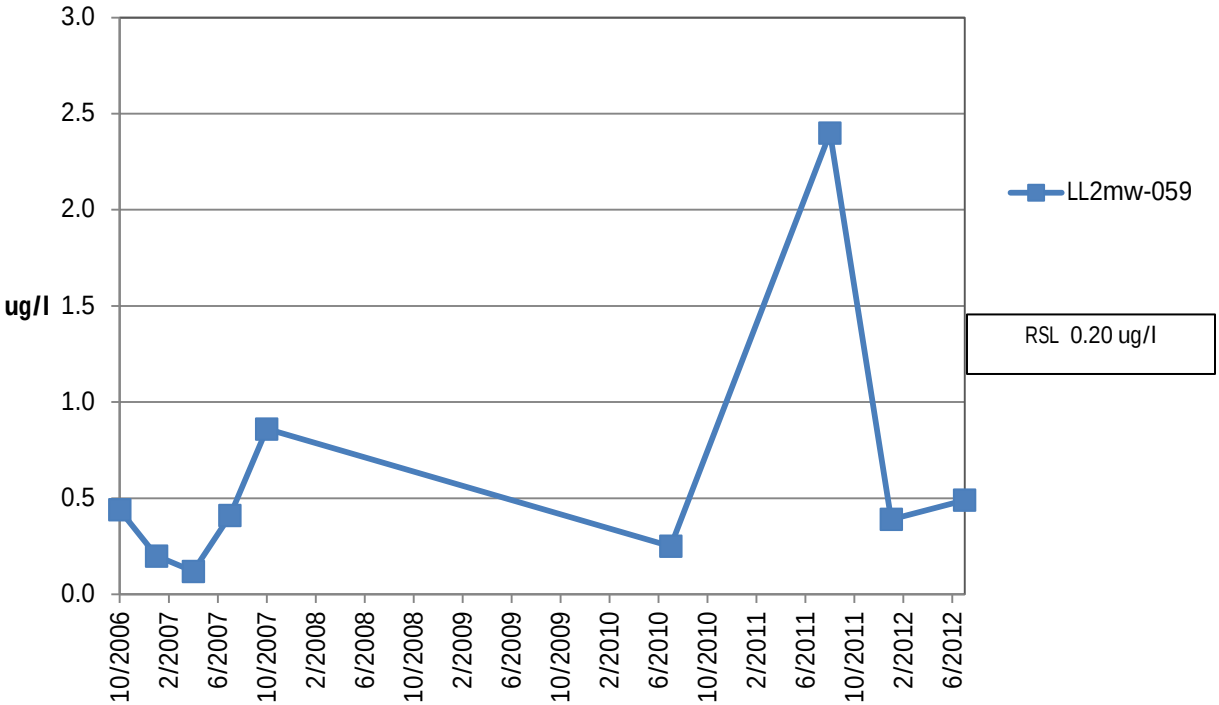
Load Line 1
Iron



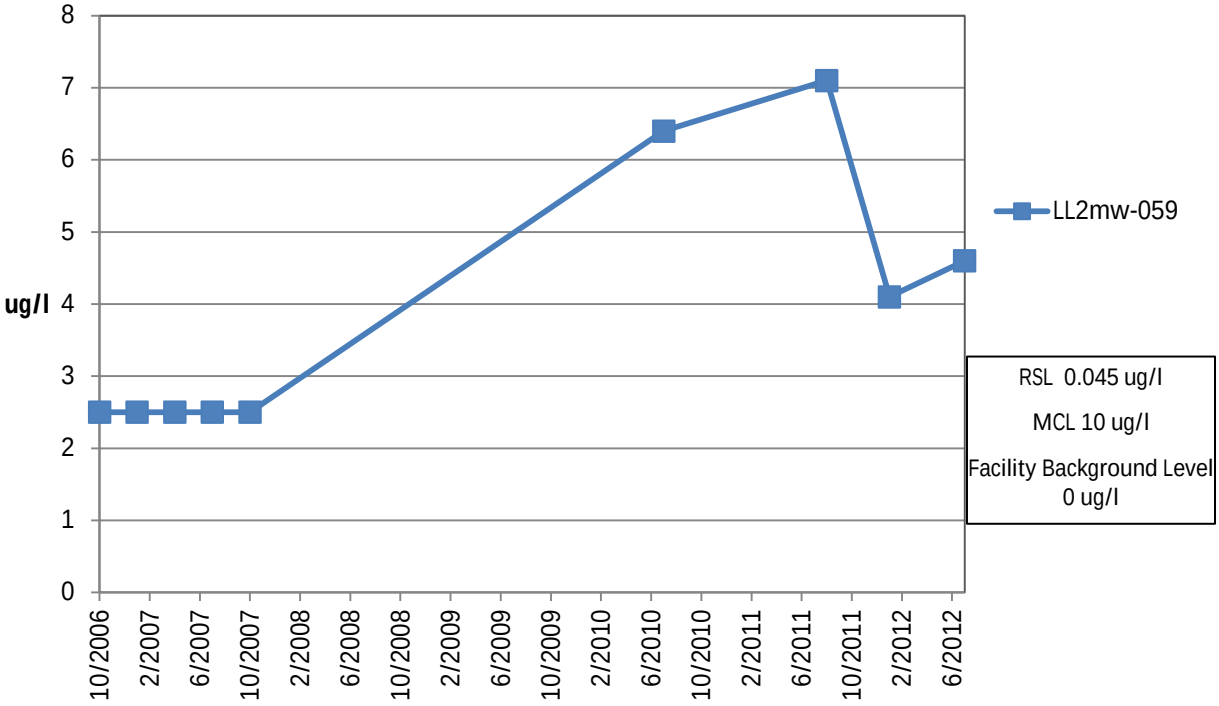
Load Line 1
Manganese



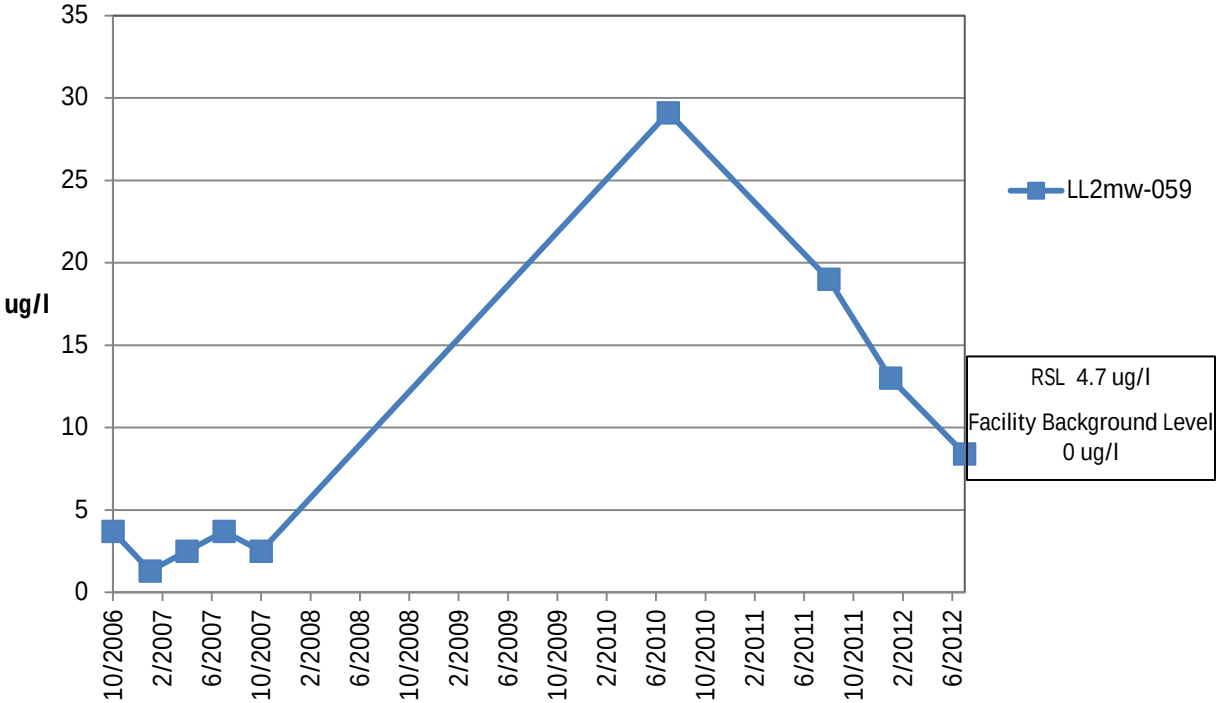
Load Line 2
2,4-Dinitrotoluene (Bedrock)



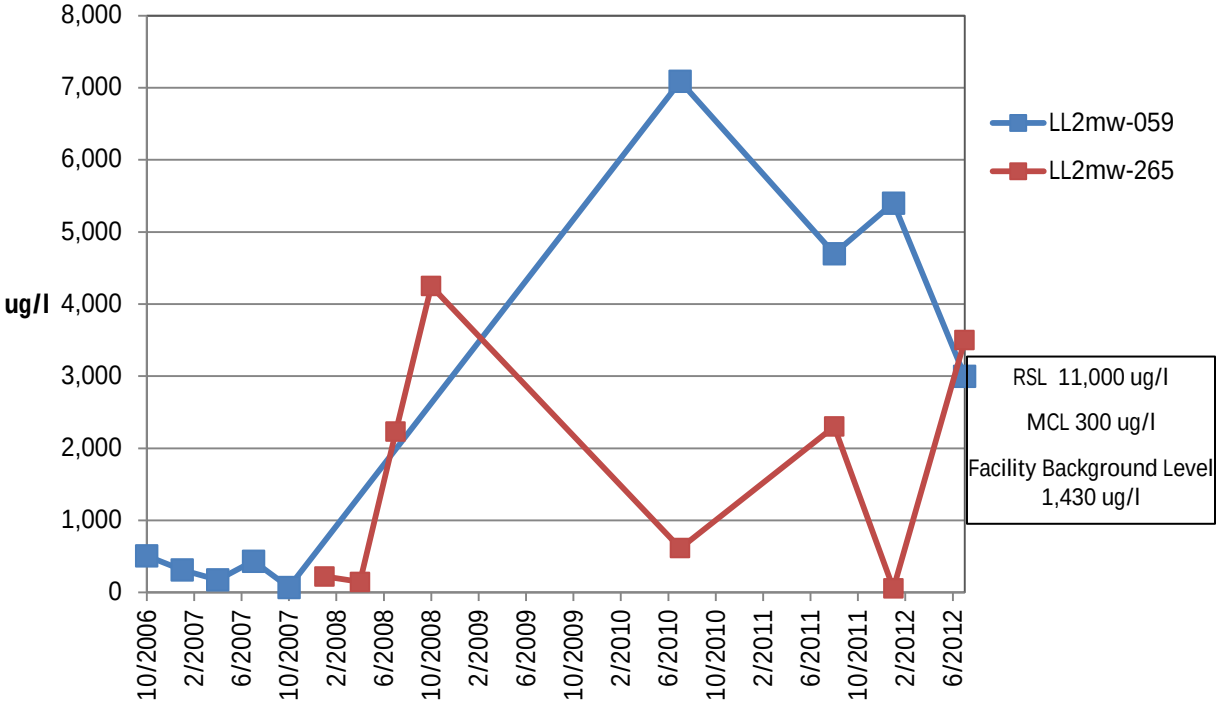
Load Line 2
Arsenic (Bedrock)



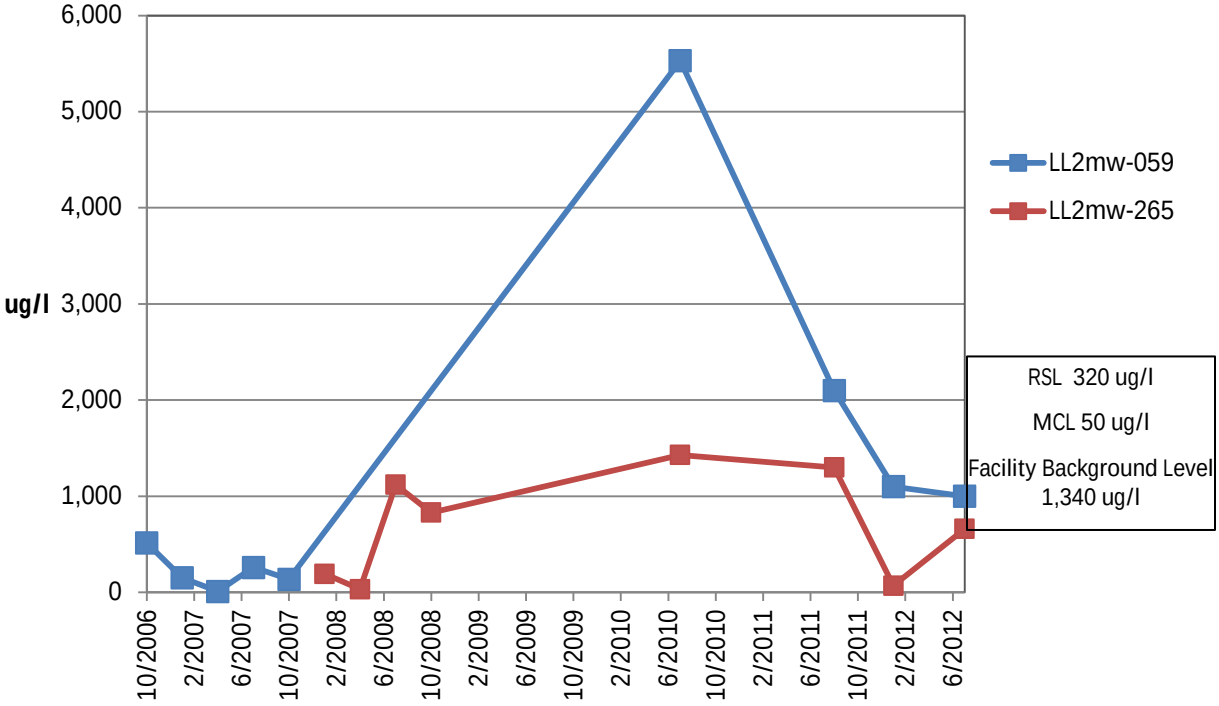
Load Line 2
Cobalt (Bedrock)



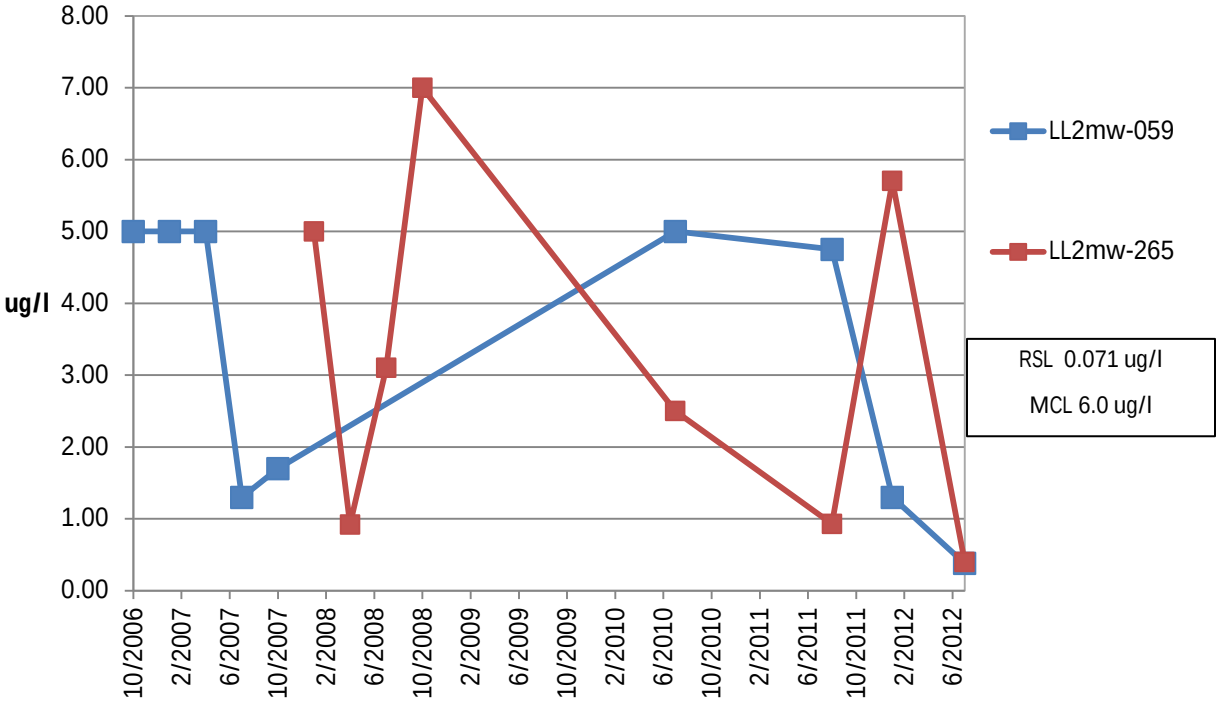
Load Line 2
Iron (Bedrock)



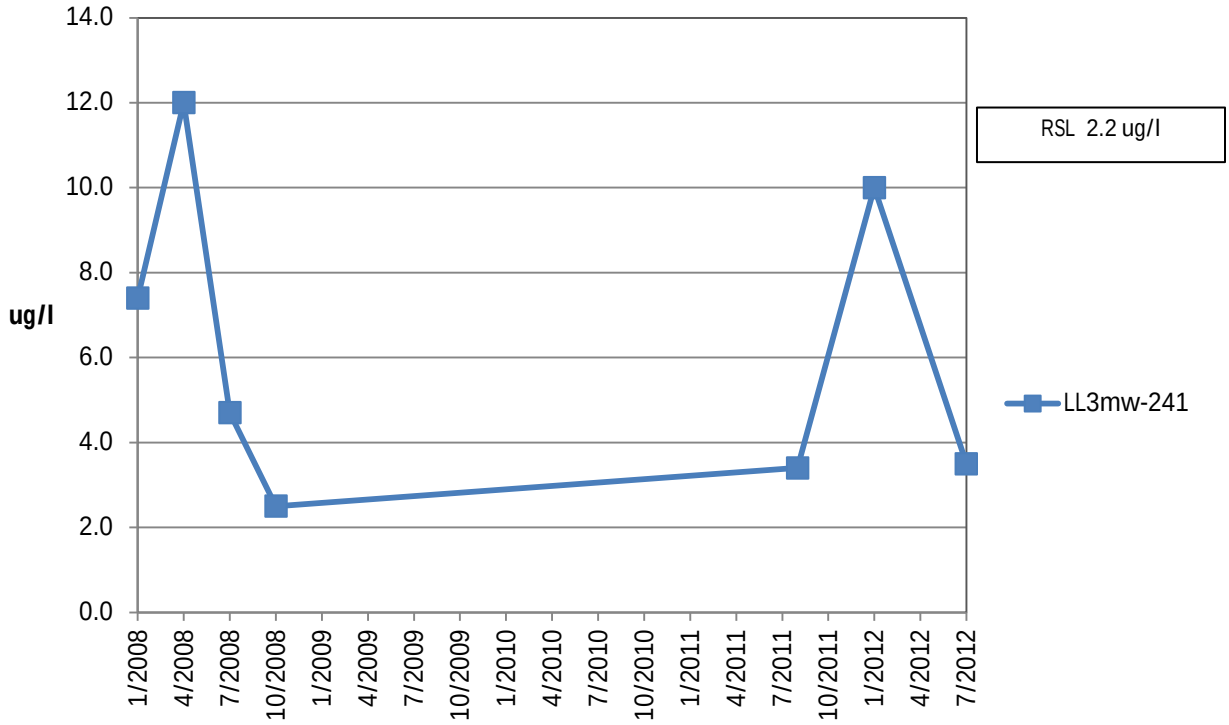
Load Line 2
Manganese (Bedrock)



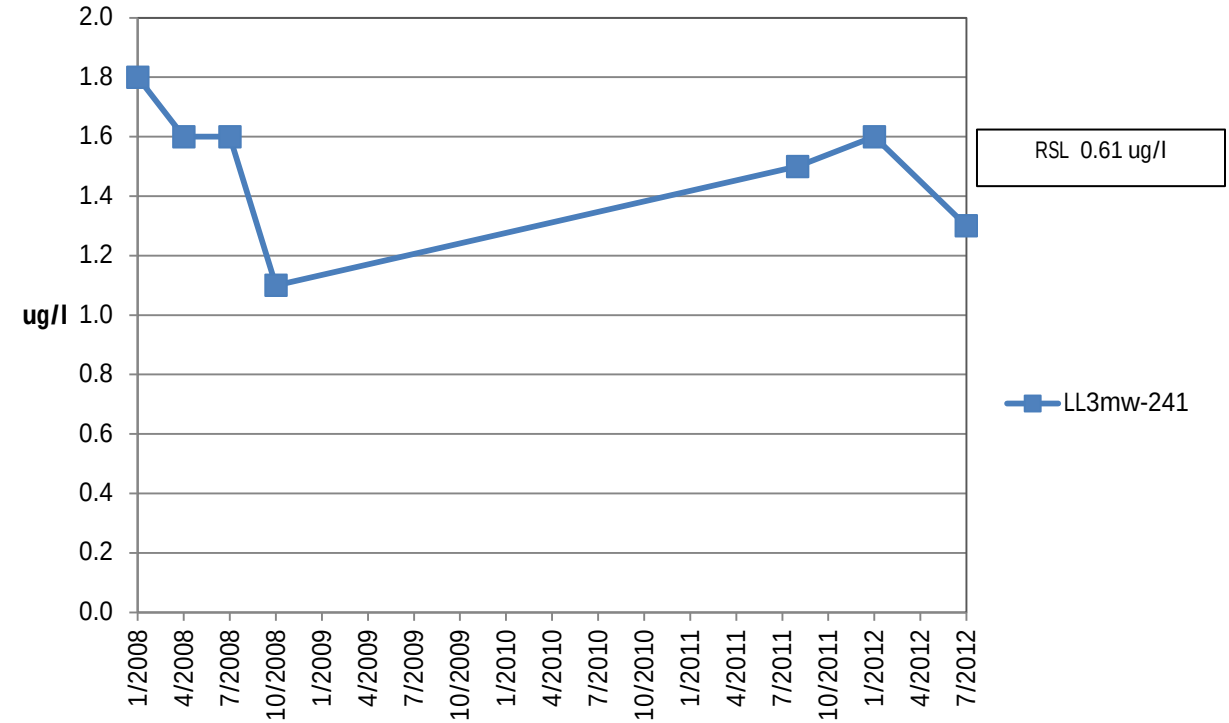
Load Line 2
Bis(2-ethylhexyl)phthalate (Bedrock)

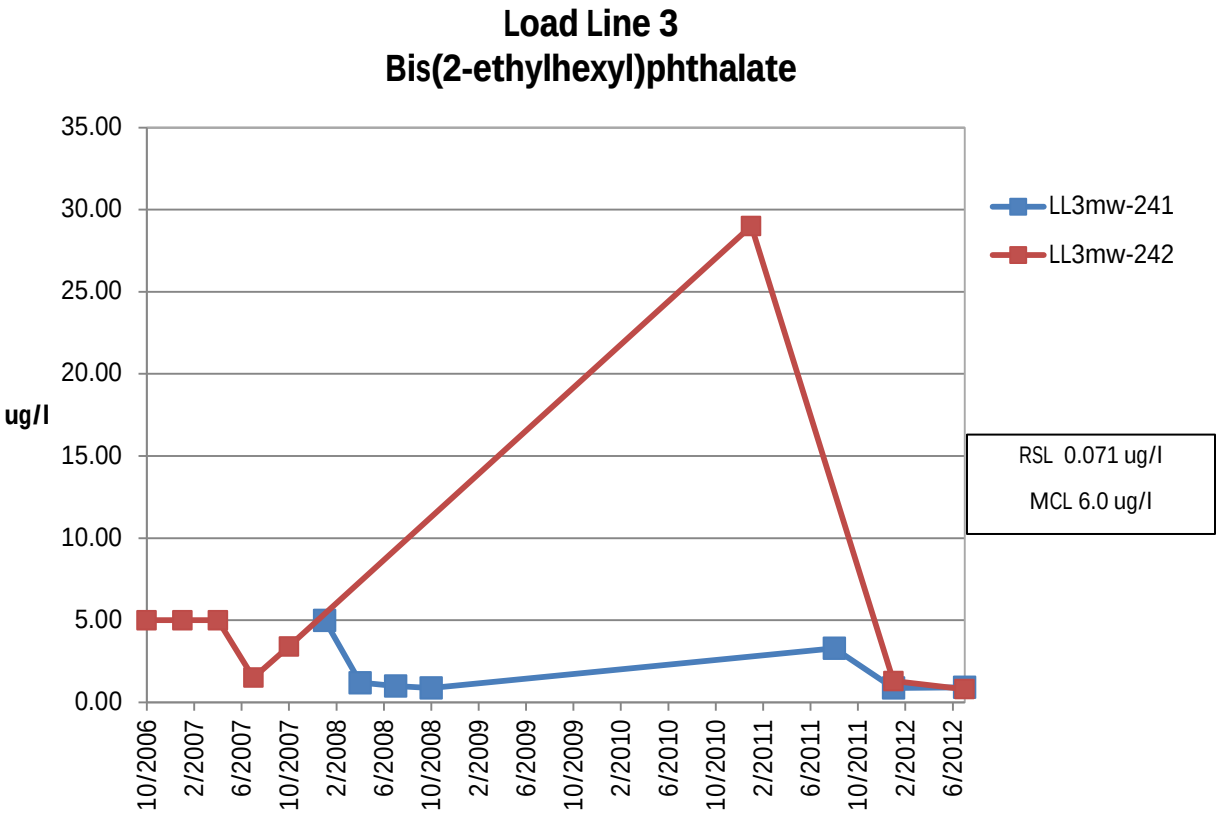


Load Line 3
2,4,6-Trinitrotoluene (Bedrock)

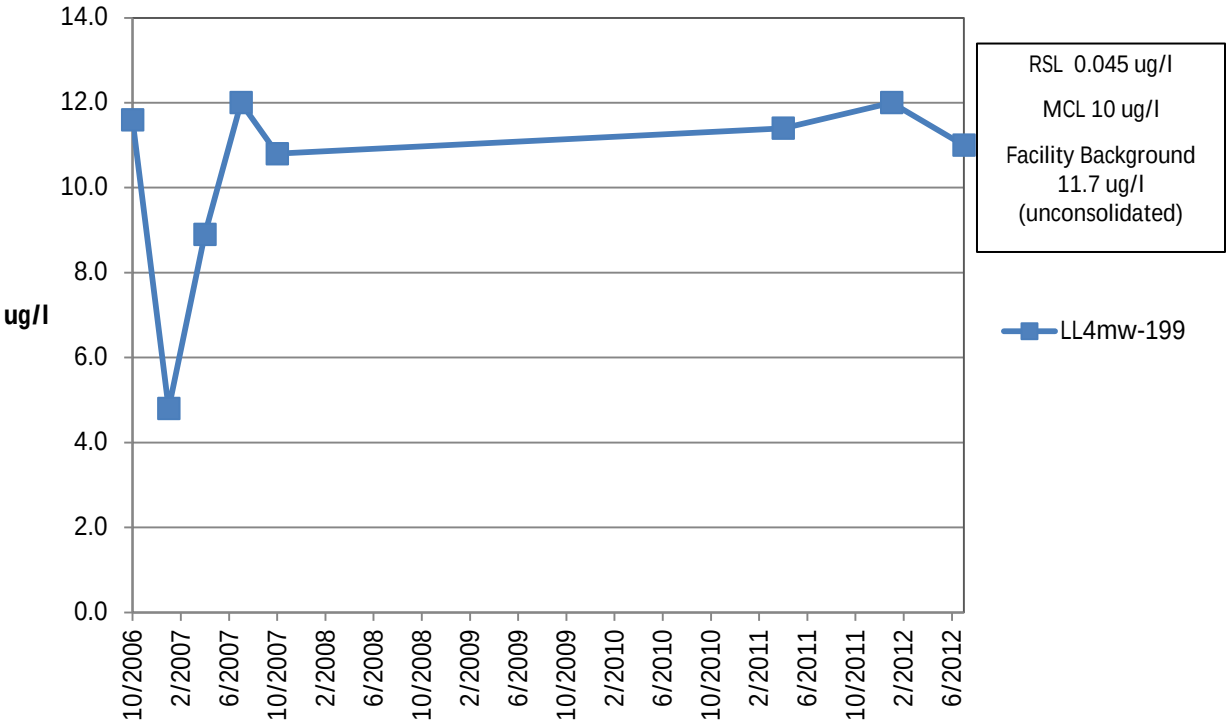


Load Line 3
RDX (Bedrock)

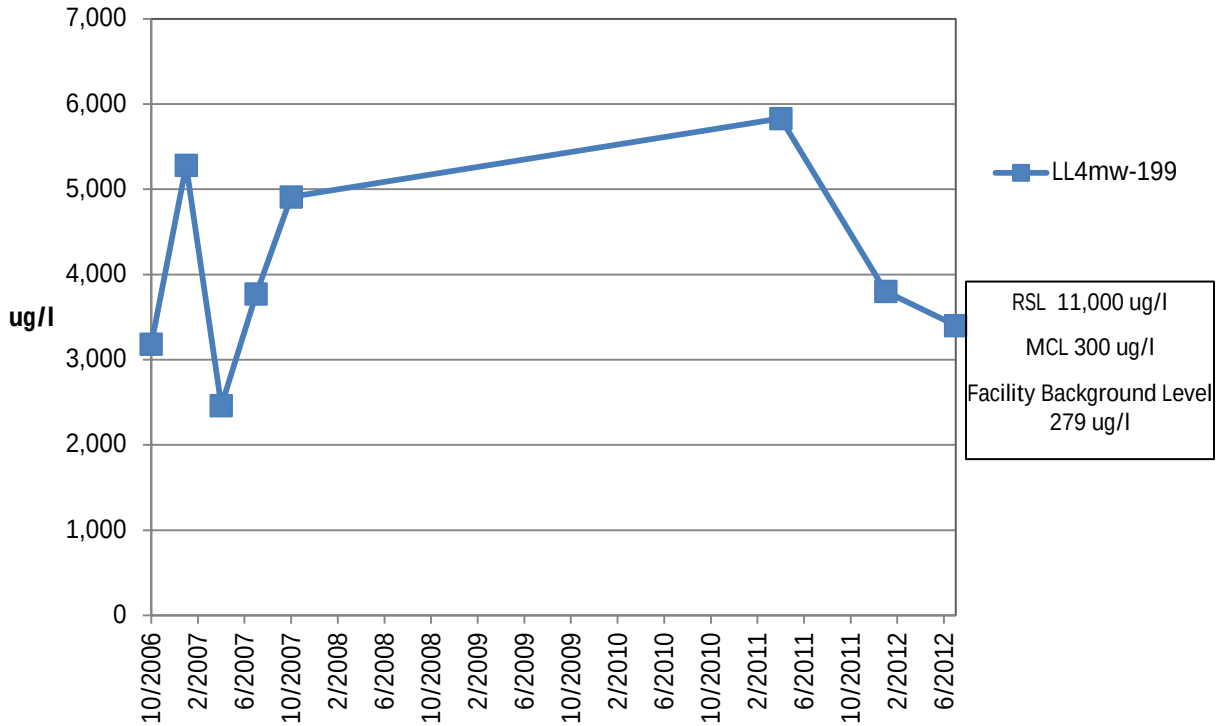



Load Line 3
Bis(2-ethylhexyl)phthalate
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
ug/l
10/2006
2/2007
6/2007
10/2007
2/2008
6/2008
10/2008
2/2009
6/2009
10/2009
2/2010
6/2010
10/2010
2/2011
6/2011
10/2011
2/2012
6/2012
LL3mw-241
LL3mw-242
RSL 0.071 ug/l
MCL 6.0 ug/l

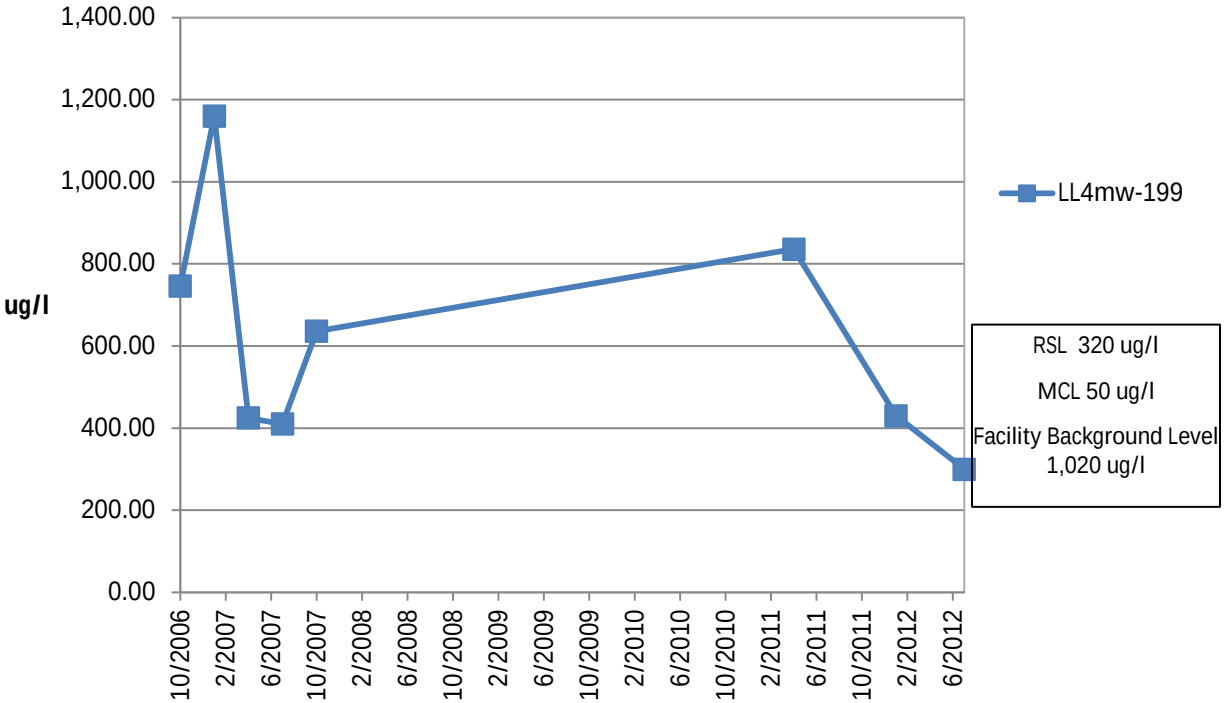
Load Line 4
Arsenic



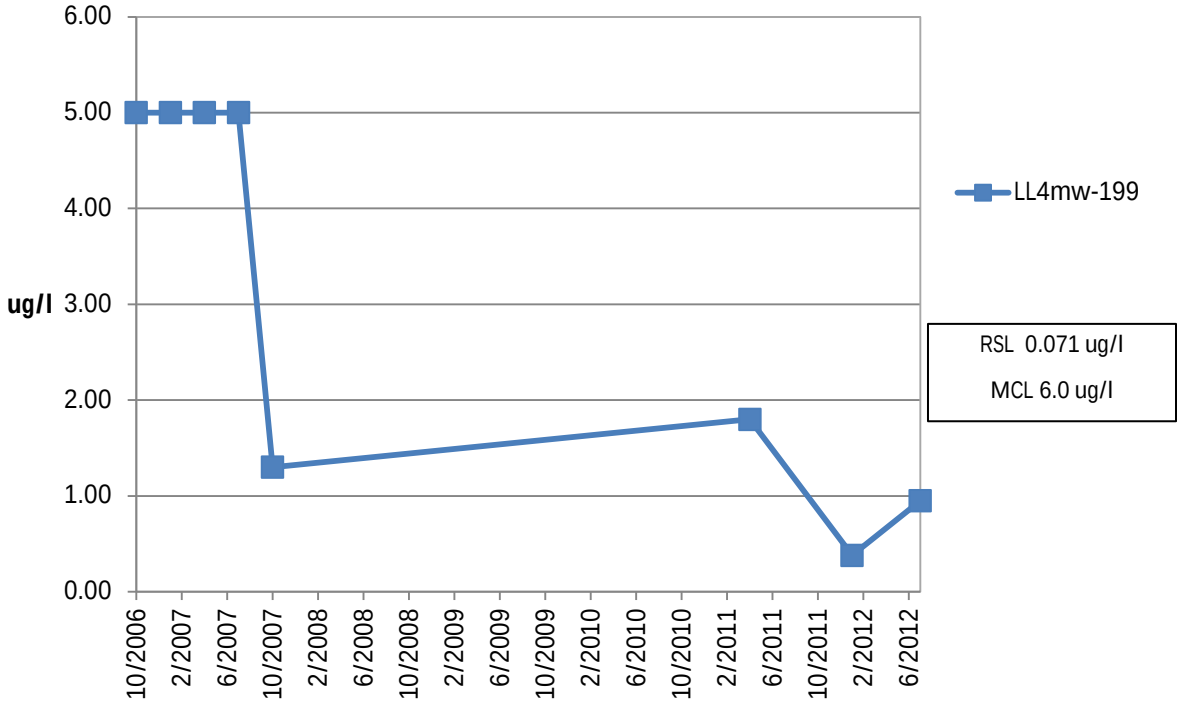
Load Line 4
Iron



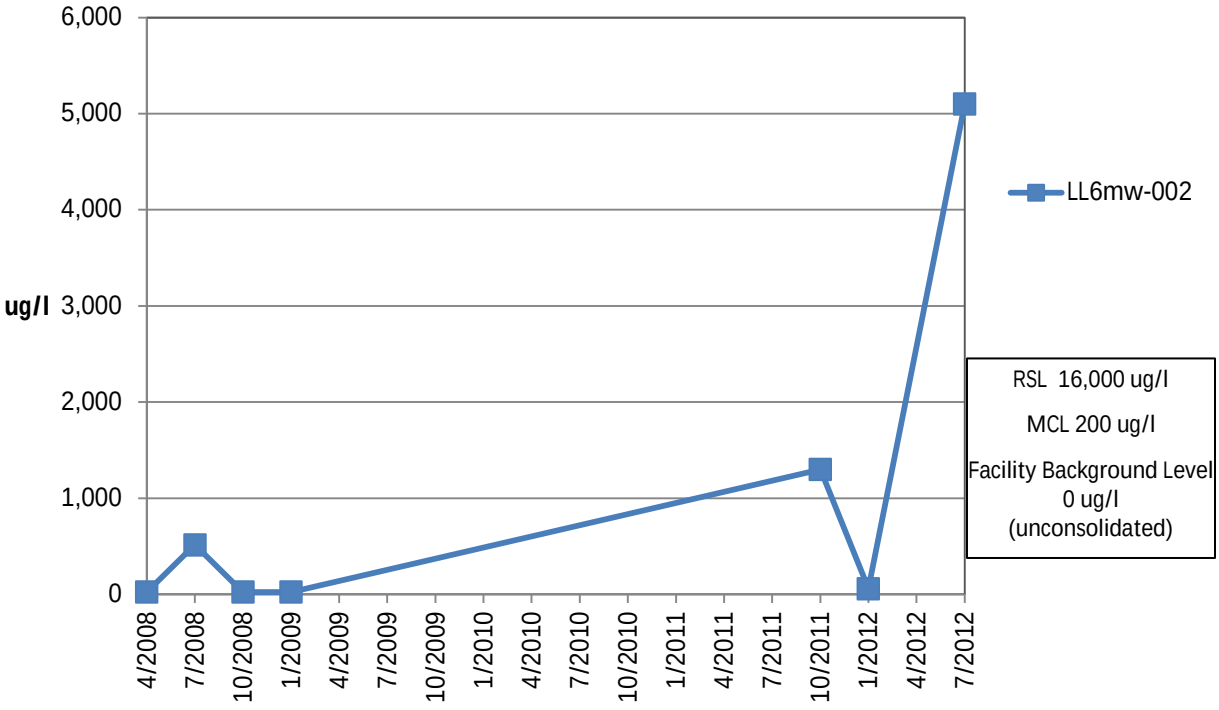
Load Line 4
Manganese



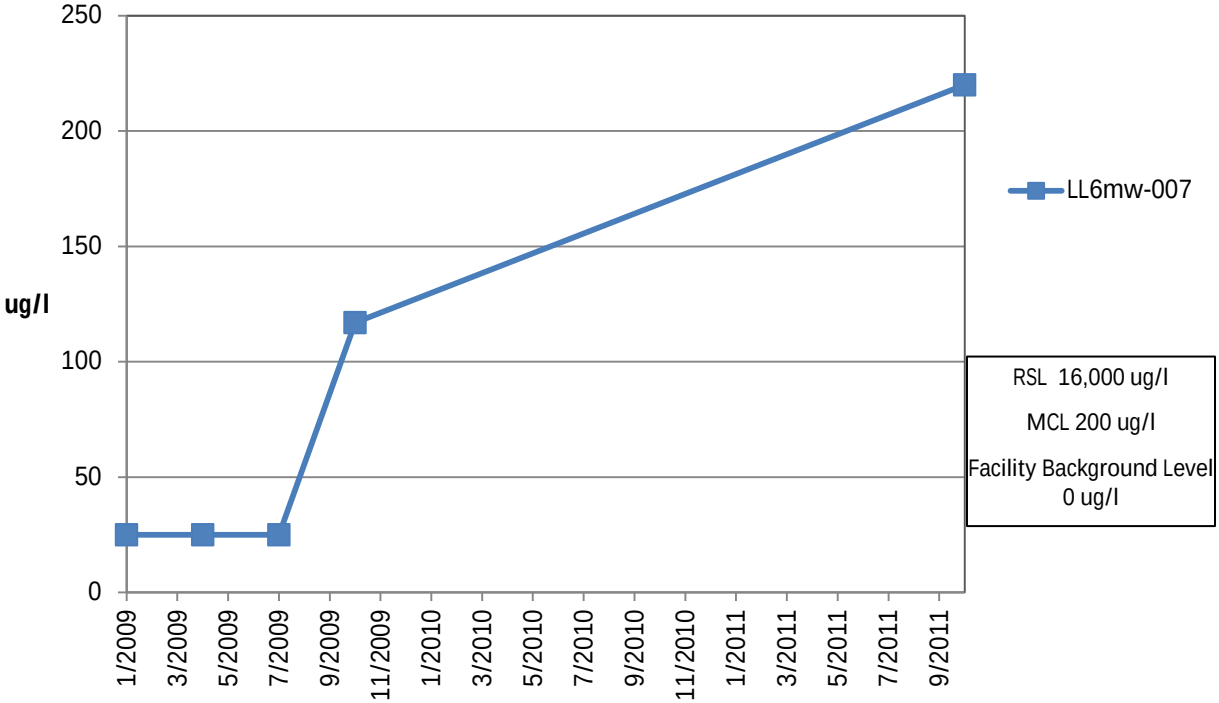
Load Line 4
Bis(2-ethylhexyl)phthalate



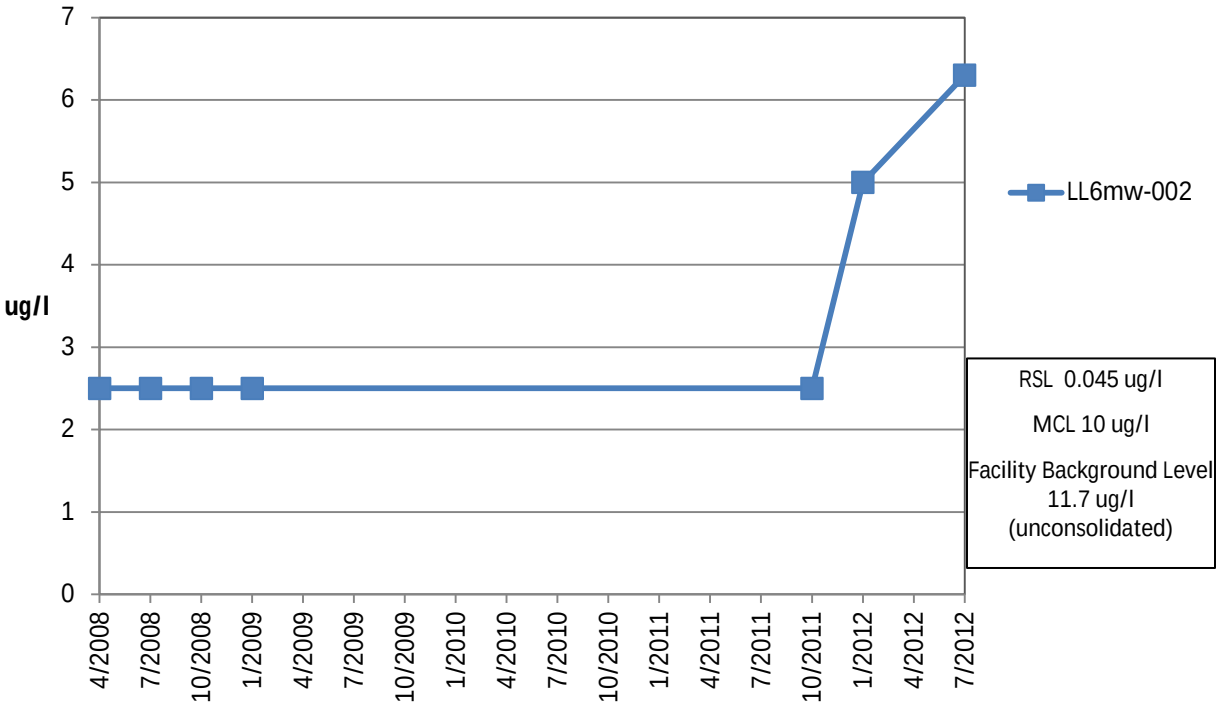
Load Line 6
Aluminum



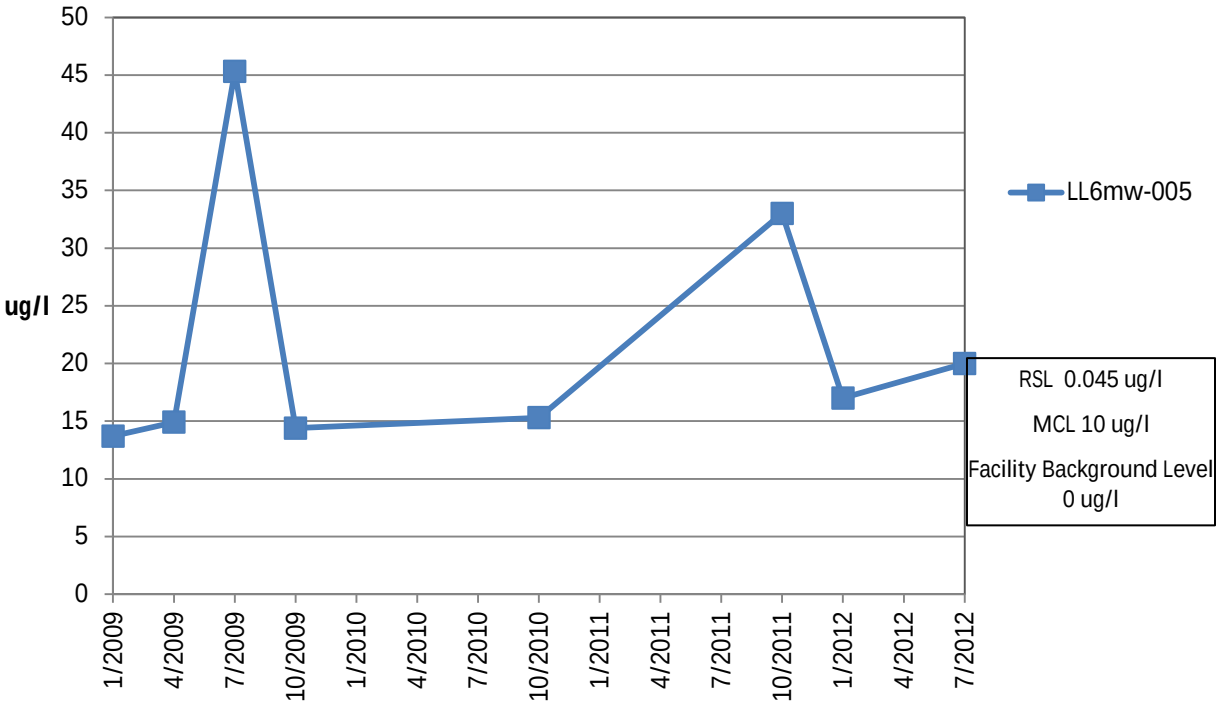
Load Line 6
Aluminum (Bedrock)



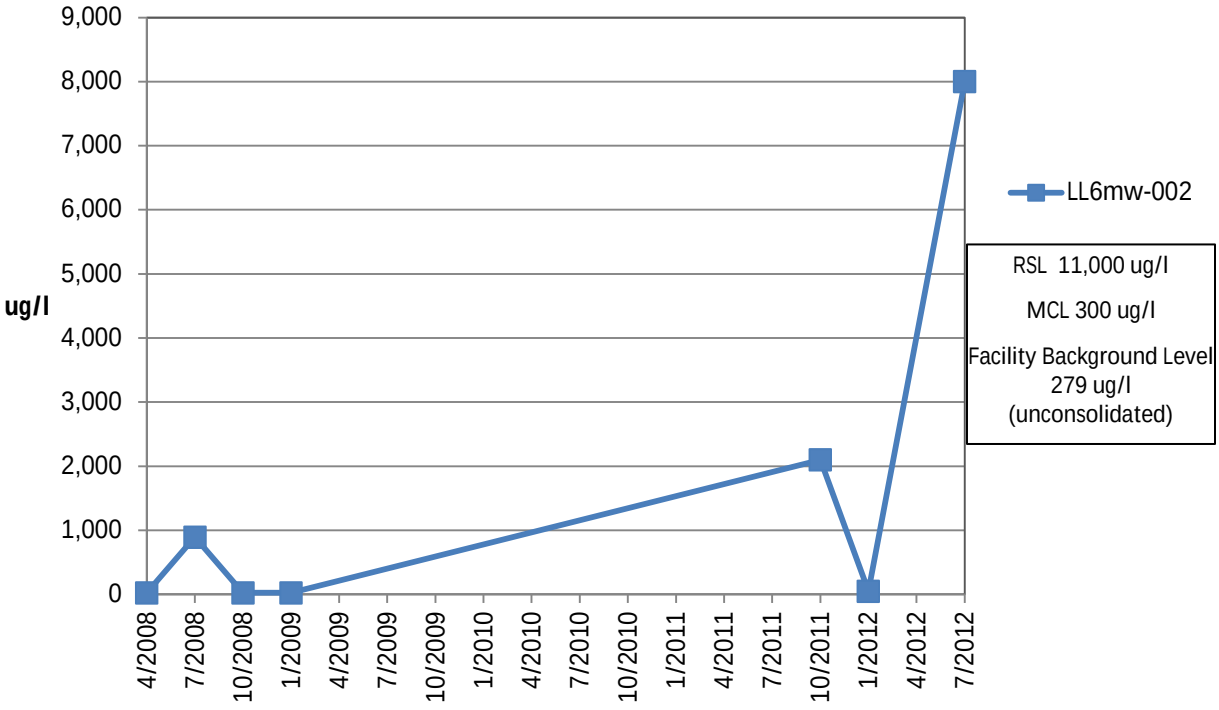
Load Line 6
Arsenic



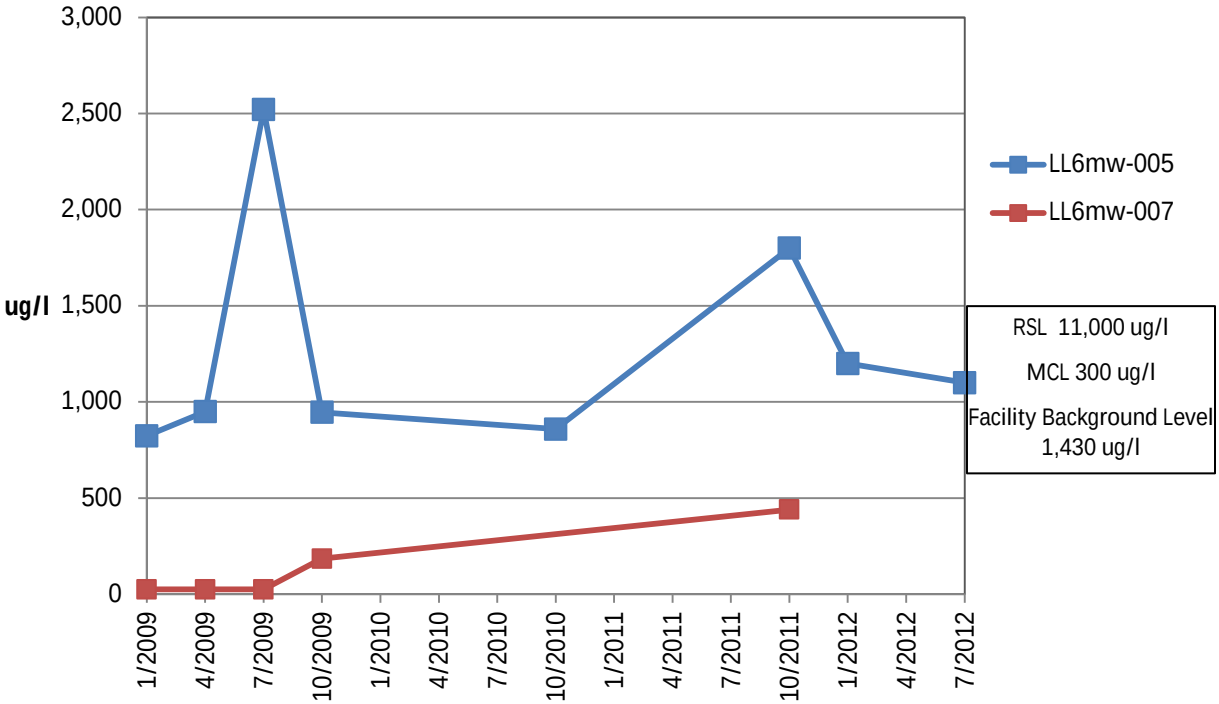
Load Line 6
Arsenic (Bedrock)



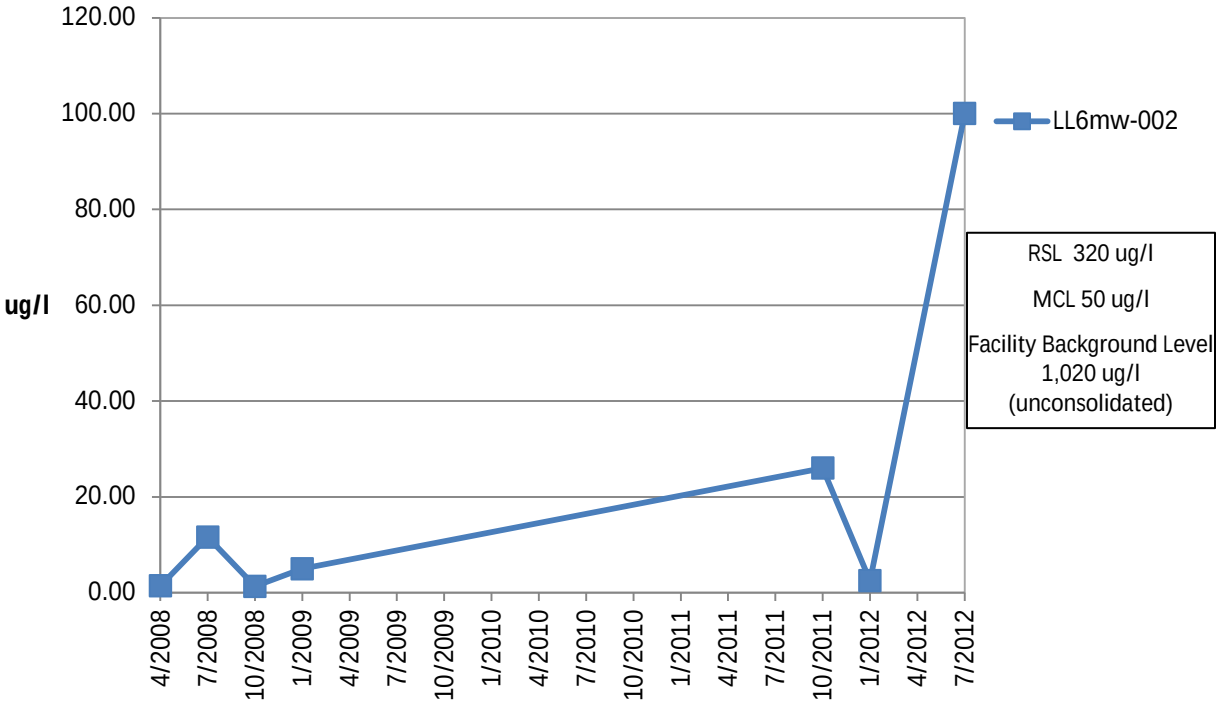
Load Line 6
Iron



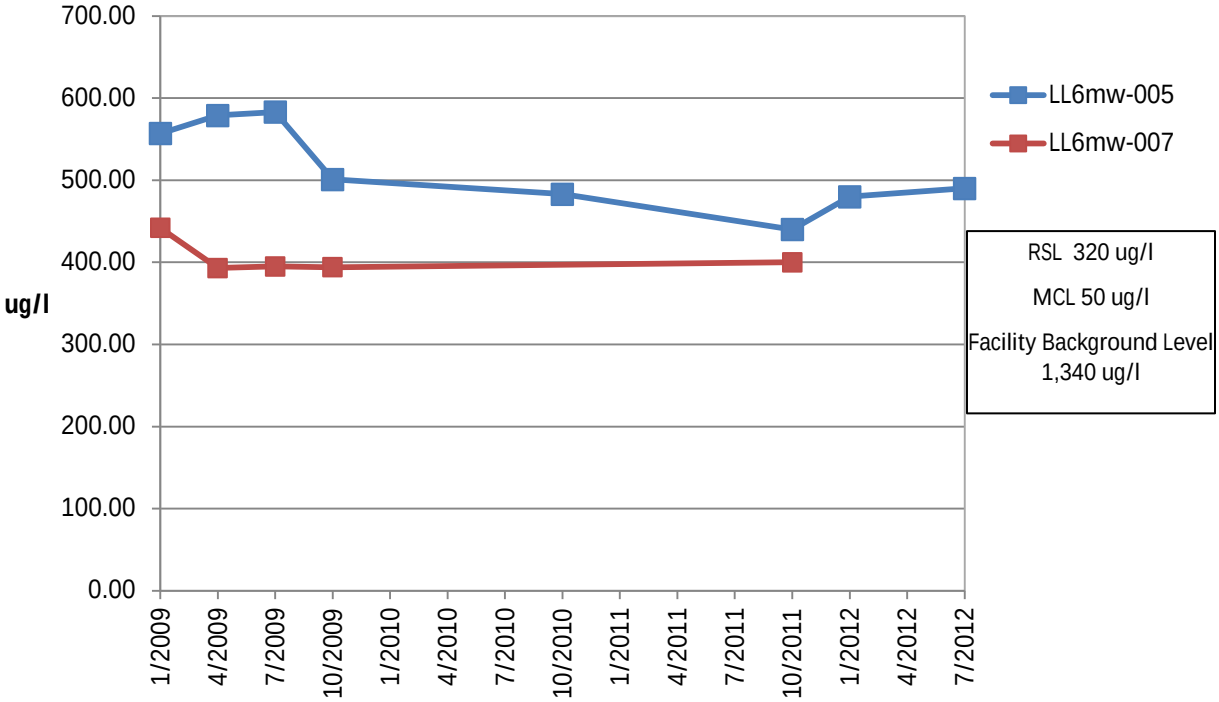
Load Line 6
Iron (Bedrock)



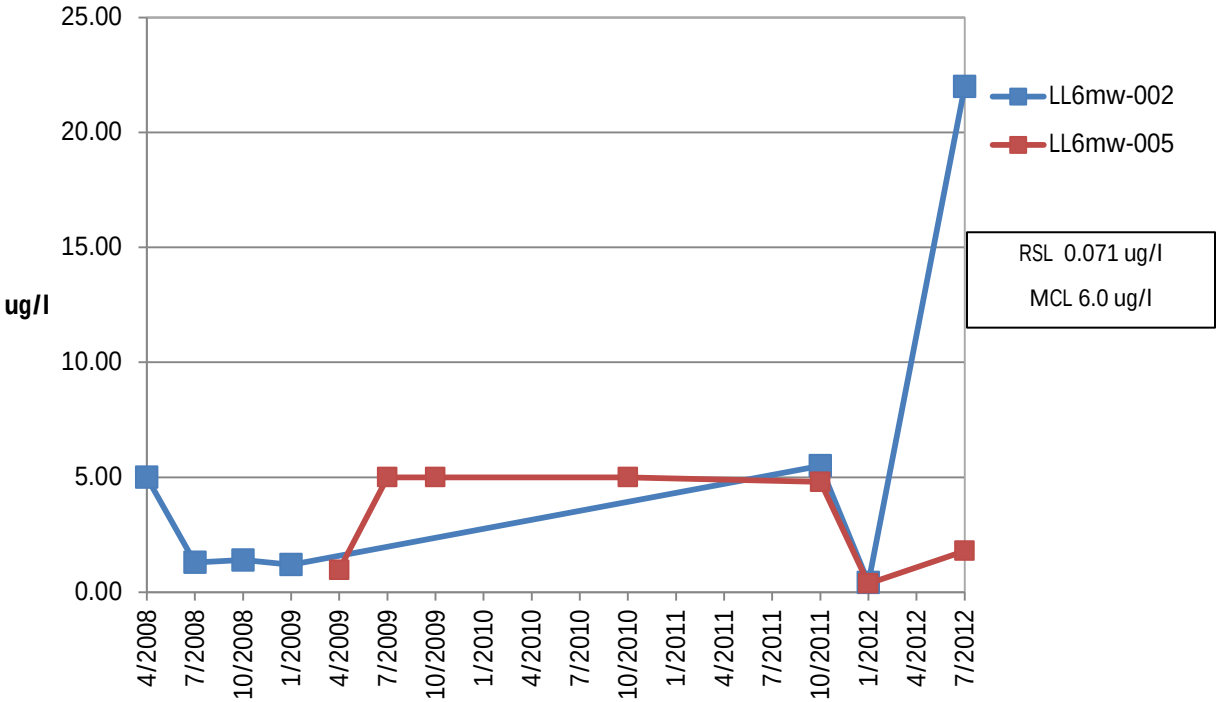
Load Line 6
Manganese



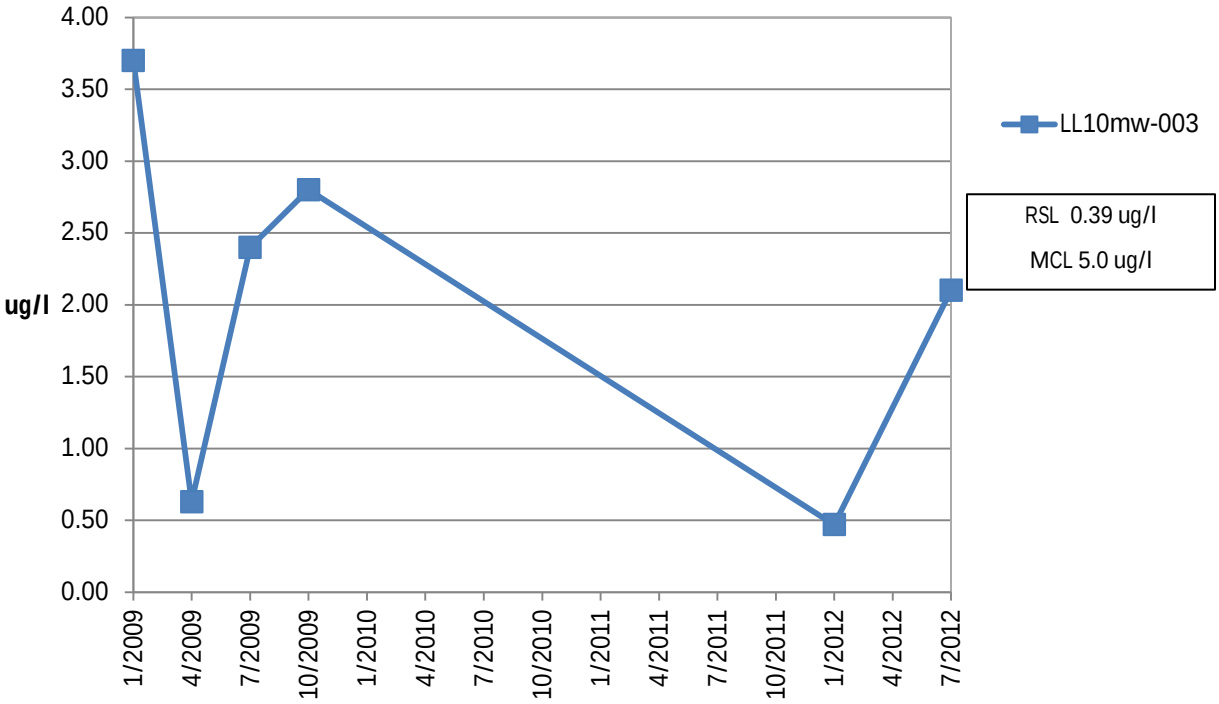
Load Line 6
Manganese (Bedrock)



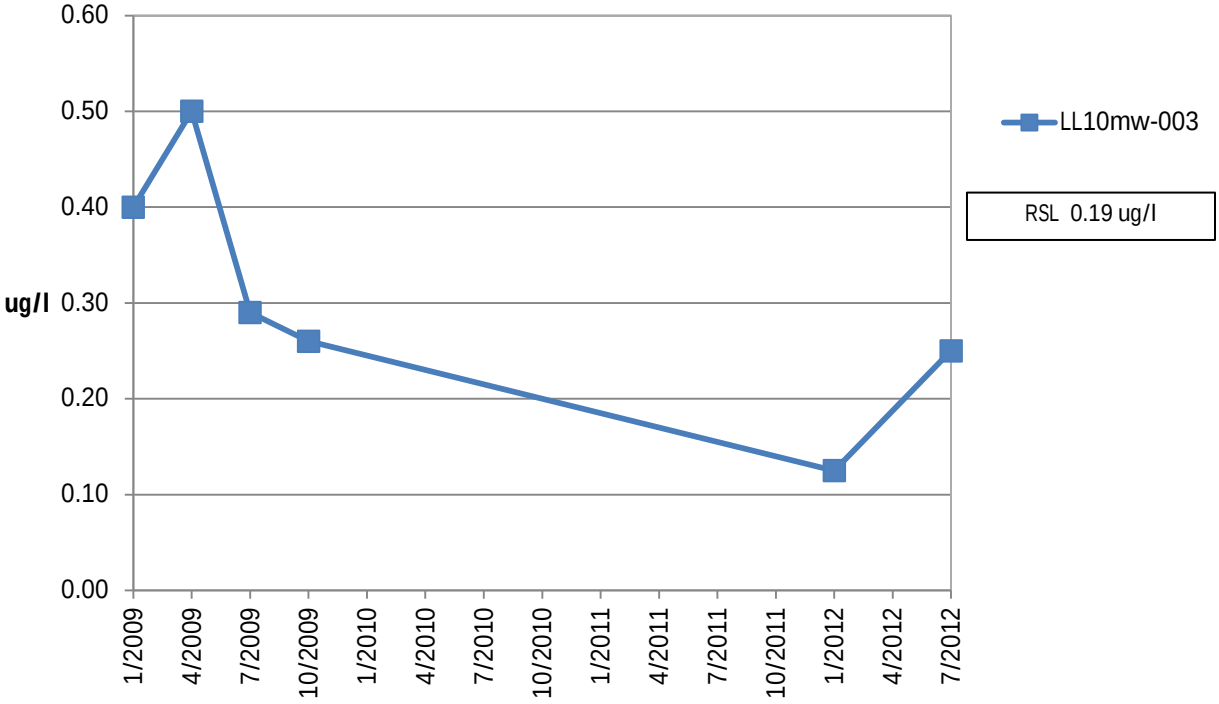
Load Line 6
Bis(2-ethylhexyl)phthalate



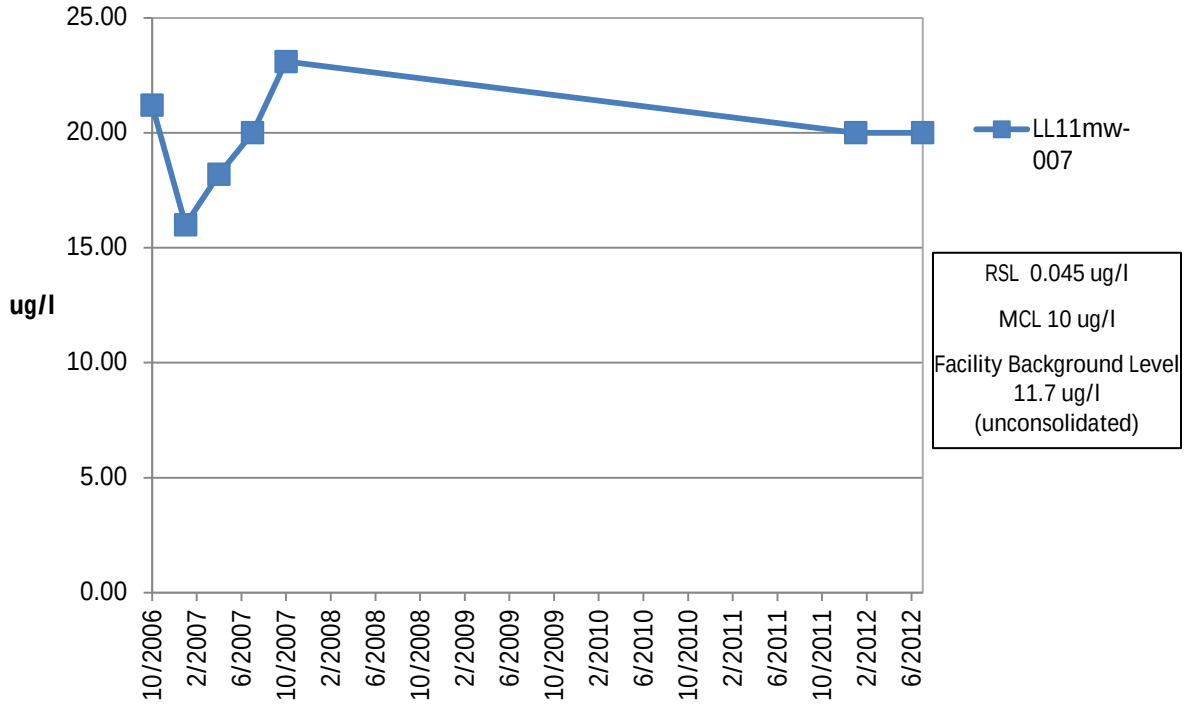
Load Line 10
Carbon Tetrachloride



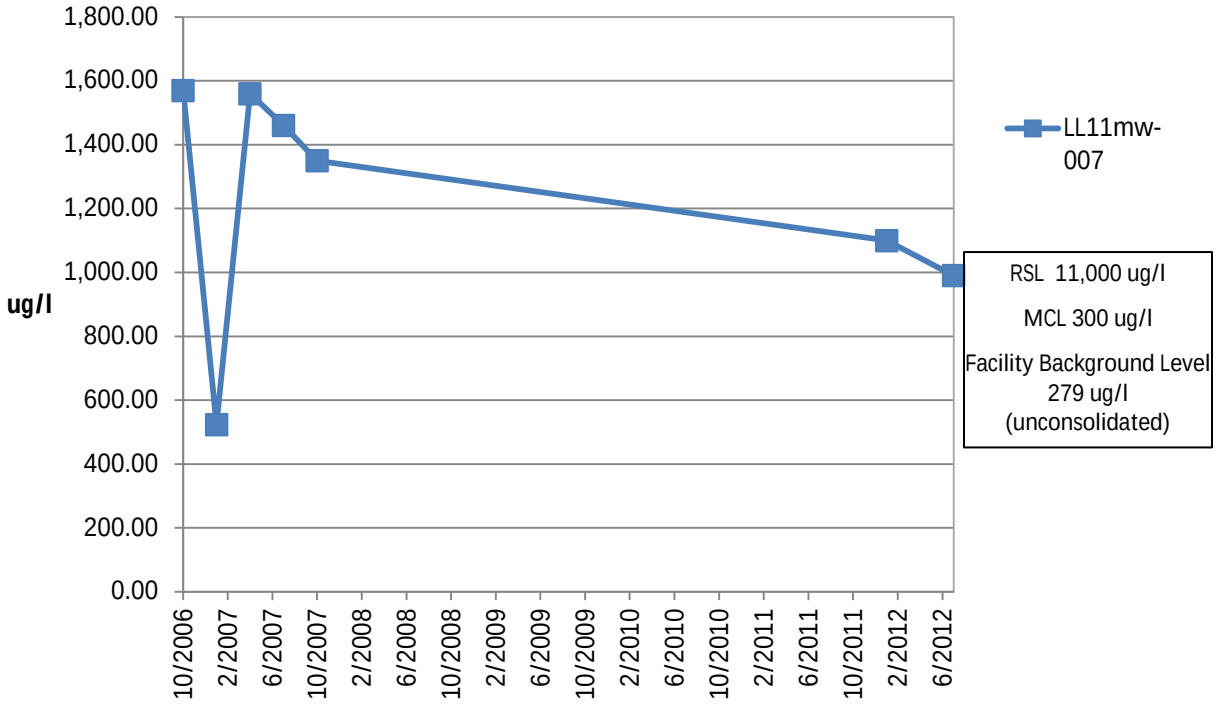
Load Line 10
Chloroform



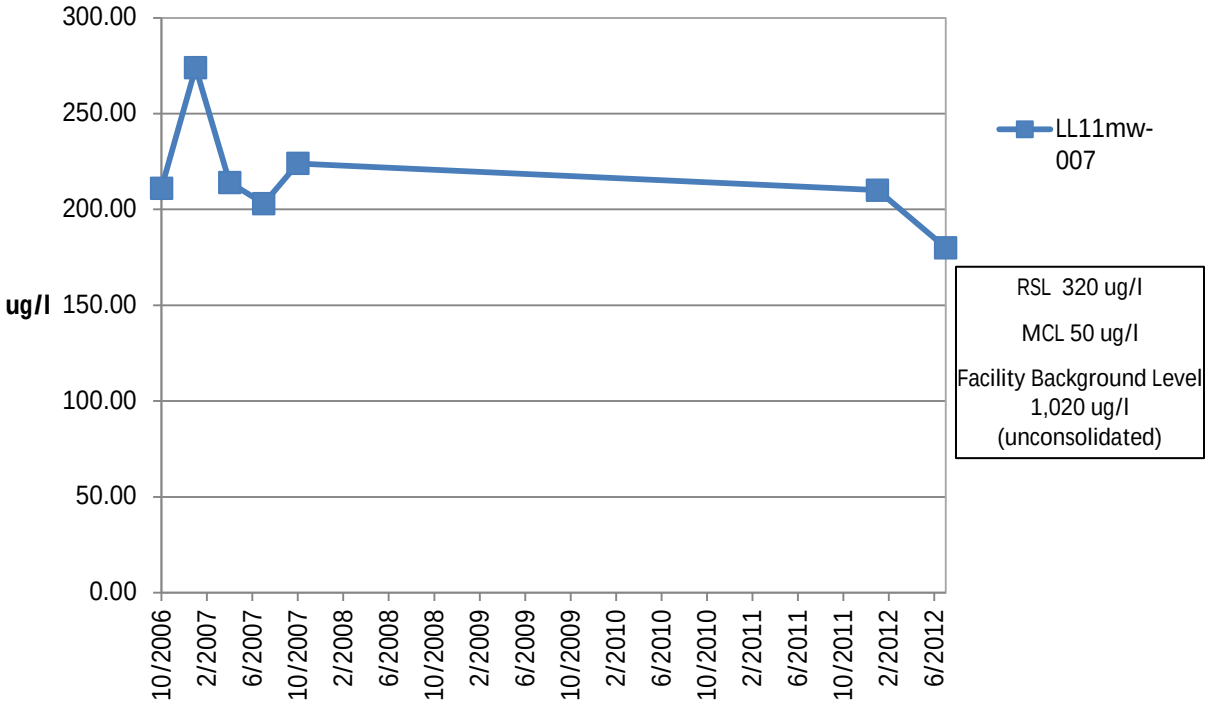
Load Line 11
Arsenic



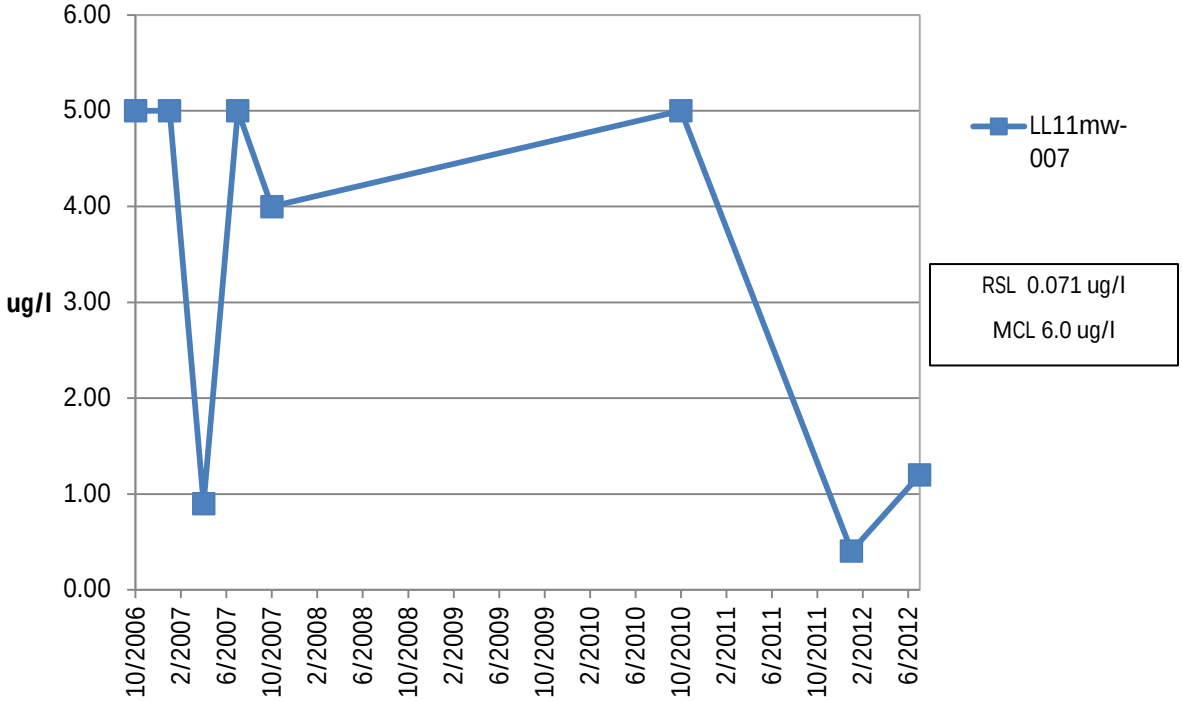
Load Line 11
Iron



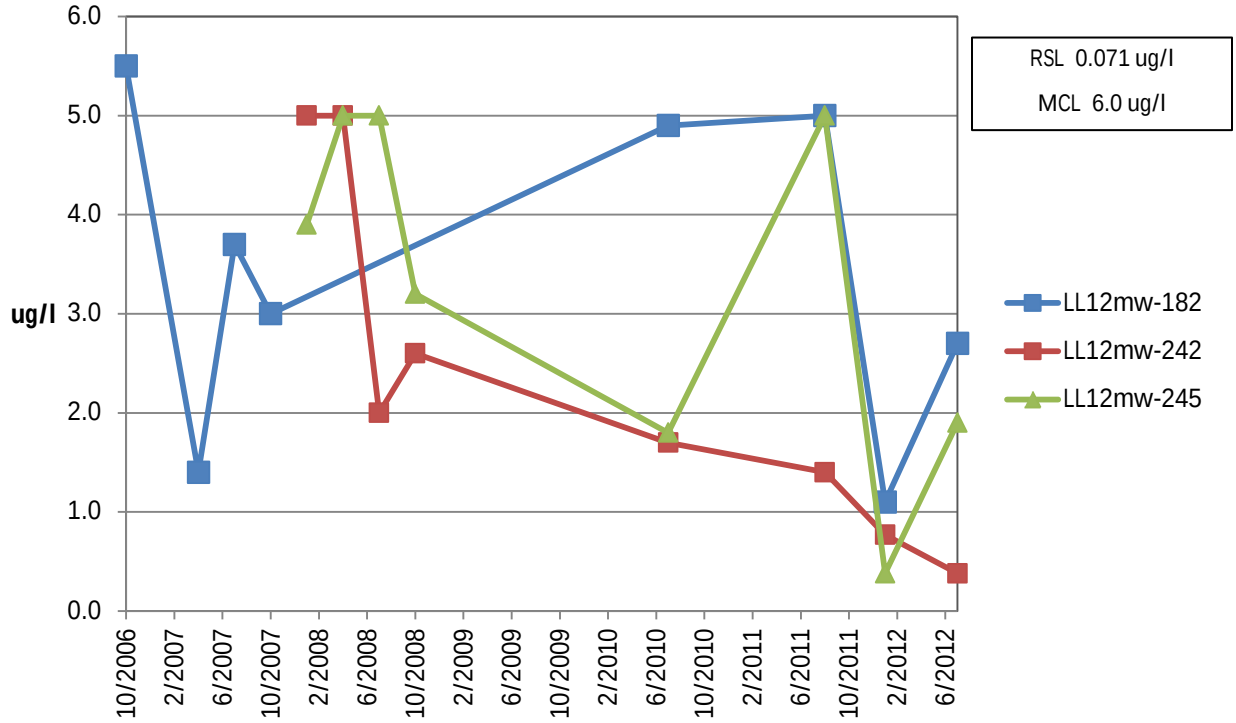
Load Line 11
Manganese



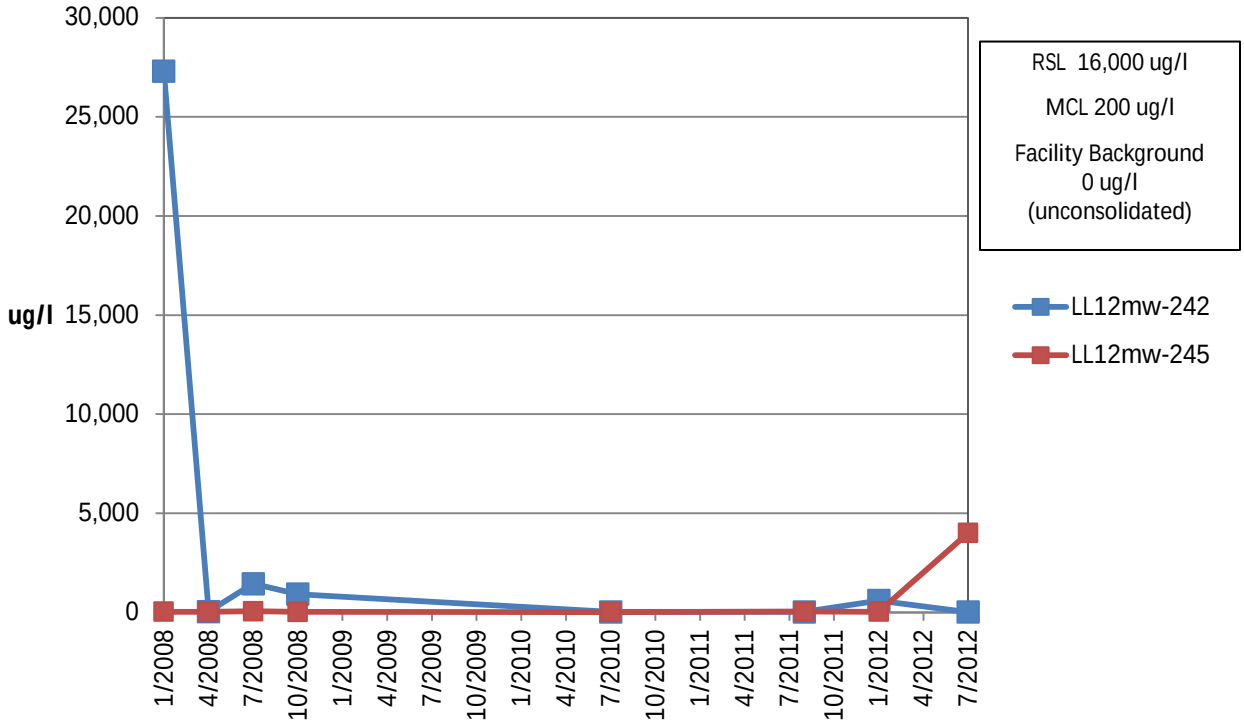
Load Line 11
Bis(2-ethylhexyl)phthalate



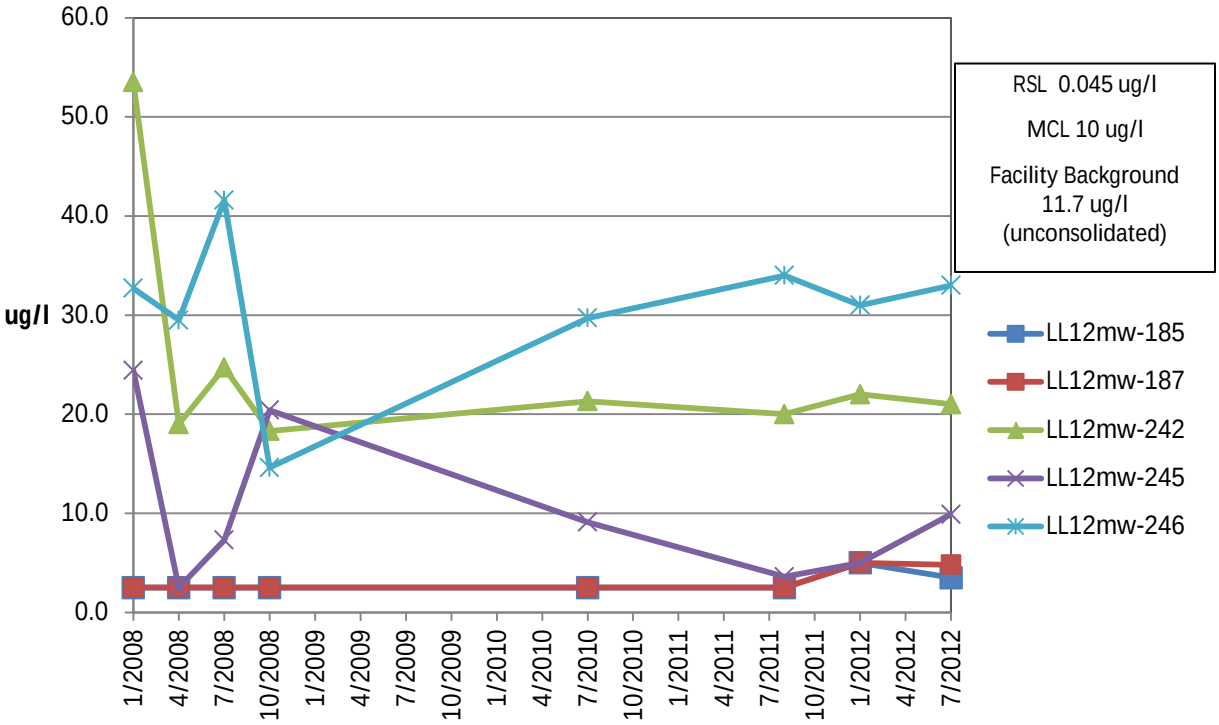
Load Line 12
Bis(2-ethylhexyl)phthalate



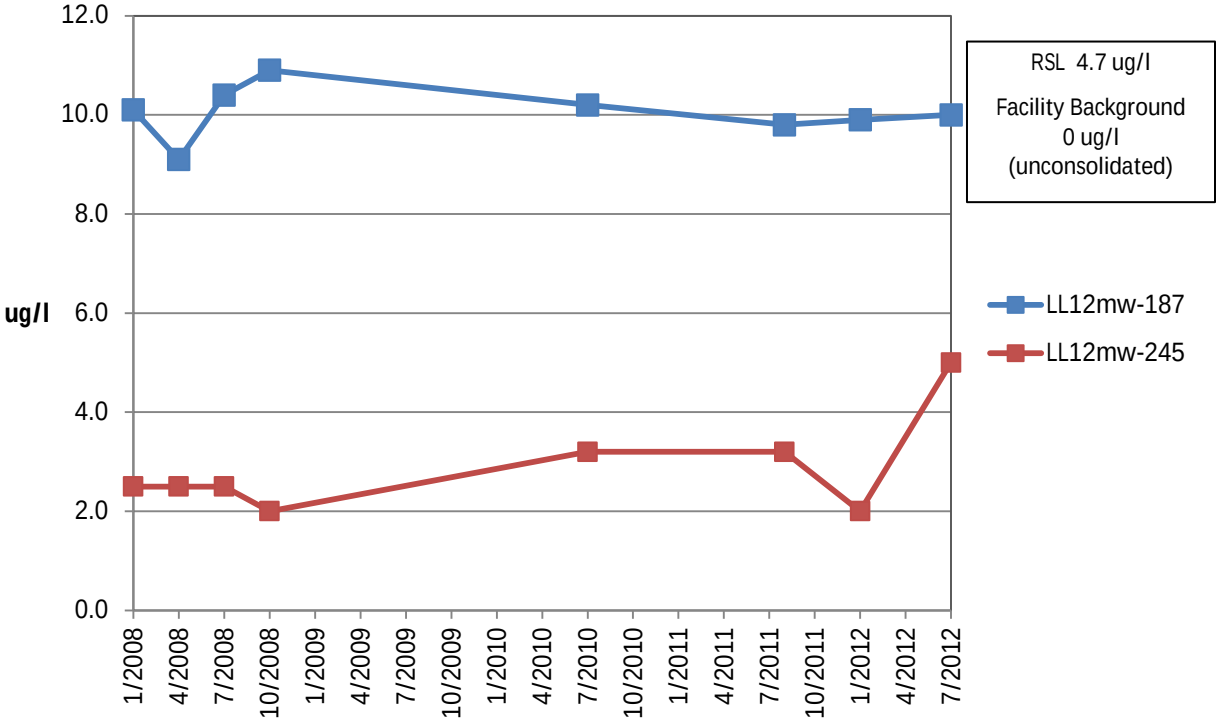
Load Line 12
Aluminum



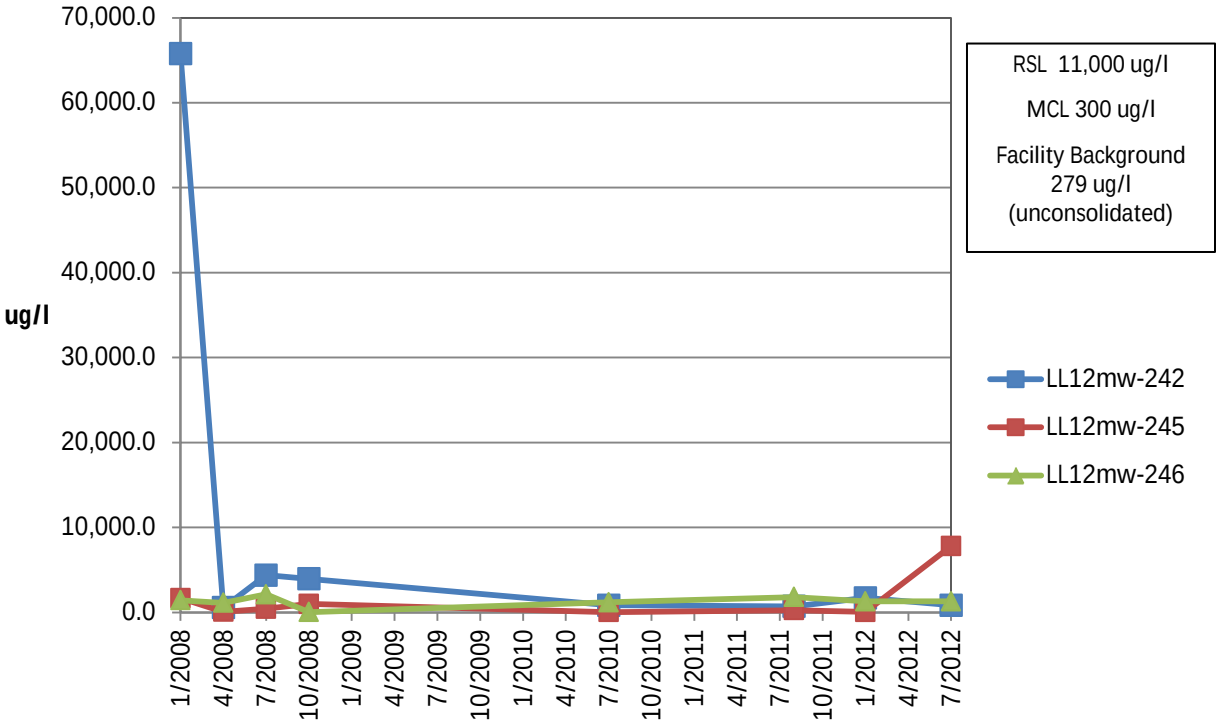
Load Line 12
Arsenic



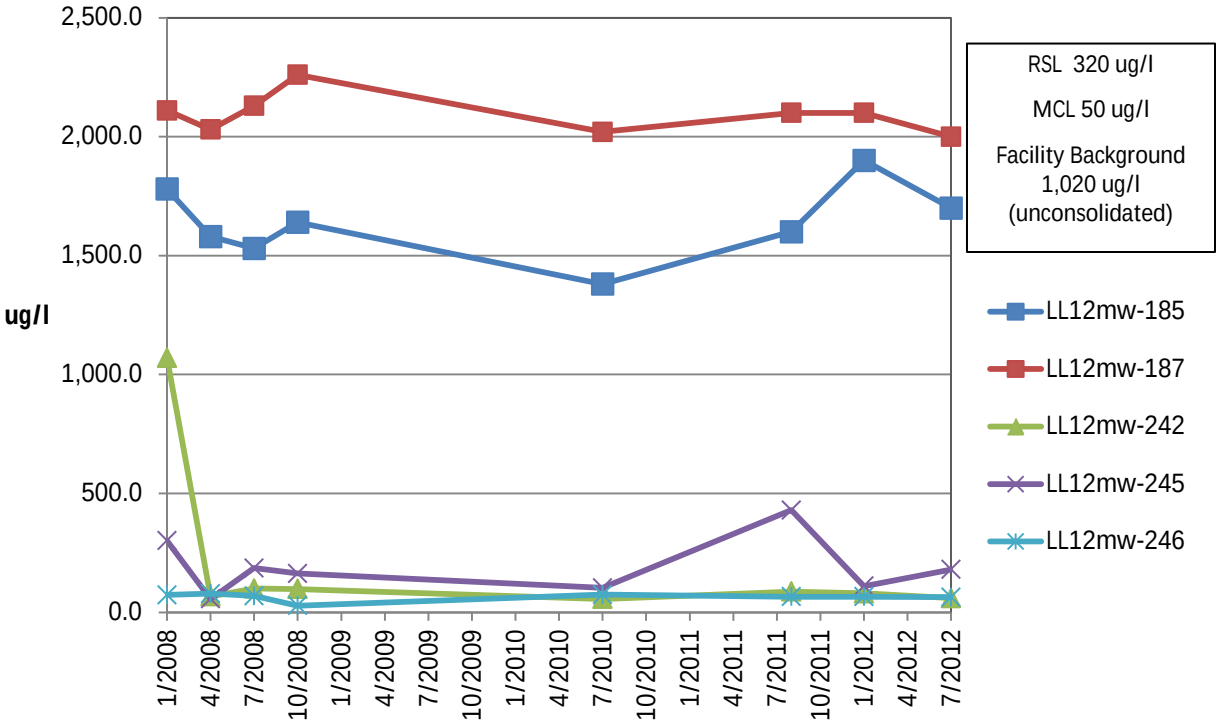
Load Line 12
Cobalt



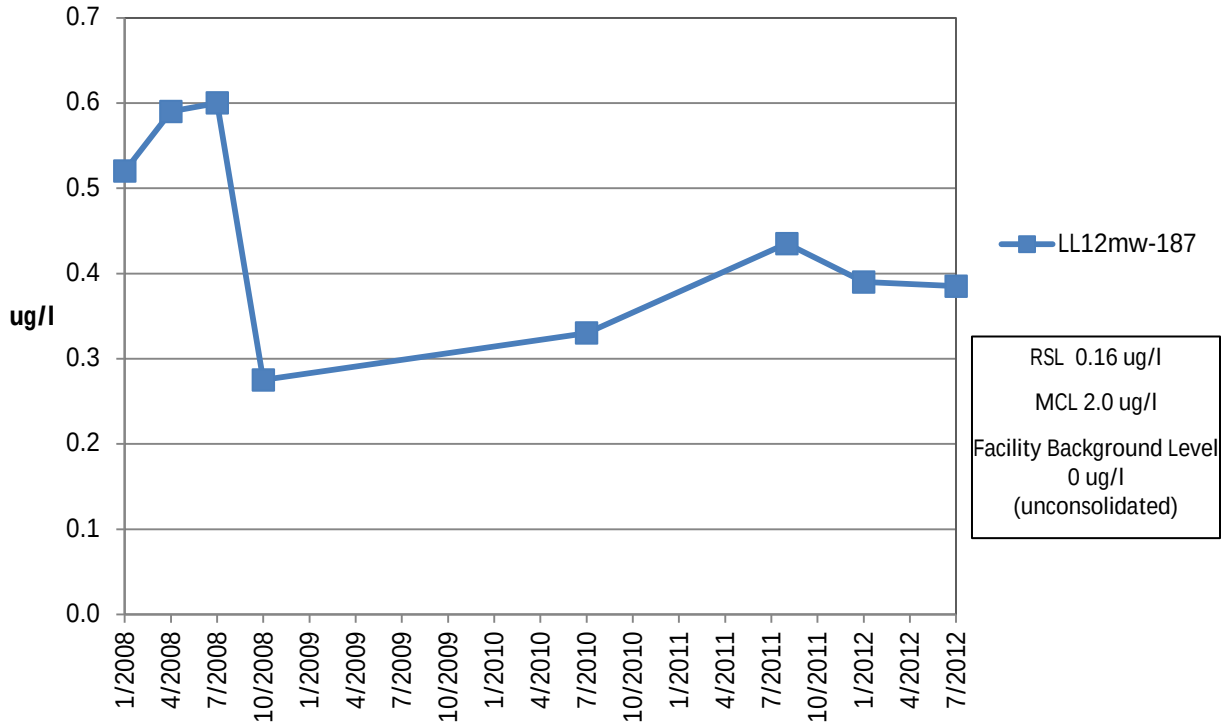
Load Line 12
Iron



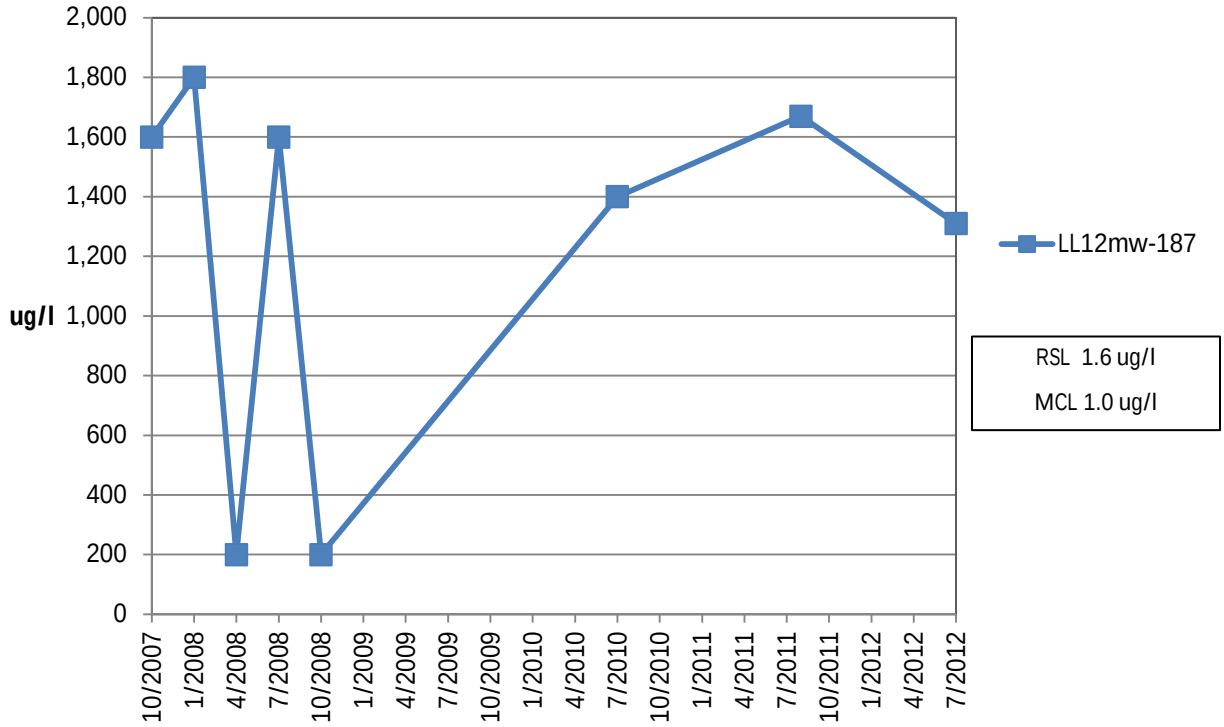
Load Line 12
Manganese



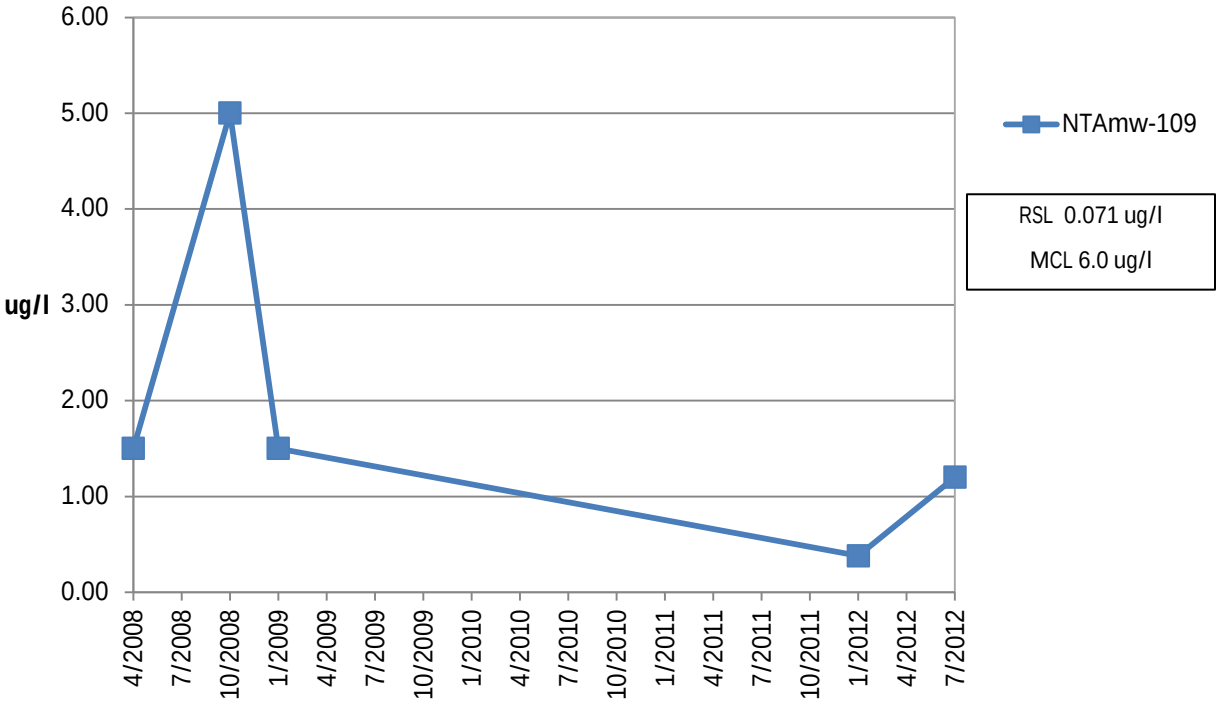
Load Line 12
Thallium



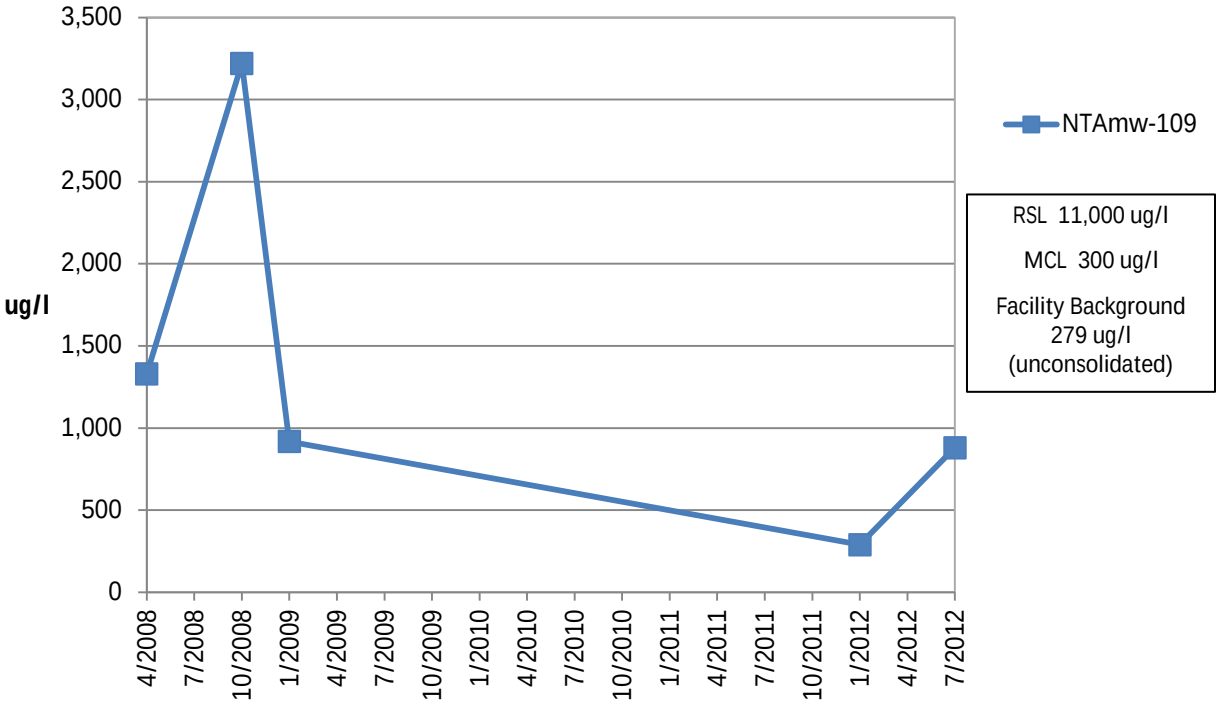
Load Line 12
Nitrate-Nitrite



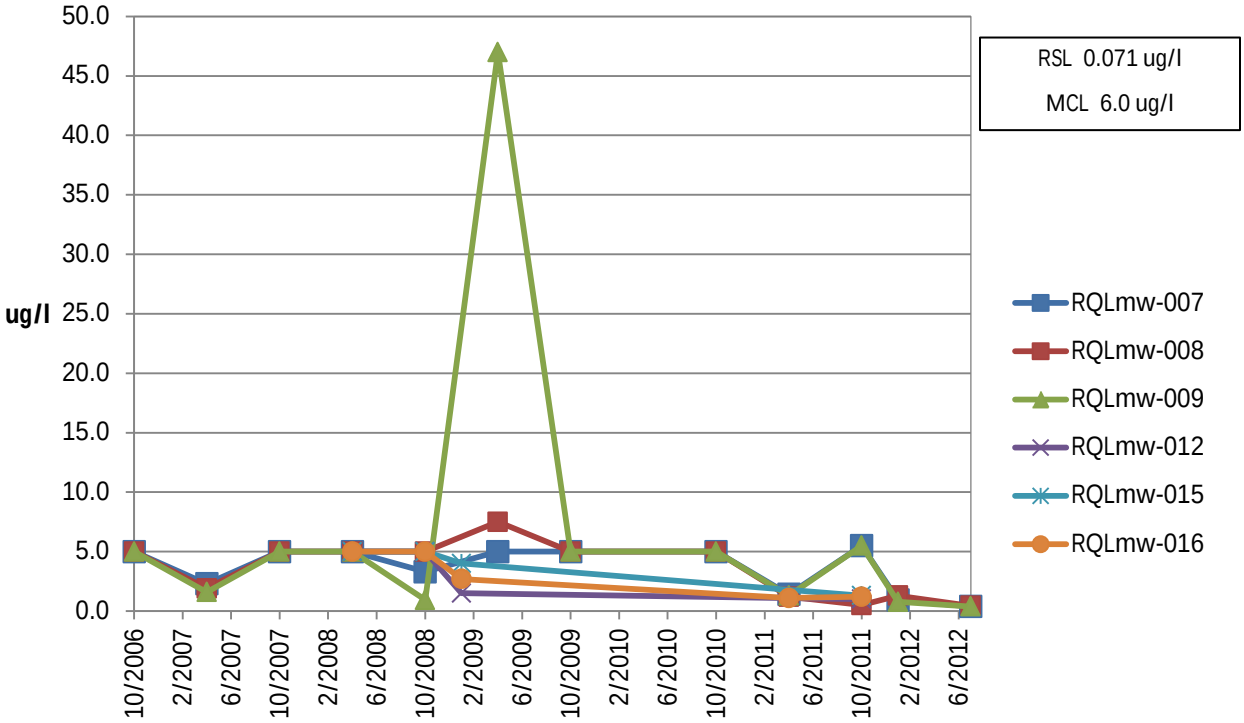
NACA Test Area
Bis(2-ethylhexyl)phthalate



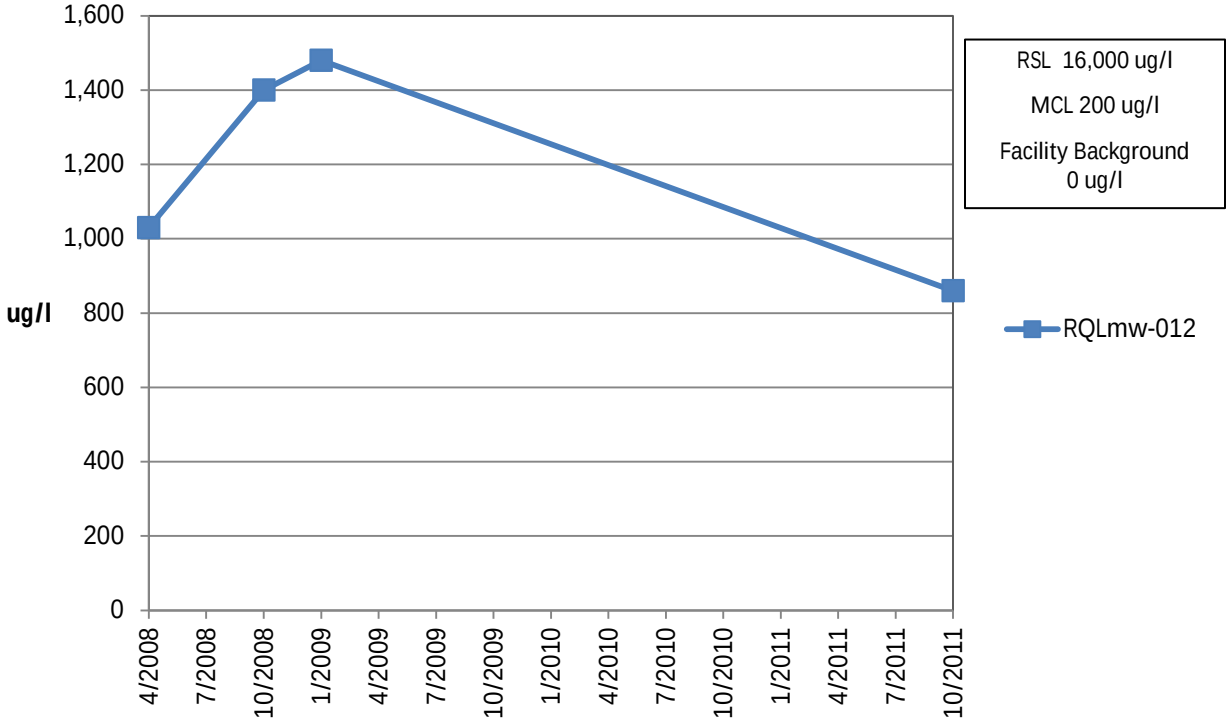
NACA Test Area
Iron



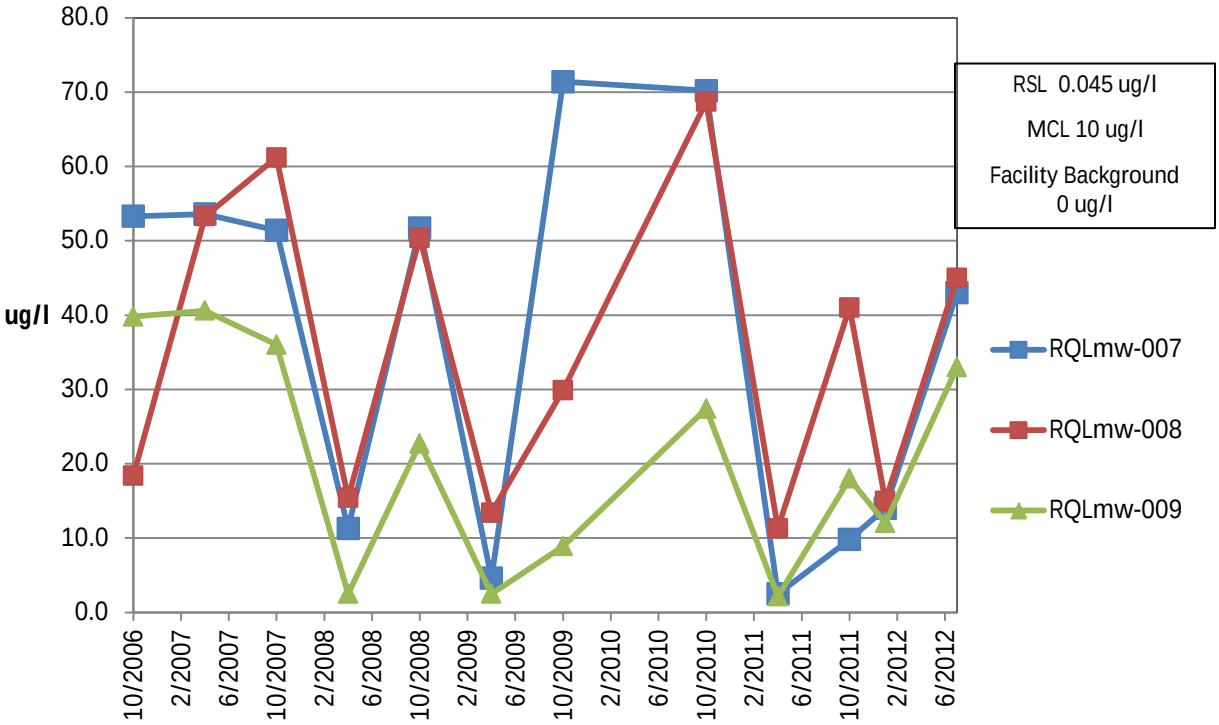
Ramsdell Quarry Landfill
Bis(2-ethylhexyl)phthalate



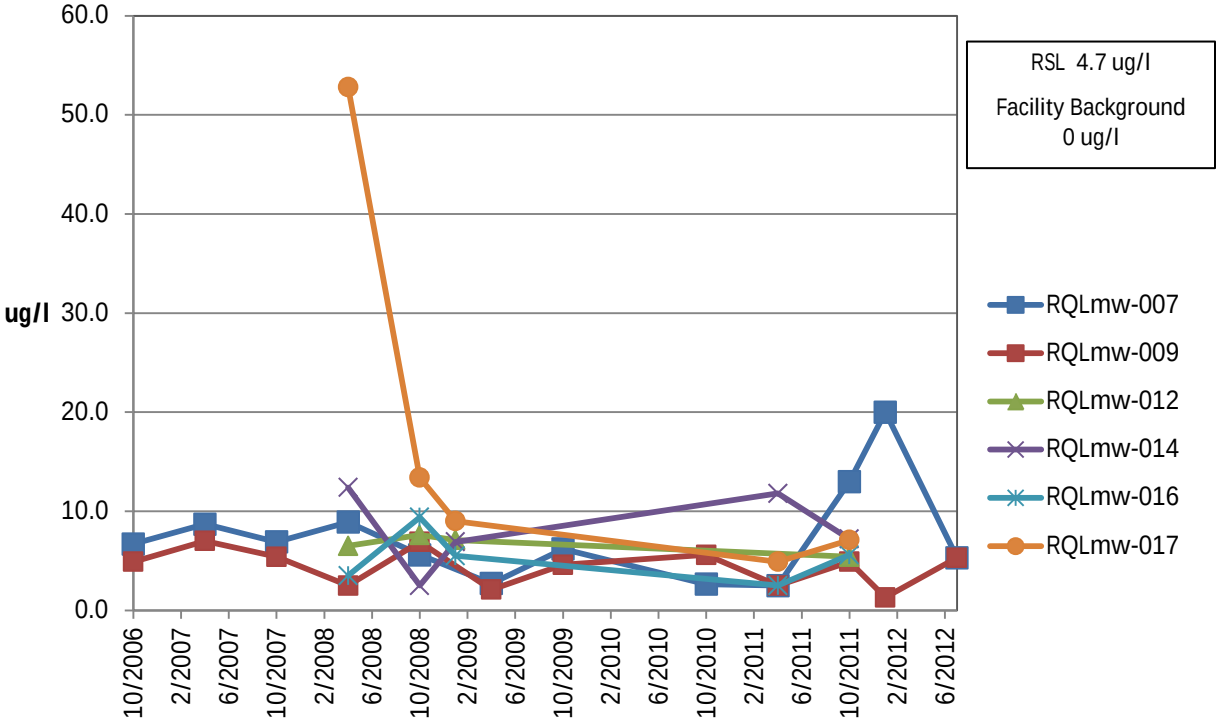
Ramsdell Quarry Landfill
Aluminum (Bedrock)



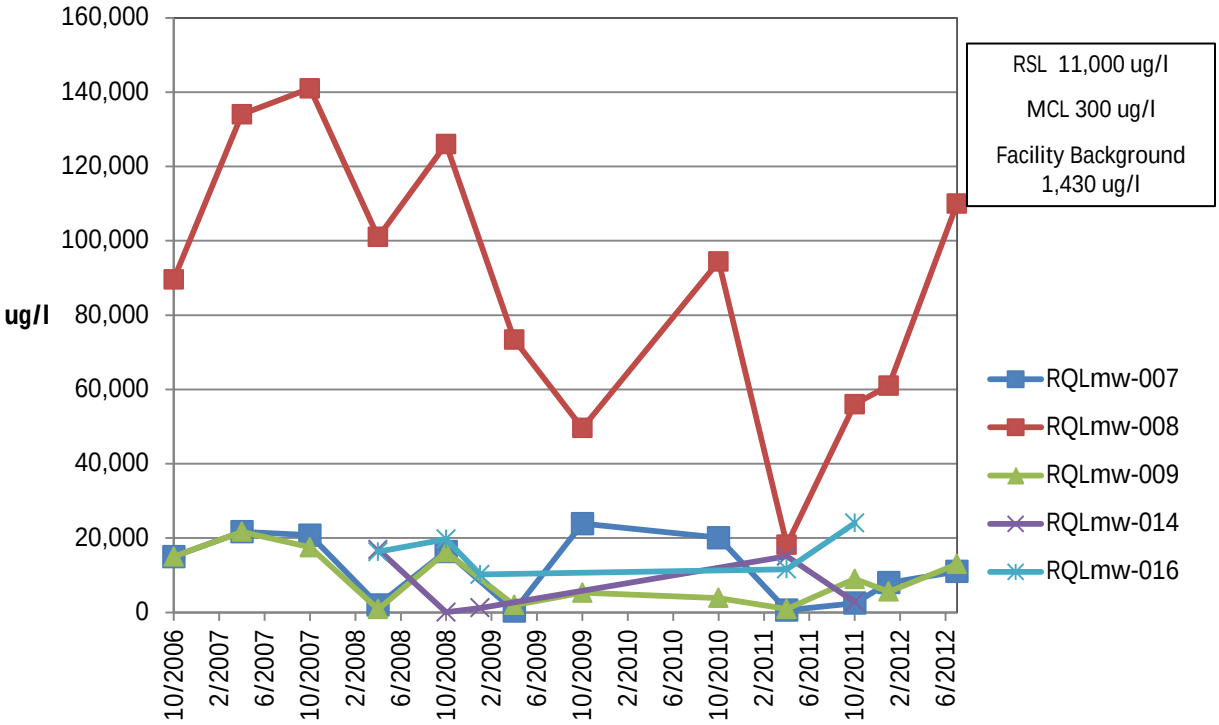
Ramsdell Quarry Landfill
Arsenic (Bedrock)



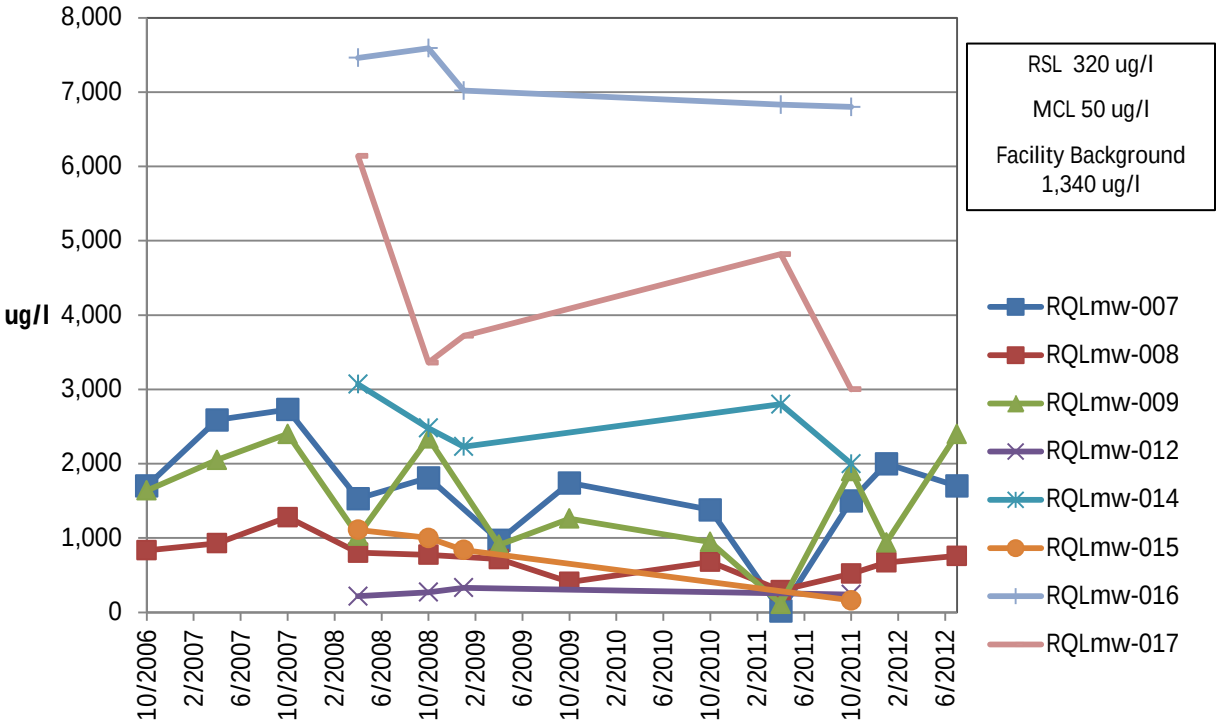
Ramsdell Quarry Landfill
Cobalt (Bedrock)

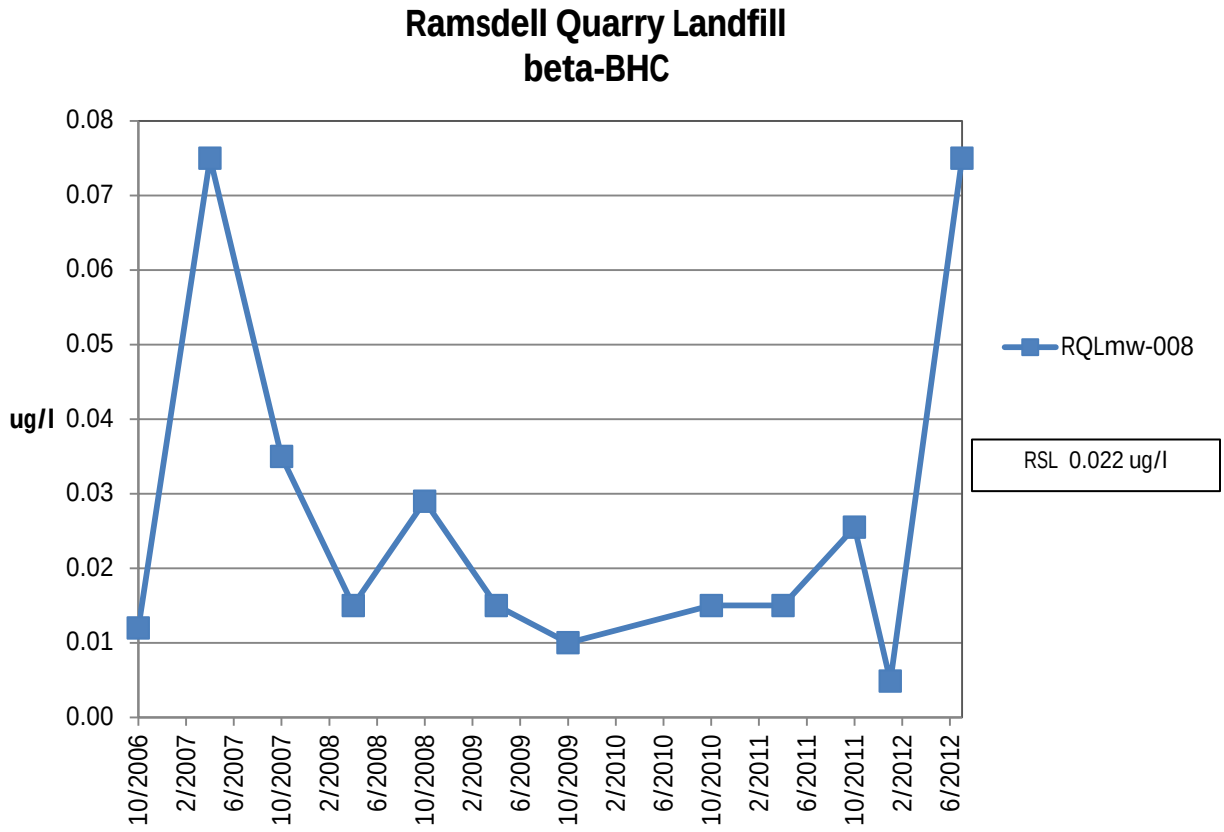


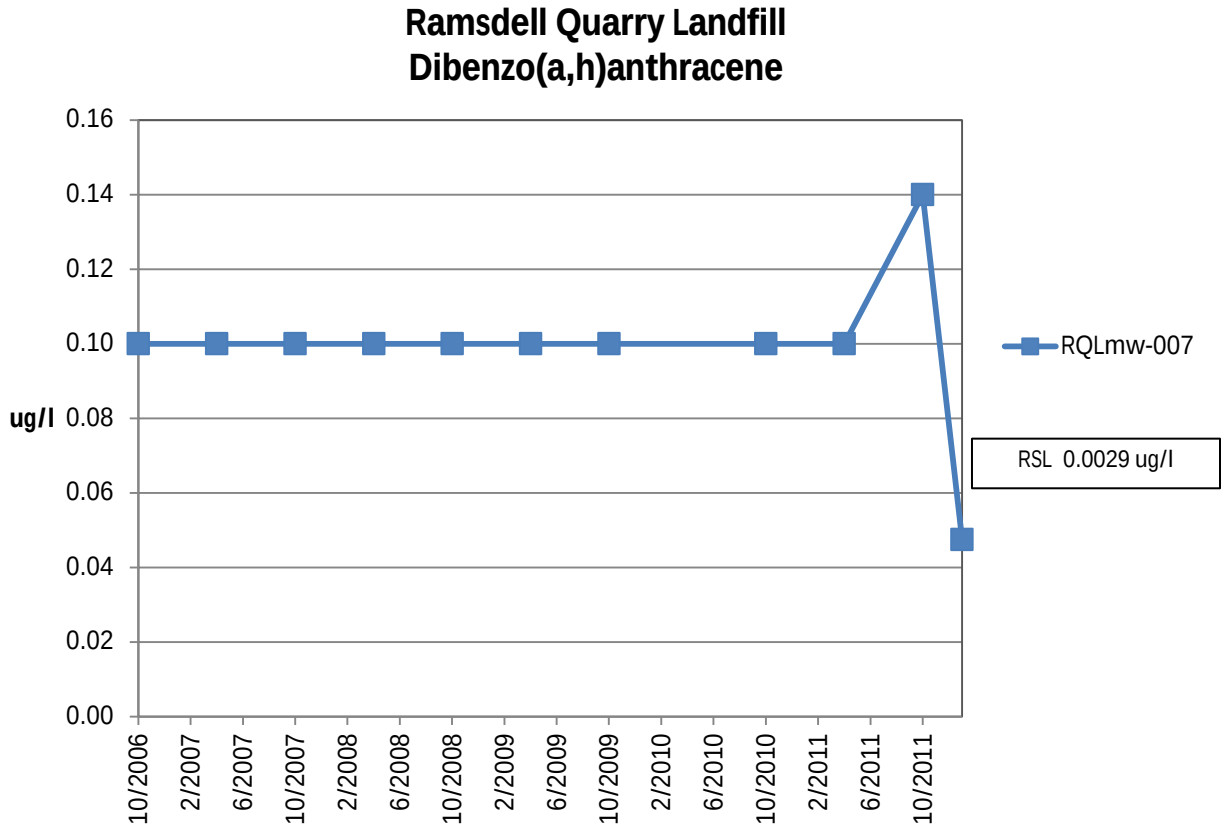
Ramsdell Quarry Landfill
Iron (Bedrock)



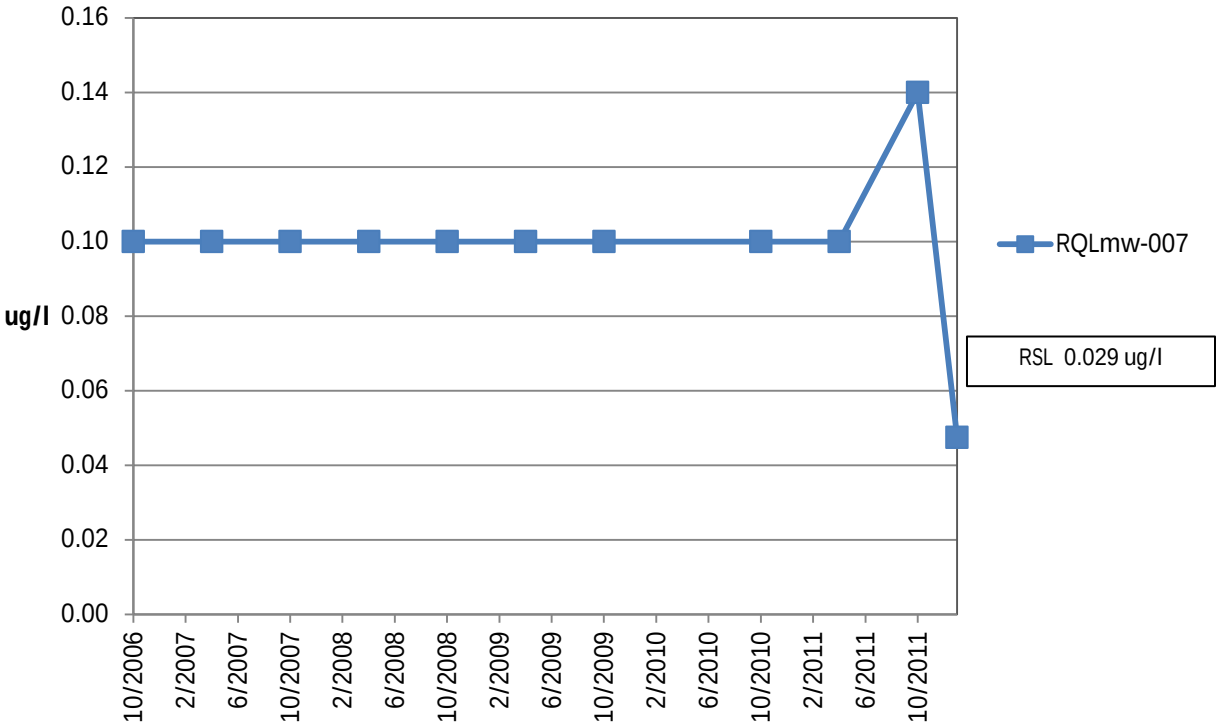
Ramsdell Quarry Landfill
Manganese (Bedrock)



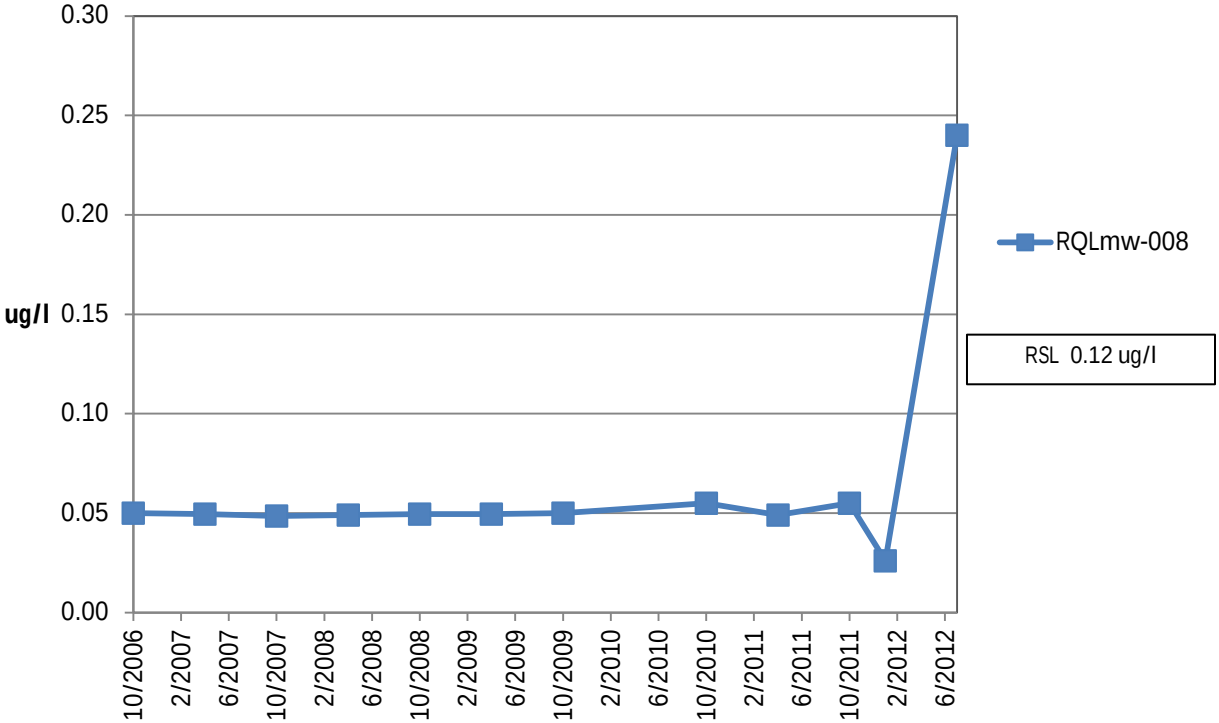

Ramsdell Quarry Landfill
beta-BHC
ug/l
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10/2006
2/2007
6/2007
10/2007
2/2008
6/2008
10/2008
2/2009
6/2009
10/2009
2/2010
6/2010
10/2010
2/2011
6/2011
10/2011
2/2012
6/2012
RQLmw-008
RSL 0.022 ug/l


Ramsdell Quarry Landfill
Dibenzo(a,h)anthracene
ug/l
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
10/2006
2/2007
6/2007
10/2007
2/2008
6/2008
10/2008
2/2009
6/2009
10/2009
2/2010
6/2010
10/2010
2/2011
6/2011
10/2011
RQLmw-007
RSL 0.0029 ug/l

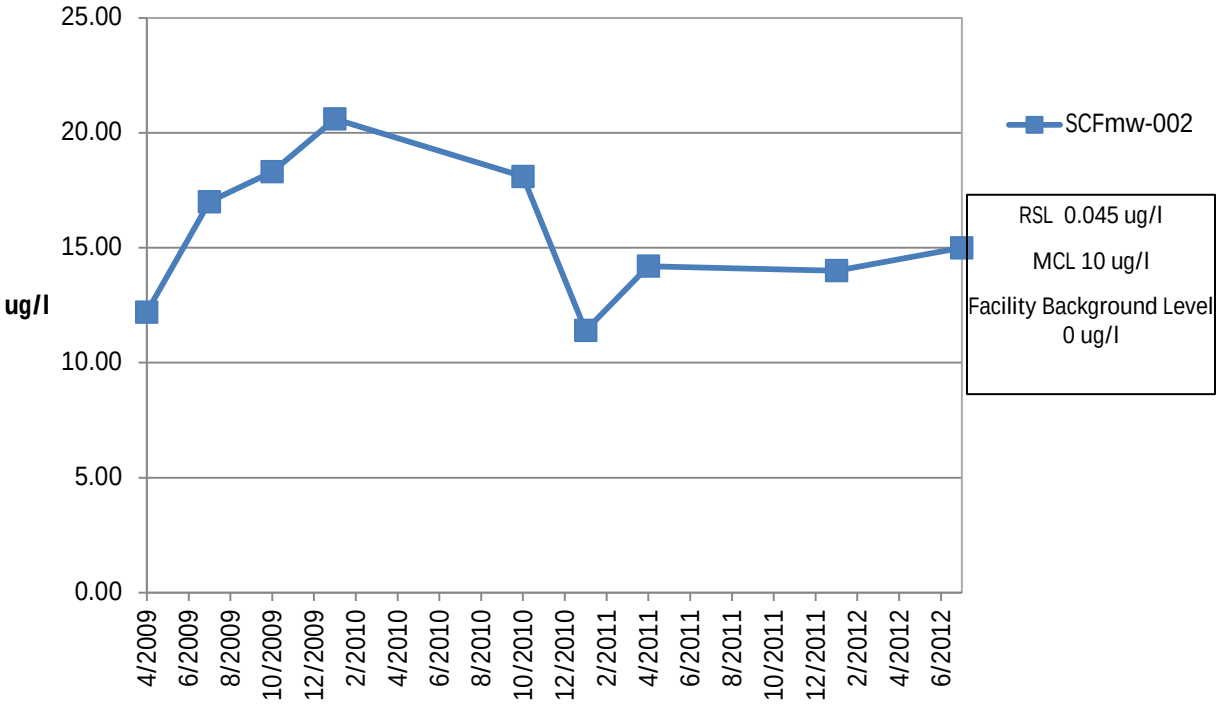
Ramsdell Quarry Landfill
Indeno(1,2,3-cd)pyrene



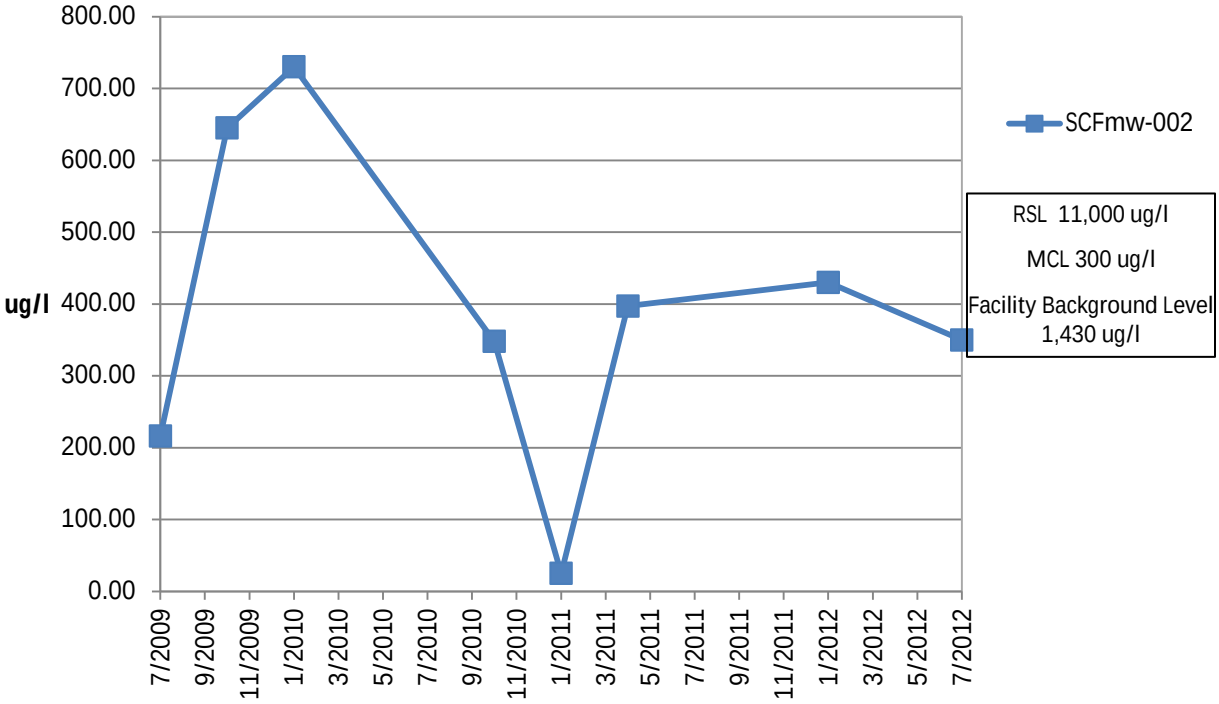
Ramsdell Quarry Landfill
Nitrobenzene

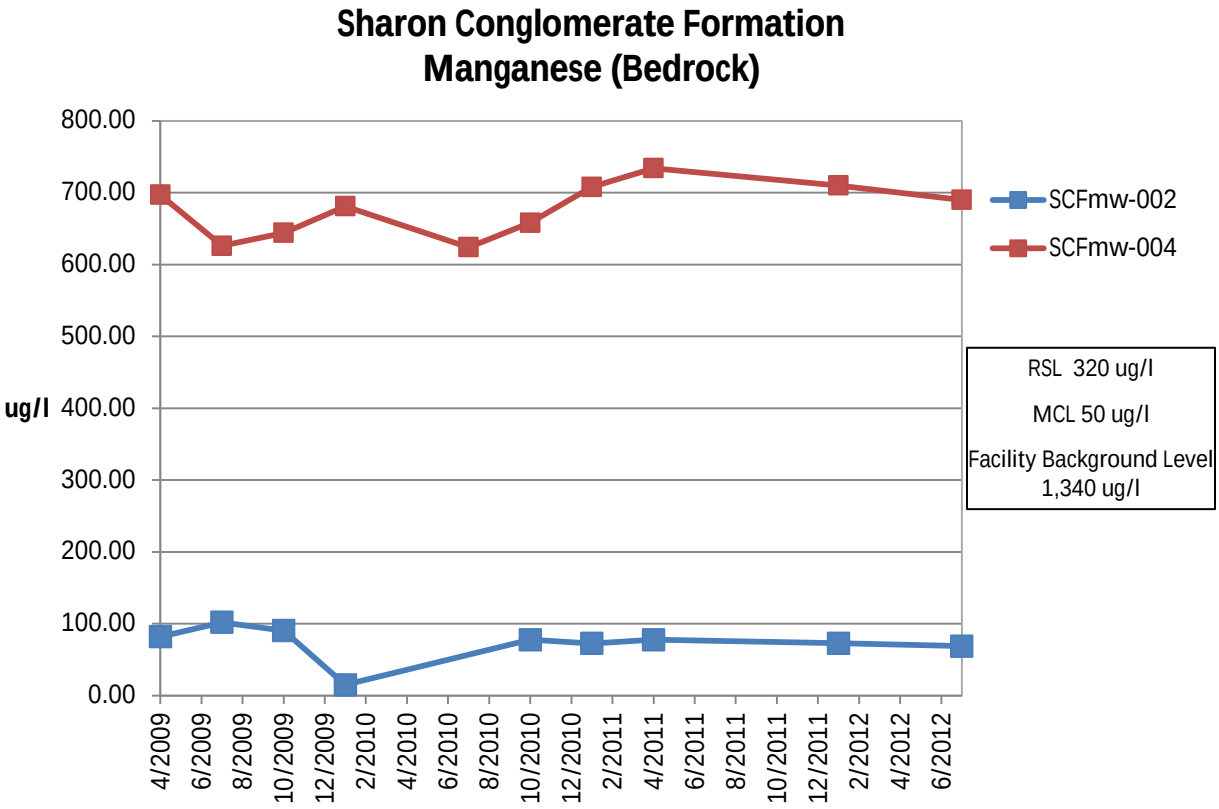


Sharon Conglomerate Formation
Arsenic (Bedrock)

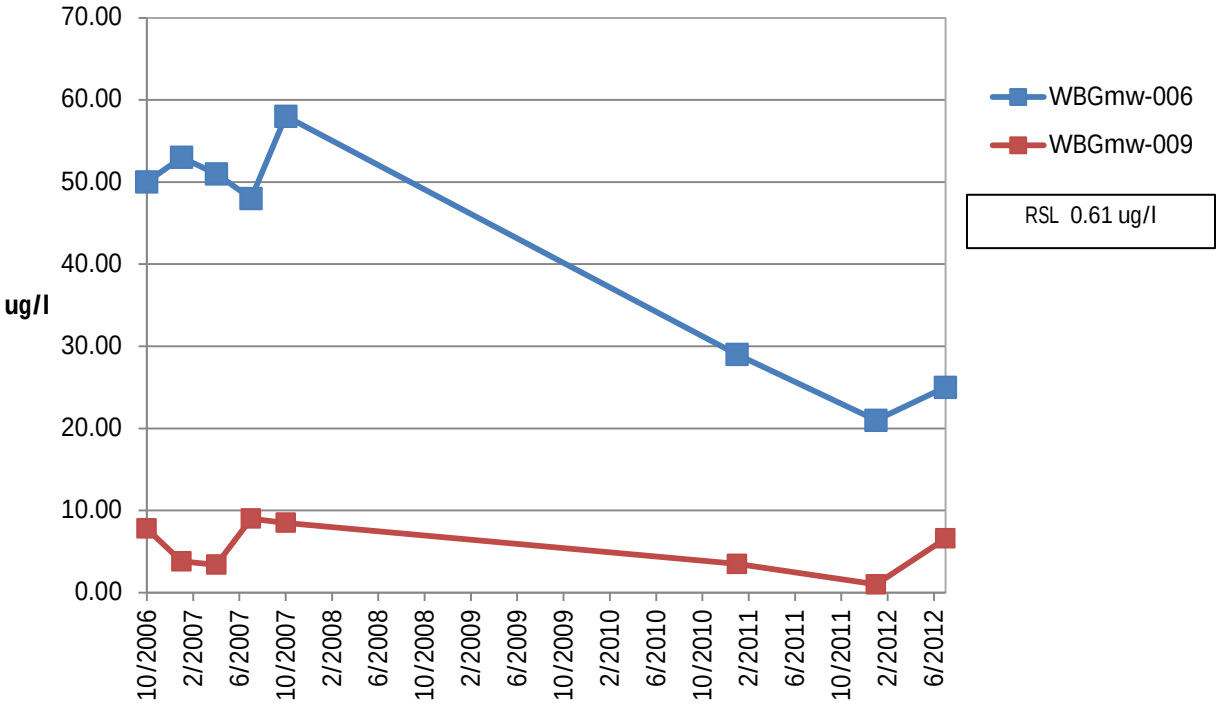


Sharon Conglomerate Formation
Iron (Bedrock)

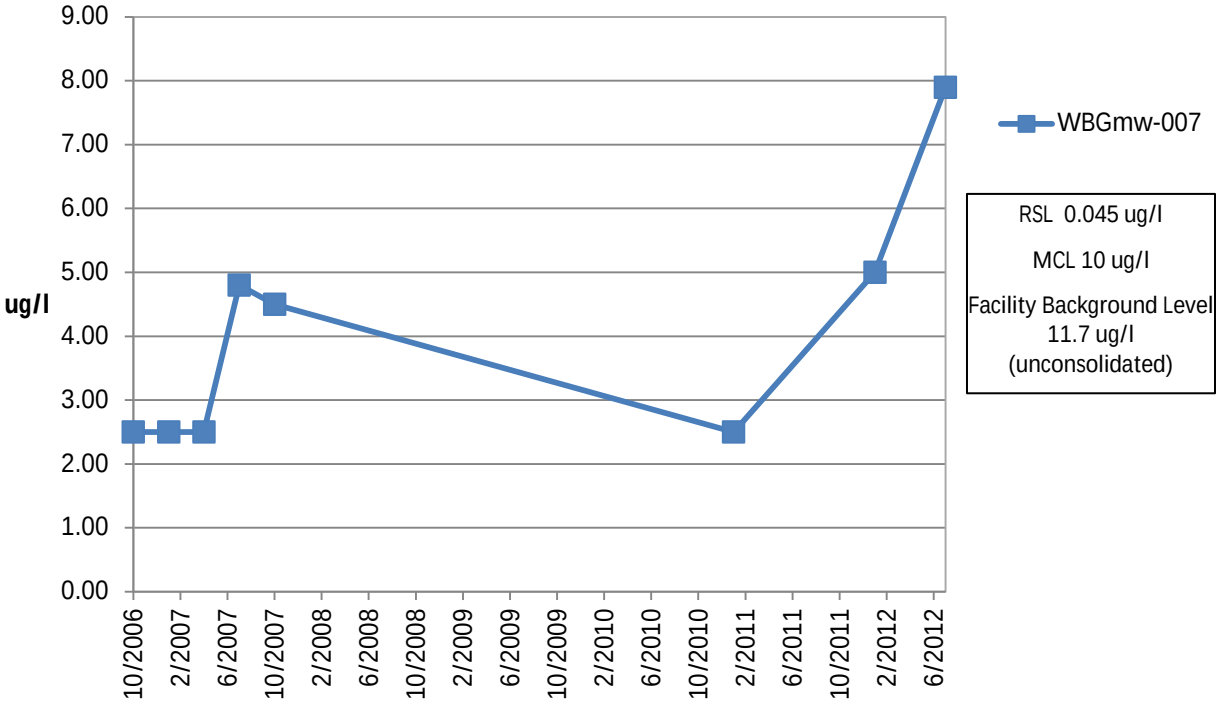



Sharon Conglomerate Formation
Manganese (Bedrock)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
ug/l
4/2009
6/2009
8/2009
10/2009
12/2009
2/2010
4/2010
6/2010
8/2010
10/2010
12/2010
2/2011
4/2011
6/2011
8/2011
10/2011
12/2011
2/2012
4/2012
6/2012
SCFmw-002
SCFmw-004
RSL 320 ug/l
MCL 50 ug/l
Facility Background Level
1,340 ug/l

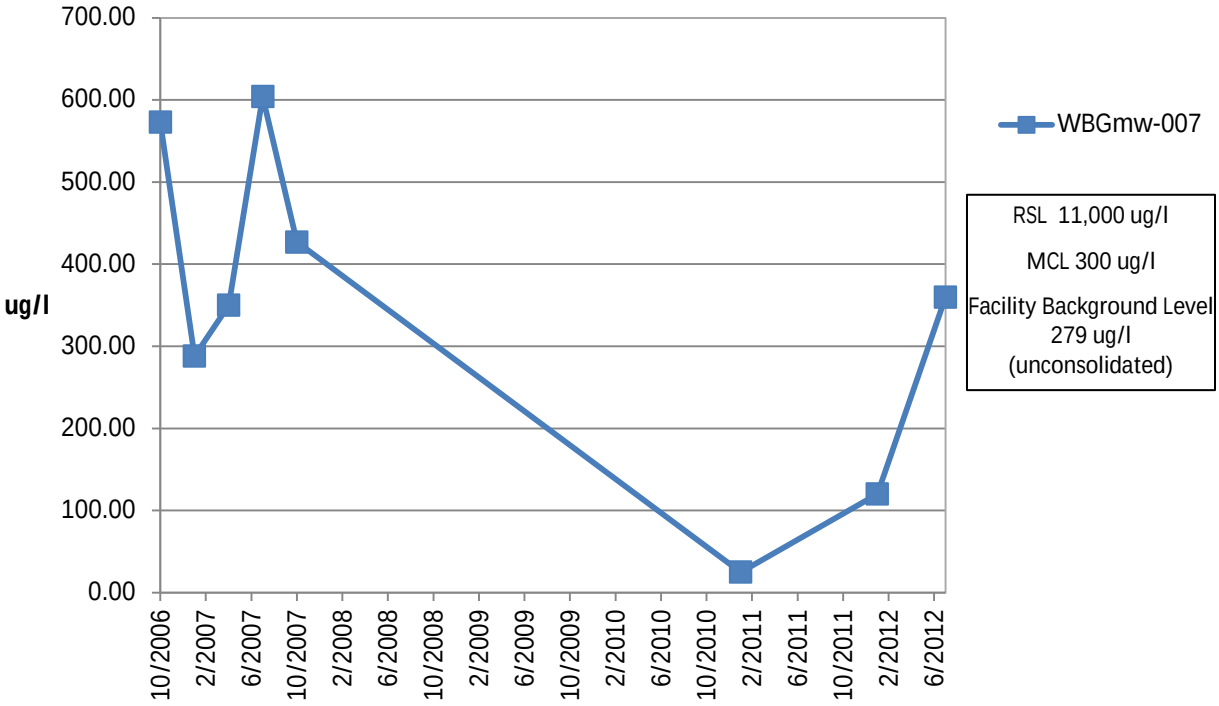
Winklepeck Burning Grounds
RDX



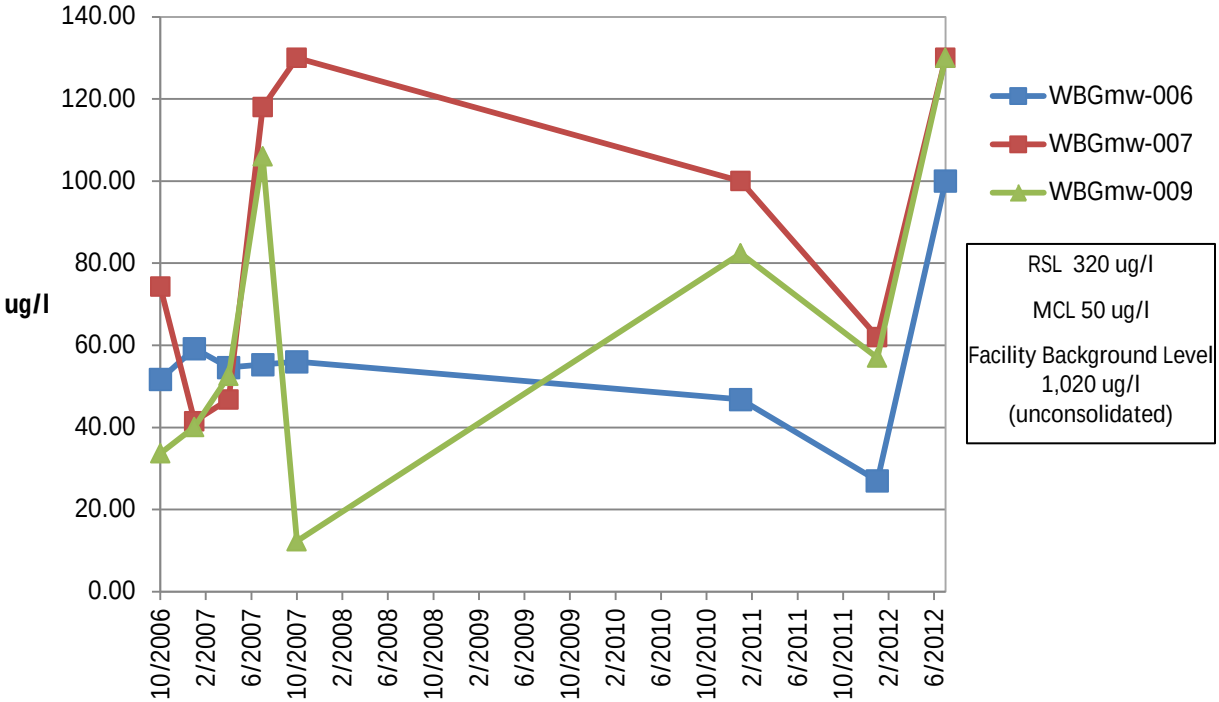
Winklepeck Burning Grounds
Arsenic



Winklepeck Burning Grounds
Iron

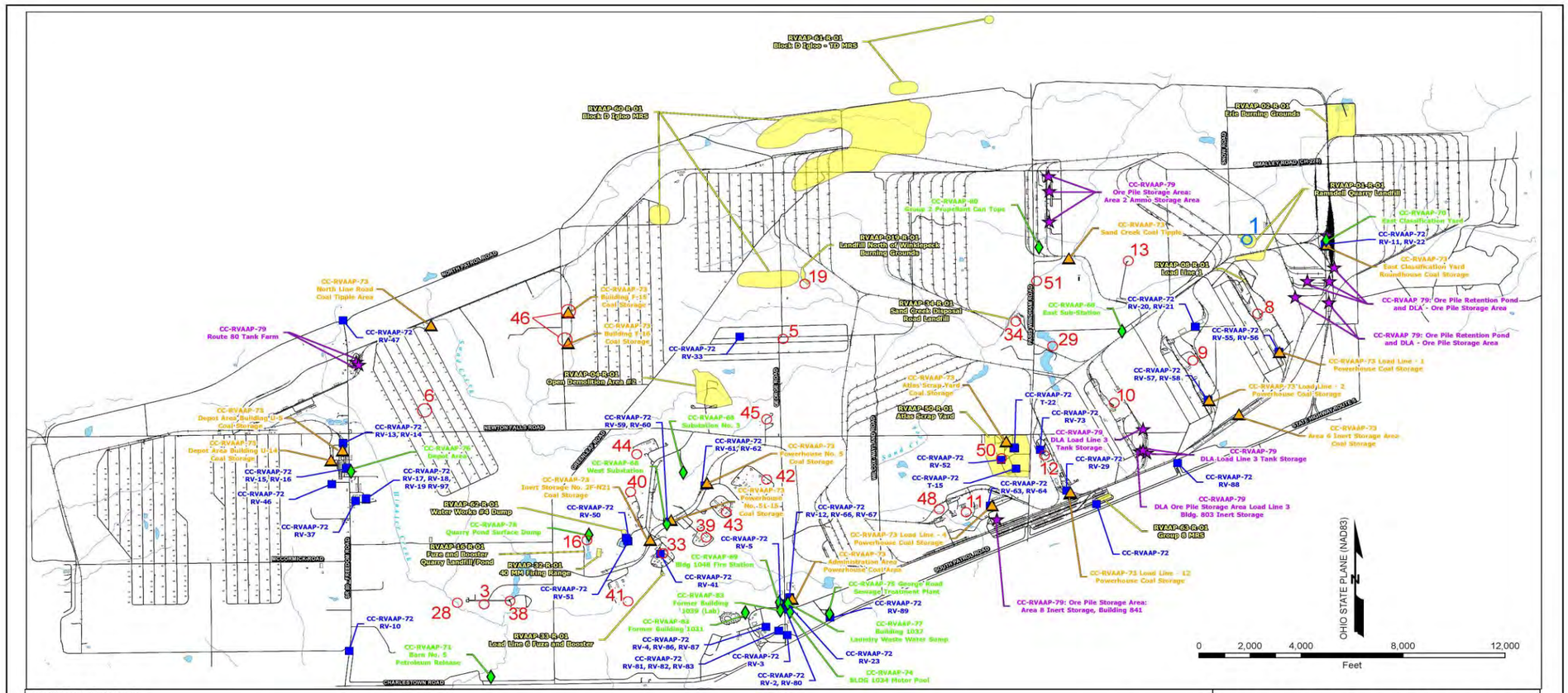


Winklepeck Burning Grounds
Manganese



APPENDIX J

MAPS OF FWGWMP STUDY AREA



LEGEND OF SITES

IRP SITES (29 SITES)

- RVAAP-01 ..... RAMSDELL QUARRY LANDFILL
- RVAAP-03 ..... OPEN DEMOLITION AREA 1
- RVAAP-05 ..... WINKLEPECK BURNING GROUNDS
- RVAAP-06 ..... C BLOCK QUARRY
- RVAAP-08 ..... LOAD LINE 1
- RVAAP-09 ..... LOAD LINE 2
- RVAAP-10 ..... LOAD LINE 3
- RVAAP-11 ..... LOAD LINE 4
- RVAAP-12 ..... LOAD LINE 12
- RVAAP-13 ..... BLDG 1200 AND DILLUTION/SETTLING POND
- RVAAP-16 ..... FUZE AND BOOSTER QUARRY LANDFILL/PONDS
- RVAAP-19 ..... LANDFILL NORTH OF WINKLEPECK BURNING GROUND
- RVAAP-28 ..... MUSTARD AGENT BURIAL SITE
- RVAAP-29 ..... UPPER AND LOWER COBBS POND
- RVAAP-33 ..... LOAD LINE 6
- RVAAP-34 ..... SAND CREEK DISPOSAL ROAD LANDFILL
- RVAAP-38 ..... NACA TEST AREA
- RVAAP-39 ..... LOAD LINE 5
- RVAAP-40 ..... LOAD LINE 7
- RVAAP-41 ..... LOAD LINE 8
- RVAAP-42 ..... LOAD LINE 9
- RVAAP-43 ..... LOAD LINE 10
- RVAAP-44 ..... LOAD LINE 11
- RVAAP-45 ..... WET STORAGE AREA
- RVAAP-46 ..... BUILDINGS F-15 AND F-16
- RVAAP-48 ..... ANCHOR TEST AREA
- RVAAP-50 ..... ATLAS SCRAP YARD
- RVAAP-51 ..... DUMP ALONG PARIS-WINDHAM ROAD
- RVAAP-66 ..... FACILITY-WIDE GROUNDWATER
- RVAAP-67 ..... FACILITY-WIDE SEWERS

COMPLIANCE RESTORATION SITES (13 SITES)

- CC-RVAAP-69 ..... ELECTRIC SUBSTATIONS (E,W,No.3)
- CC-RVAAP-69 ..... BUILDING 1048 - FIRE STATION
- CC-RVAAP-70 ..... EAST CLASSIFICATION YARD
- CC-RVAAP-71 ..... BARN NO. 5 PETROLEUM RELEASE
- CC-RVAAP-72 ..... FACILITY-WIDE USTS
- CC-RVAAP-73 ..... FACILITY-WIDE COAL STORAGE
- CC-RVAAP-74 ..... BUILDING 1034 MOTOR POOL HYDRAULIC LIFT
- CC-RVAAP-75 ..... GEORGE ROAD SEWAGE TREATMENT PLANT
- CC-RVAAP-76 ..... DEPOT AREA
- CC-RVAAP-77 ..... BUILDING 1037 LAUNDRY WASTE WATER SUMP
- CC-RVAAP-78 ..... QUARRY POND SURFACE DUMP
- CC-RVAAP-79 ..... DLA ORE STORAGE SITES
- CC-RVAAP-80 ..... GROUP 2 PROPELLANT CAN TOPS
- CC-RVAAP-85 ..... FORMER BUILDINGS 1031 AND 1039

MMRP SITES (14 SITES)

- RVAAP-001-R-01 ..... RAMSDELL QUARRY LANDFILL MRS
- RVAAP-002-R-01 ..... ERIE BURNING GROUNDS MRS
- RVAAP-003-R-01 ..... OPEN DEMOLITION AREA #2 MRS
- RVAAP-005-R-01 ..... LOAD LINE 1 MRS
- RVAAP-010-R-01 ..... FUZE AND BOOSTER QUARRY MRS
- RVAAP-011-R-01 ..... LANDFILL NORTH OF WINKLEPECK MRS
- RVAAP-032-R-01 ..... 40MM FIRING RANGE MRS
- RVAAP-038-R-01 ..... FIRESTONE TEST FACILITY MRS
- RVAAP-034-R-01 ..... SAND CREEK DUMP MRS
- RVAAP-010-R-01 ..... ATLAS SCRAP YARD MRS
- RVAAP-006-R-01 ..... BLOCK D IGLOO MRS
- RVAAP-061-R-01 ..... BLOCK D IGLOO -TD MRS
- RVAAP-009-R-01 ..... WATER WORKS #4 DUMP MRS
- RVAAP-063-R-01 ..... GROUP 8 MRS

LEGEND OF SYMBOLS

- ..... CERCLA
- ..... RCRA
- ..... MMRP SITES
- ..... COMPLIANCE RESTORATION SITES - APPROVED
- ..... DLA ORE STORAGE AREAS (7 SITES)
- ..... COAL STORAGE AREAS (17 SITES)
- ..... UNDERGROUND STORAGE TANKS

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO
(12/23/2011)

Figure 2
RVAAP
Facility Map

US Army Corps
of Engineers
Louisville District



Note: The following maps have been reproduced from various separate reports. Each map has not been altered in any way from the original format from which it was copied.

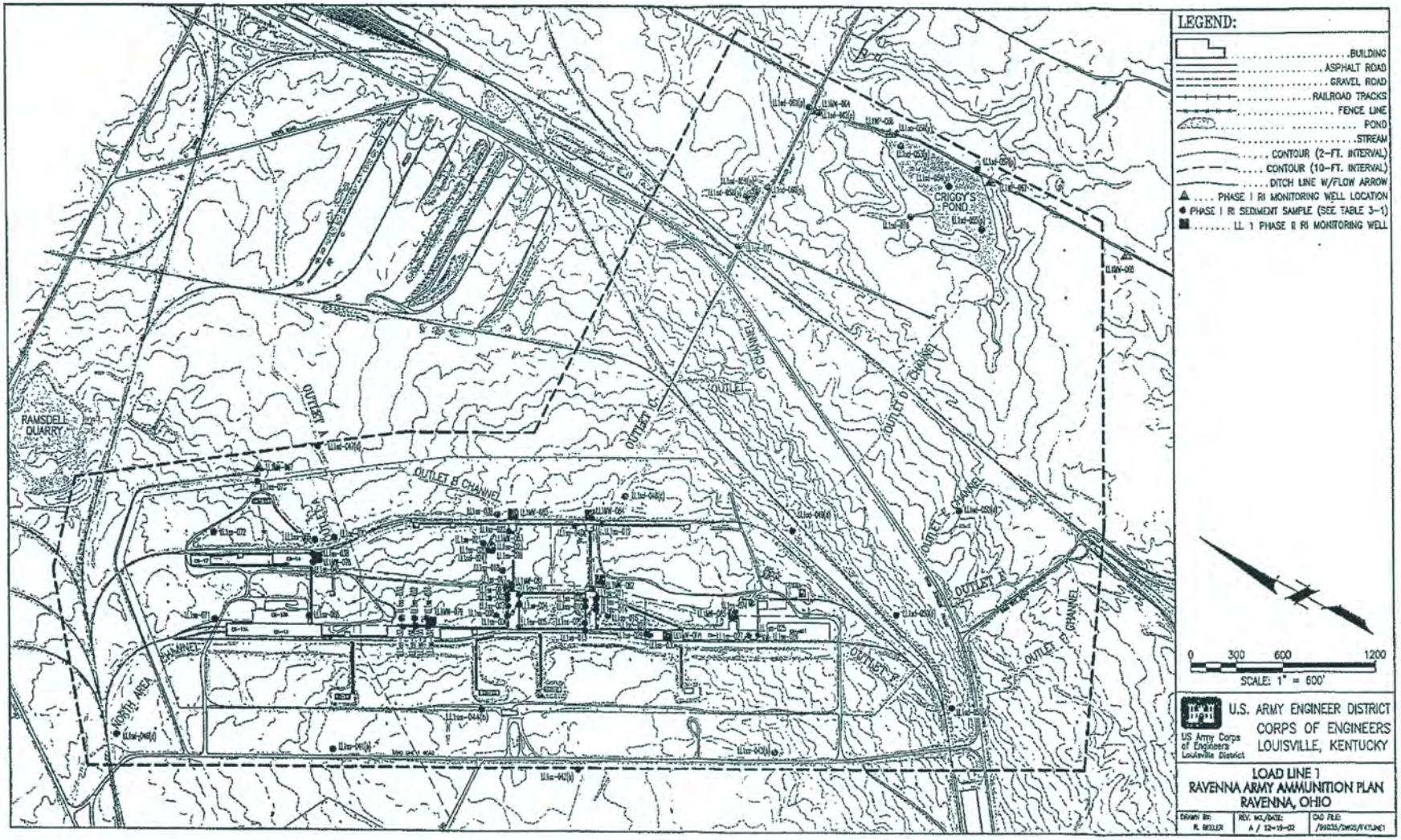


Figure 1-6. Existing Phase I RI Sampling Locations and Phase II RI Monitoring Wells at Load Line 1

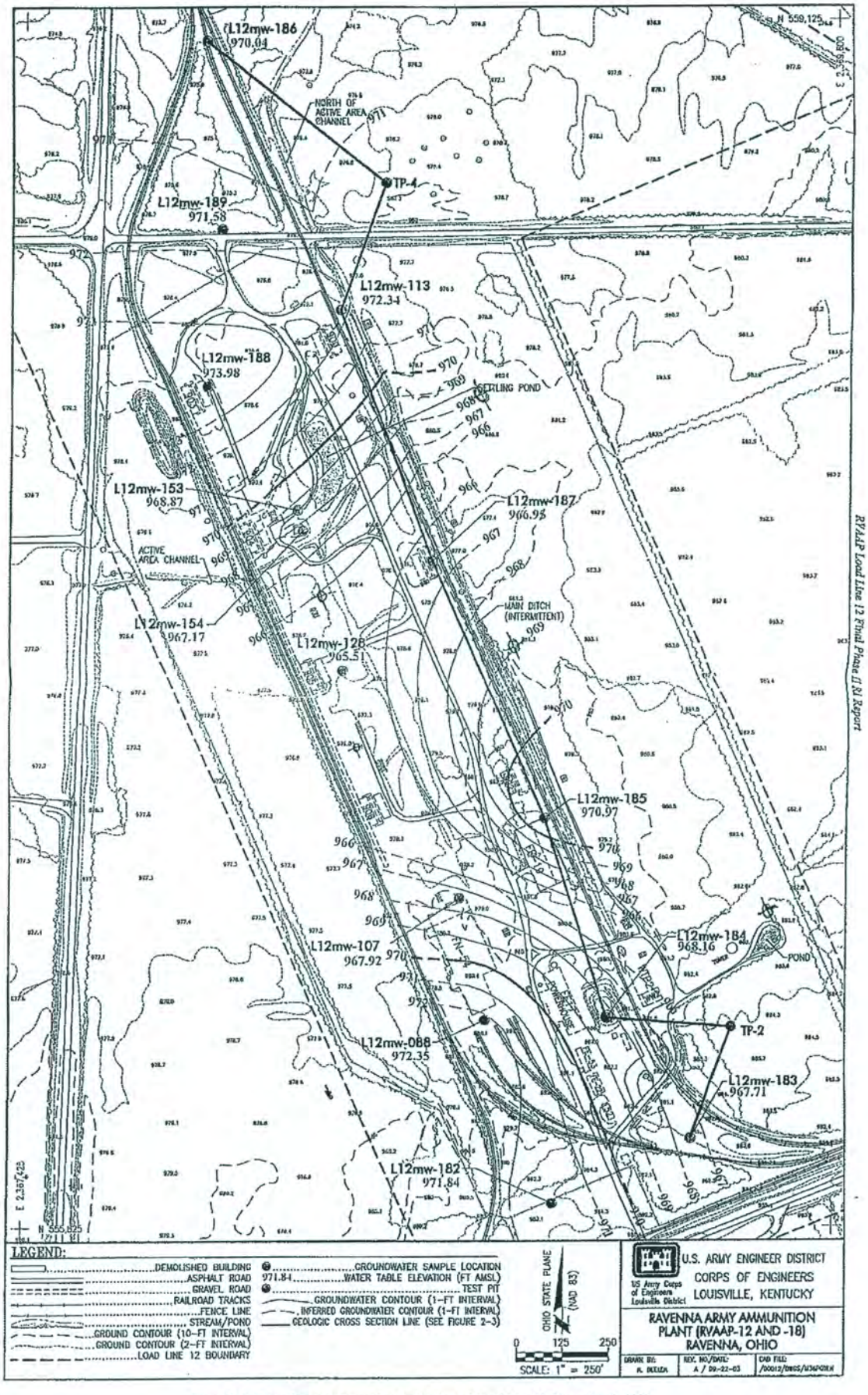


Figure 2-5. Potentiometric Groundwater Surface at Load Line 12, November 9, 2000

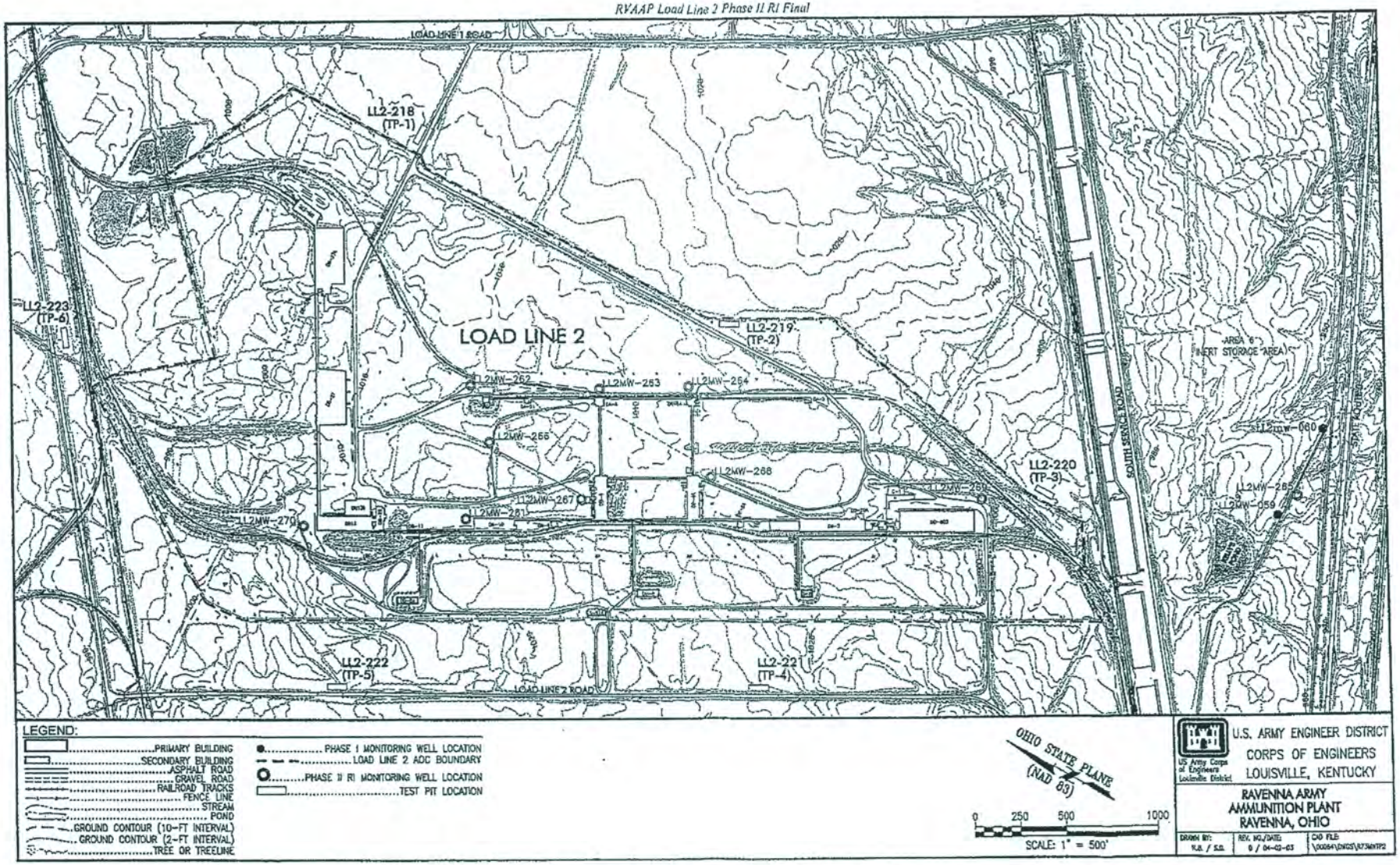


Figure 3-6. Phase II RI Monitoring Well and Test Pit Locations at Load Line 2

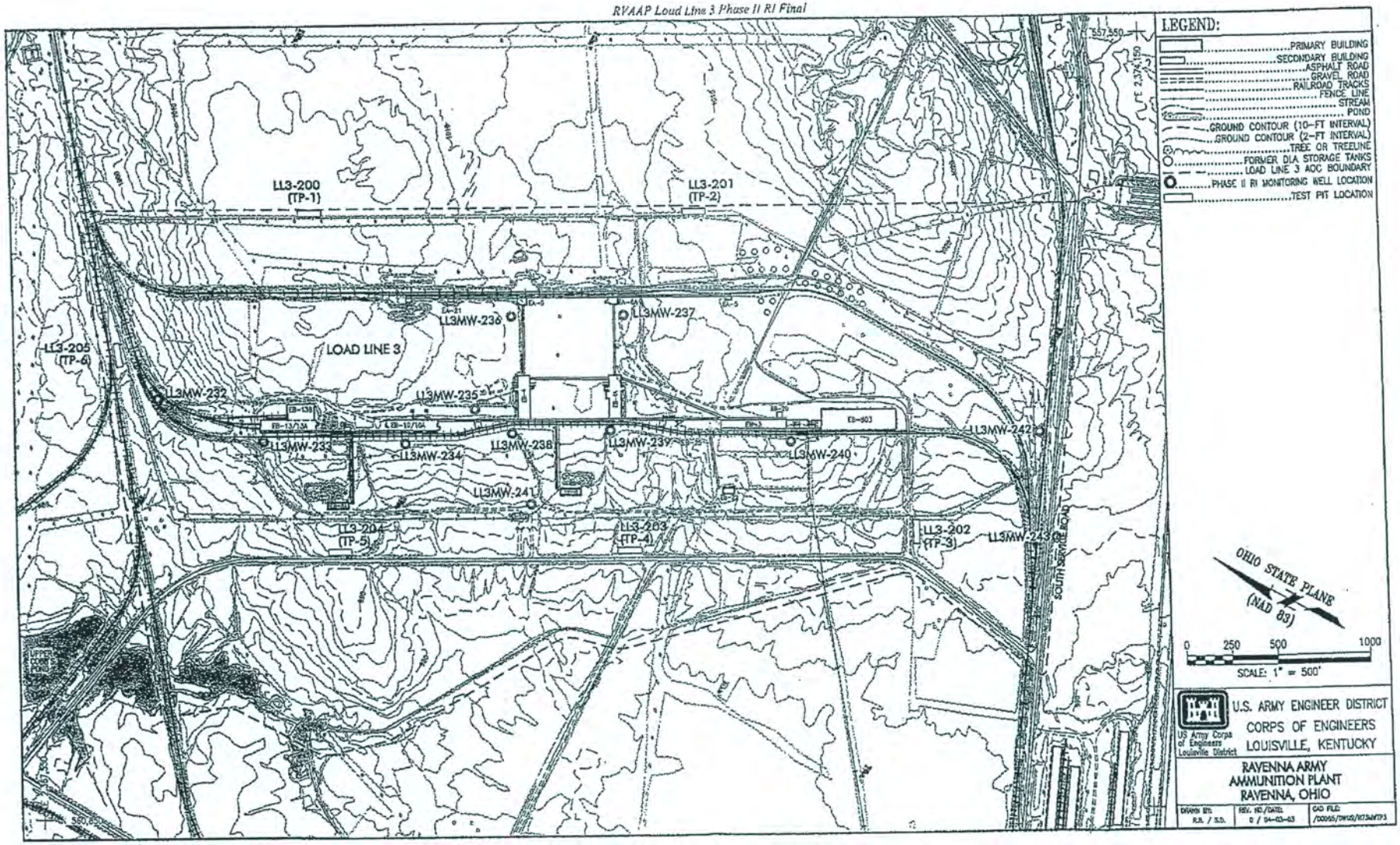
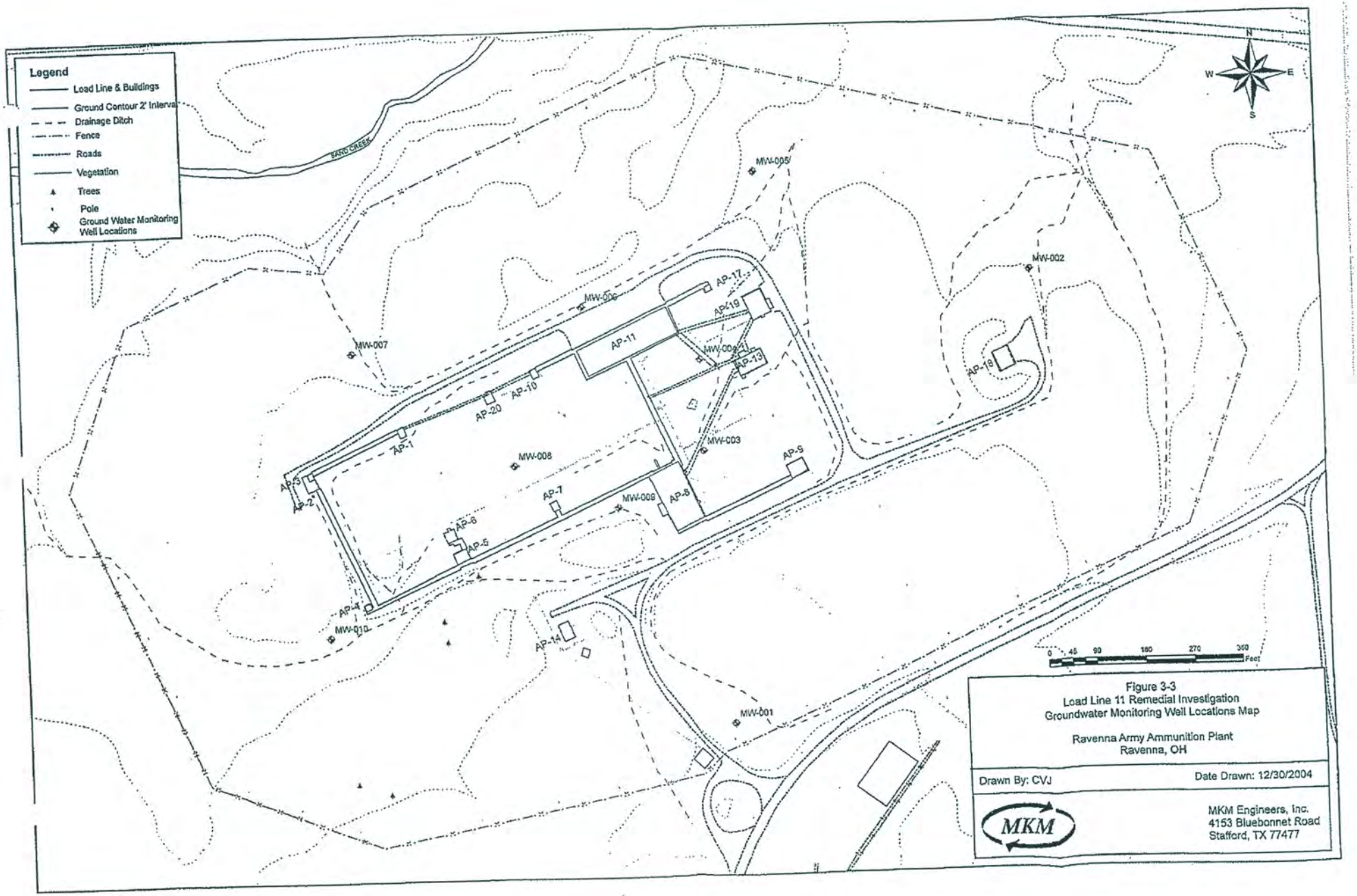


Figure 3-6. Phase II RI Monitoring Well and Test Pit Locations at Load Line 3


Legend
Load Line & Buildings
Ground Contour 2' Interval
Drainage Ditch
Fence
Roads
Vegetation
Trees
Pole
Ground Water Monitoring Well Locations
SAND CREEK
N
W
E
S
MW-005
MW-002
MW-006
MW-007
MW-004
MW-003
MW-008
MW-009
MW-010
MW-001
AP-1
AP-2
AP-3
AP-4
AP-5
AP-6
AP-7
AP-8
AP-9
AP-10
AP-11
AP-12
AP-13
AP-14
AP-17
AP-18
AP-19
AP-20
0 45 90 180 270 360 Feet
Figure 3-3
Load Line 11 Remedial Investigation
Groundwater Monitoring Well Locations Map
Ravenna Army Ammunition Plant
Ravenna, OH
Drawn By: CVJ
Date Drawn: 12/30/2004
MKM
MKM Engineers, Inc.
4153 Bluebonnet Road
Stafford, TX 77477

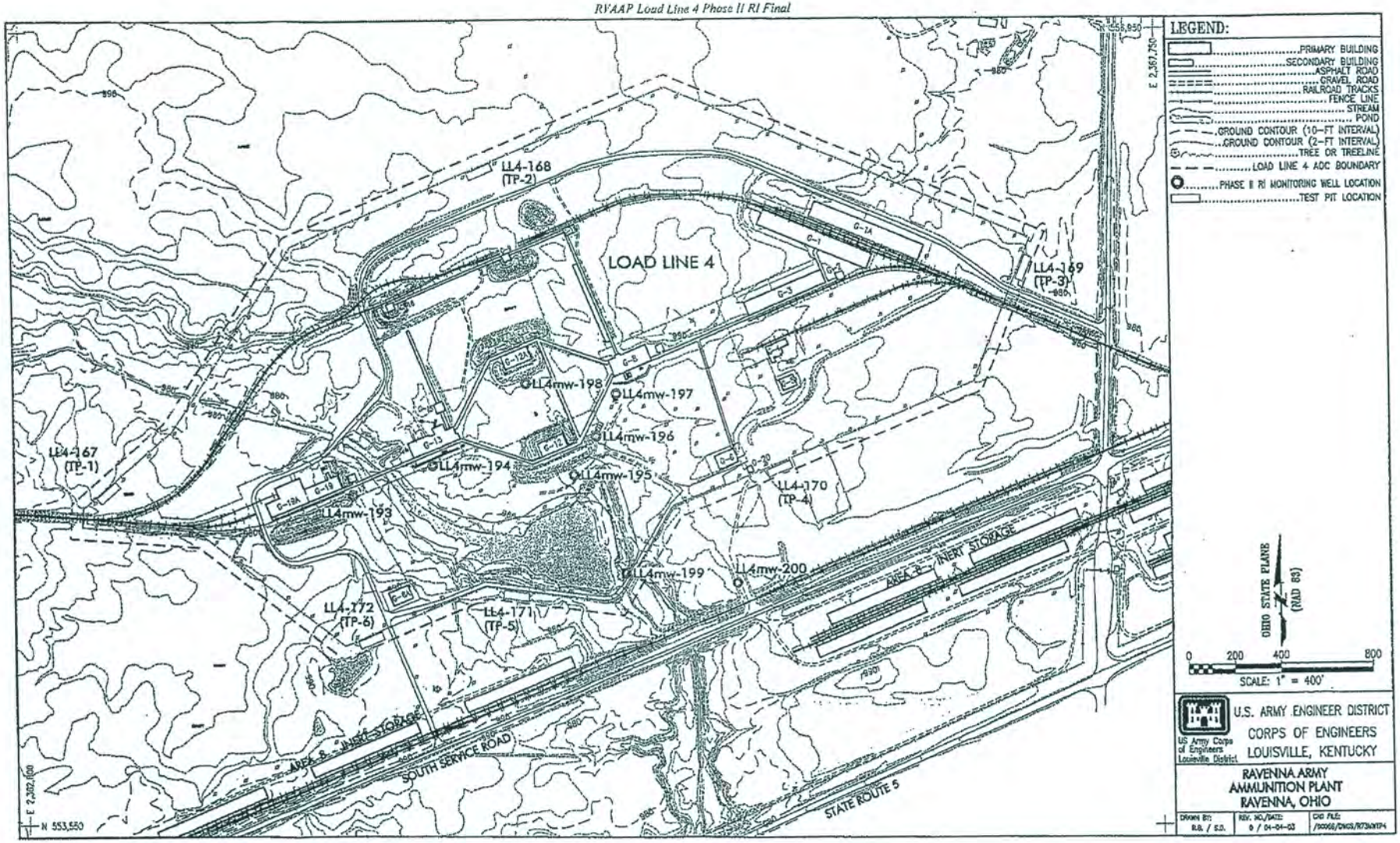
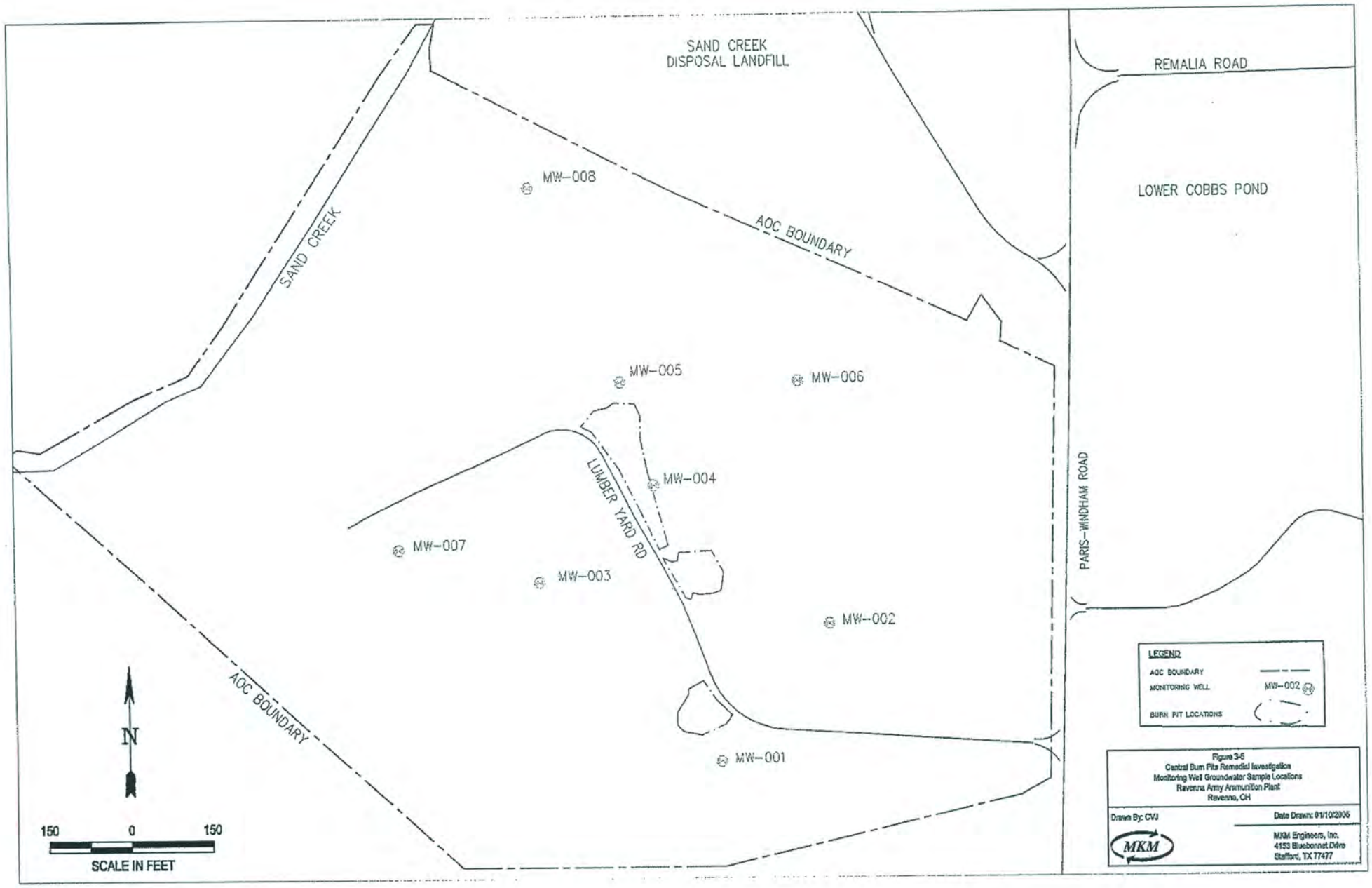


Figure 3-5. Phase II RI Monitoring Well and Test Pit Locations for Load Line 4


SAND CREEK
DISPOSAL LANDFILL
REMALIA ROAD
LOWER COBBS POND
MW-008
SAND CREEK
AOC BOUNDARY
MW-005
MW-006
MW-004
LUMBER YARD RD
MW-007
MW-003
MW-002
PARIS-WINDHAM ROAD
AOC BOUNDARY
MW-001
N
150 0 150
SCALE IN FEET
LEGEND
AOC BOUNDARY
MONITORING WELL
MW-002
BURN PIT LOCATIONS
Figure 3-5
Central Burn Pits Remedial Investigation
Monitoring Well Groundwater Sample Locations
Ravenna Army Ammunition Plant
Ravenna, OH
Drawn By: CVJ
Date Drawn: 01/10/2006
MKM
MKM Engineers, Inc.
4153 Bluebonnet Drive
Stafford, TX 77477

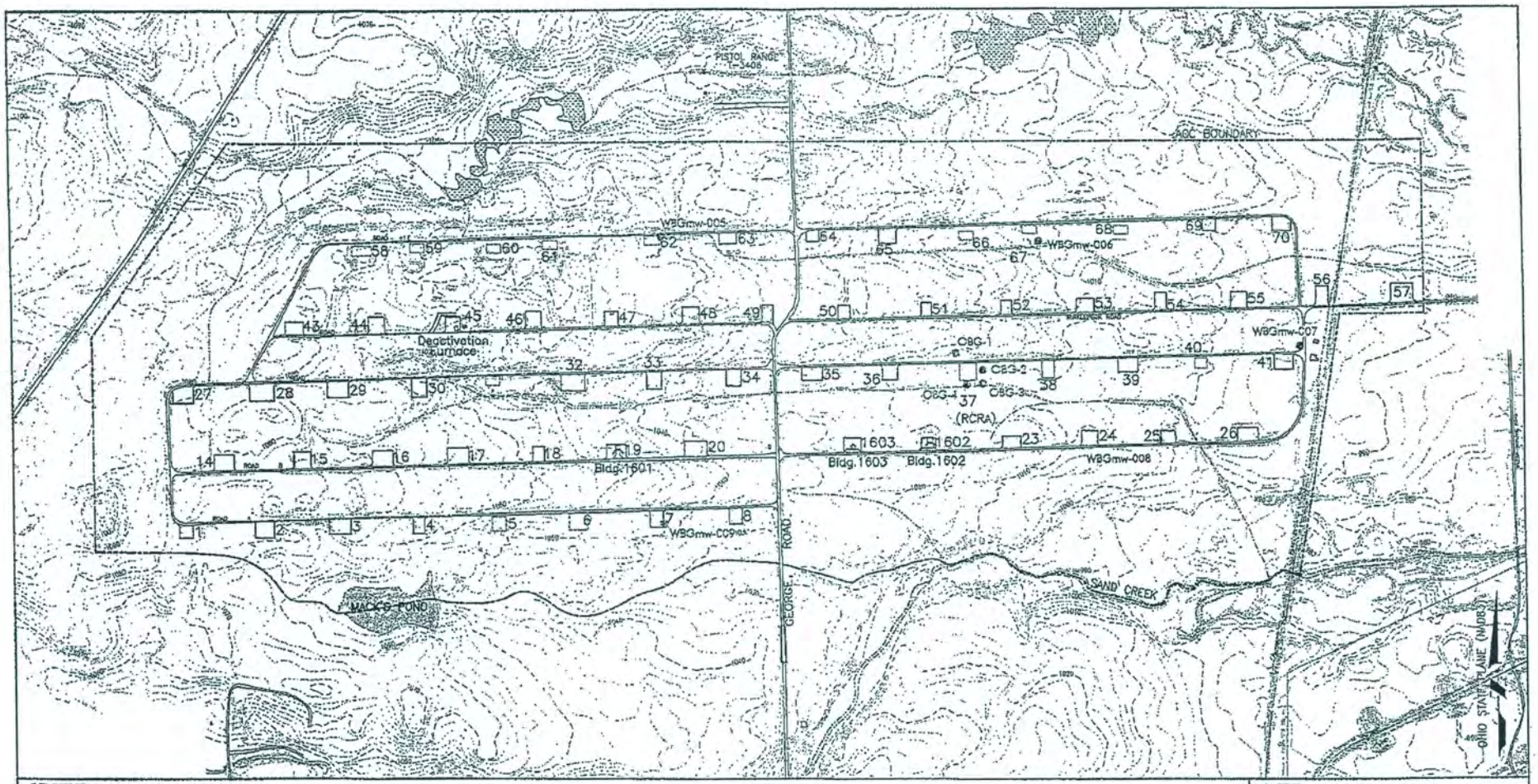
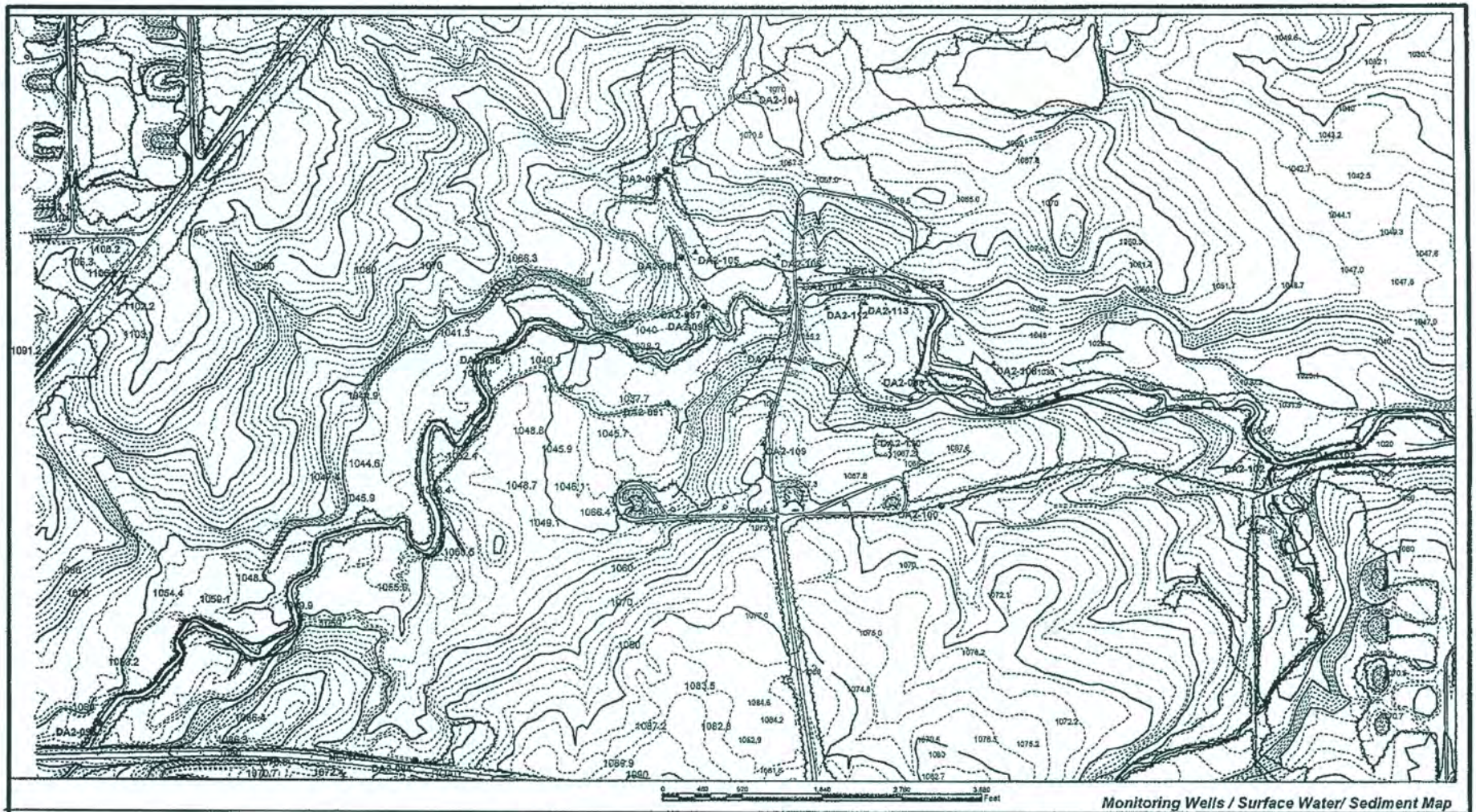


Figure 2-5 WBG Monitoring Well Locations



DEMOLITION AREA 2.

Figure 3-2 : Sediment, Surface Water, and Groundwater Sample Location Map

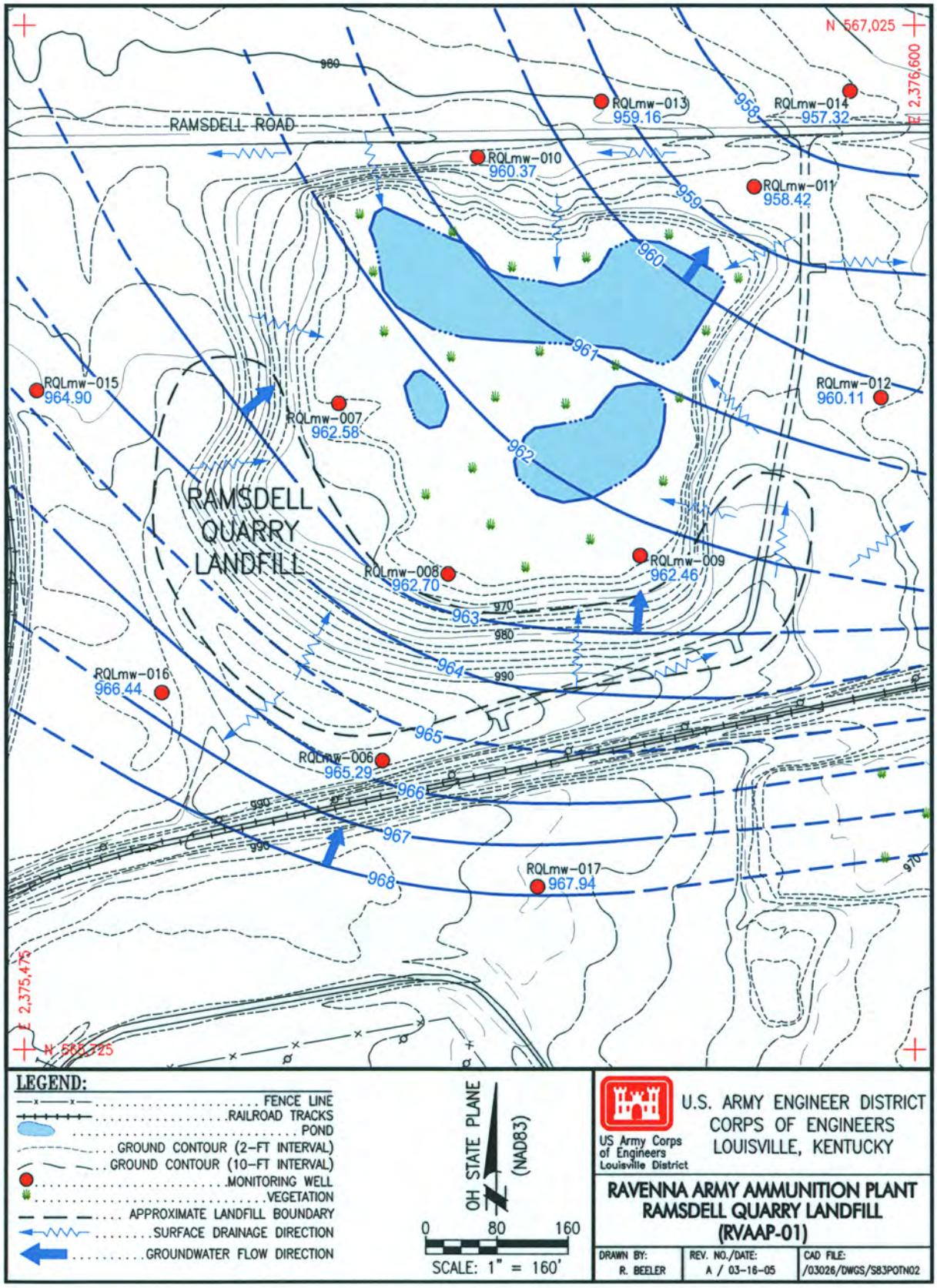


Figure 2-4. Ramsdell Quarry Potentiometric Surface, May 2004

APPENDIX K

Correspondence and Comment/Response Table

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

January 15, 2013

RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FWGWMP, DRAFT ANNUAL REPORT FOR 2012, DATED DECEMBER 10, 2012 (Ohio EPA ID # 267-000859-036)

Mr. Mark Patterson
Installation Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

CERTIFIED MAIL
7010 3090 0000 3936 7396

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft, Facility-Wide Groundwater Monitoring Program (FWGWMP), Annual Report for 2012" document. The document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on December 11, 2012 and is dated December 10, 2012. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under GSA contract No. GS-10F-0293K.

The annual report summarizes the results of the October 2011, January, April and July 2012 sampling events completed under the FWGWMP. Additional activities included installation of 38 monitoring wells, well maintenance, and preparation of potentiometric surface maps.

Included in the annual report is the recommendations section that specifies goals and identifies activities yet to be completed. The goals and the activities are broad and conceptual in nature, defining the path forward from the conceptual to the finite does not appear to have been developed at this stage. This is a concern for Ohio EPA, since these issues could drive this project to a similar path as the PBA-08 documents, which had multiple global comments that needed resolution before acceptable draft documents could be developed. Ohio EPA would like to propose we work with the Army to address this prior to moving in this direction.

Also, as stated in Ohio EPA's comment response table dated April 10, 2012 regarding the Draft RI/FS Work Plan, there are outstanding, unresolved issues regarding the FWGWMP that need to be addressed.

A few of the unresolved issues include the following:

1. DNT isomers: historical report from another facility indicated that even though low levels of 2,4-DNT and 2,6-DNT were detected, high levels of the other four isomers can occur.

2. Abandonment of identified water wells on site (potential GW contamination).

3. Identification/location of abandoned oil and gas wells (potential GW contamination).

E-MAILED 01-17-2013 GH

Scanned
By: GH
Date: 1-17-2013

RECEIVED 1-16-2013 GH

4. Identifying clearly the rationale for filtering GW samples and resolving filtered vs. unfiltered as applicable to risk.

5. Use of other documents in RI approach (Major Cations and Anions Study, Newfields Statistical Report, Jonathan Myers Metals Study, and others).

6. Resolving Bis(2-ethylhexyl)phthalate issue.

7. RSLs-updating the soil and GW FWCUGs.

8. Additional information regarding potable well use in the area/evaluating data.

9. Modeling/assumptions/potentiometric surface maps.

10. Determine the use of groundwater/potable water on site.

11. Identifying what data will be used for RI and risk.

12. Others.

Ohio EPA had hoped that USACE would have requested a meeting to discuss and resolve the above, but that has not happened. Ohio EPA is amendable to meeting, should USACE decide to schedule a meeting to discuss the path forward to achieving the goals and completing activities on a finite level and resolving the outstanding data gaps/issues. Some data gap/issues may require additional work and time that may affect time lines and milestones. Resolving these in a timely manner may be prudent.

Pursuant to the June 14, 2004 Director's final Findings and Orders (DFFOs), Ohio EPA has prepared this notice of deficiency documenting Ohio EPA's disapproval of the Draft Annual report for 2012.

Pursuant to the DFFOs, Paragraph 41, and this notification, the "Respondent shall within thirty (30) days from the date of actual receipt of the disapproval, correct the deficiencies and submit" revised page(s) to Ohio EPA for approval. "This time limitation may be extended by mutual written agreement of the Project Managers. The revised submission shall incorporate all of the uncontested changes, additions, and/or deletions specified by Ohio EPA in its notice of deficiency."

Paragraph 42 of the DFFOs provides for a meeting request by the Respondent to discuss and clarify issues. The DFFOs state, "...the meeting shall commence within fifteen (15) days of the close of the comment period" and again can be extended by mutual written agreement of the Project Managers. Please let Ohio EPA's project Manager, Eileen Mohr, know if the Army wants to request a meeting.

Pursuant to the CERCLA process, the property owner usually can provide the expected land use to assist in ensuring the investigation addresses all receptors for both current and future land uses. However, it is the understanding of Ohio EPA that the end use for groundwater has not yet been finalized. Therefore, please be advised that future modifications may be required by Ohio EPA to address incompatible land uses with the findings of this report.

Enclosed are Ohio EPA's comments. Please call Eileen Mohr if you wish to schedule a conference call.

Sincerely,

for

Nancy Zikmanis, CHMM
Environmental Supervisor
Division of Environmental Response and Revitalization

VD:NZ/kss

enclosure

cc: Katie Tait, OHARNG RTLS
Ann Wood, NGB

ec: Eileen Mohr, Ohio EPA, NEDO, DERR
Vicki Deppisch, Ohio EPA, NEDO, DERR
Al Muller, Ohio EPA, NEDO, DERR
Justin Burke, Ohio EPA, CO, DERR
Kevin Palombo, Ohio EPA, NEDO, DERR

DRAFT FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
ANNUAL REPORT FOR 2012
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE
January 17, 2013

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
O-1	Pg. vii and viii re: RCRA wells		Report states the RCRA wells are sampled twice a year and also state they were sampled in Oct. 2011, Jan. 2012, and July 2012.	Please clarify.	Per the FWGWMPP and the DFFOs, the RCRA wells are sampled twice per **calendar** year. In 2011, these wells were sampled in April and October 2011. The 2012 Annual Report includes the quarterly data from October 2011 through July 2012. This has resulted in the RCRA wells being sampled three times within the 2012 annual reporting period. Page vii will be revised to include "*are sampled on a semiannual basis (i.e., twice per calendar year)*".
O-2	Pg. viii, lines 3 and 4		First sentence appears to be truncated.	Please change.	Will rephrase first sentence to read: *Immediately prior to the July 2012 sampling event, water levels in the 281 RVAAP monitoring wells were gauged.*
O-3	Pg. 4, line 44 and Pg. 5, lines 1-3, and others regarding bis(2-ethylhexyl) phthalate		BEHP continues to be a concern and is unresolved. BEHP was evaluated in two adjacent wells at Load Line 12 - one polyvinyl well (LL12mw-182) and the other a stainless steel well(LL12mw-18ss). The July 2012 samples from LL12mw-182 and LL12mw-18ss were found to contain BEHP at concentrations of 2.7 ug/L and 1.9 ug/L,	The BEHP issues need to be resolved and Ohio EPA is open to suggestions. Ohio EPA is suggesting the Army consider splitting at least 10% (five sample well locations) of the next round of sampling from wells that have	The following sentence has been added to the last paragraph of Section 1.2 for clarification: *"At this point, bis(2-ethylhexyl)phthalate is being evaluated as a chemical detected in the groundwater at RVAAP. As such it will be screened using the approved screening process to determine if it is a site related chemical (SRC) and eventually a chemical of*

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			respectively, both exceeding the RSL for this analyte. Although, until Ohio EPA hears from the Army, the July 2012 data is all suspect at this time. Those levels of BEHP in groundwater from the two wells are similar, suggesting that well materials are not the source of contamination. Considering the BEHP is a common lab contaminant and that most of the detected concentrations of that contaminant are less than 2 µg/l, a likely source is lab contamination, even in samples that were not "B" qualified. In addition, Ohio EPA could not locate a general discussion of the results comparing wells LL12mw-182 and LL12mw-182ss.	historically had the highest concentrations of BEHP with another lab to perform a comparison of the results to evaluate whether or not lab contamination is the likely source of BEHP. Please provide a detailed discussion of the results and comparisons of the two wells in the report.	*potential concern (COPC)."* Currently, split samples are collected quarterly from 10% of the wells sampled. However, the results from the split samples are not submitted to EQM; they are forwarded directly to the USACE from the laboratory. The results of the split samples will be evaluated to determine a comparison of laboratories, however as stated above we consider BEHP a groundwater COPC at RVAAP. The report indicates on page 86, lines 28-32, that the presence of BEHP in the new stainless steel well indicates that this constituent is not leaching from the PVC well materials. The well materials do not appear to be the source of BEHP contamination. This annual report only covers the first two sampling events for the new stainless steel well. The BEHP analytical results for these two wells for the 2012 reporting period are presented in Table 4-6. A full comparison will be presented at the end of 4 quarters of

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
Ohio EPA (V. Deppisch/A. Muller)					
					sampling.
O-4	Table 2-1		Under "Permeability Testing:" the table does not differentiate between different permeability testing.	Could asterisks and bottom notes be added to the table to identify the type of testing that was conducted on that specific well?	As described in the *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Addendum* (EQM, January 2012), permeability tests were performed on Shelby tubes and rock core samples collected during well installation using ASTM methodologies. This document also provides more information regarding the rationale for the new RI wells. The findings of the ASTM permeability tests are presented in the *Facility-Wide Groundwater Monitoring Program Plan RVAAP-66 Facility-Wide Groundwater Monitoring Well Installation Report* (EQM, October 2012). Bottom footnotes indicating *"Shelby tube sample to be collected and submitted for permeability testing using ASTM Method D-5084"* and *"Rock core sample to be collected and submitted for permeability testing using ASTM Method D-5084"* will be added to the table indicating this information.

DRAFT FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
ANNUAL REPORT FOR 2012
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE
January 17, 2013

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
O-5	Pg. 17, lines 5-7, Pg. 32, lines 1-18 (Section 3.1) Plates A & B Appendix D Plate 2 Appendix H		Groundwater elevation measurements made during the July 2012 sampling event were utilized to produce a composite "water table" (i.e., unconfined) potentiometric map (Plate 2) of the first groundwater zone encountered in the unconsolidated glacial material and the top portion of bedrock (Homewood and Sharon Formations). From a site-wide approach and the potential use of a composite flow map for groundwater modeling and fate and transport, it is important that this interpretation be accurately evaluated, explained, and documented. On a site-wide basis, the unconsolidated may be interconnected in some areas, but not in others. The report states (p. 17): "*...it is evident that the potentiometric surface in what was referred to as the unconsolidated aquifer is the same as the potentiometric surface referred to as the bedrock aquifer.*"	Ohio EPA recommends that until it can be adequately demonstrated that the unconsolidated, upper Sharon Sandstone and Homewood Sandstone (first water) are interconnected on a site-wide basis, separate flow maps should continue to be generated. Are there any nested wells or wells in close proximity that could be used to demonstrate interconnection? Other approaches? Please clarify why different static water levels were used to generate the "compiled" water table map than the other two maps. Regarding the bedrock flow map: if one flow map has been generated for the upper Sharon Sandstone and Homewood Sandstone, Ohio EPA	EQM has generated separate flow maps for the four different groundwater zones for the July 2012 potentiometric maps. Section 3.1 has been revised to indicate these separate groundwater zones. Some of the new RI wells are paired overburden and bedrock wells. The potential hydraulic connection between these well pairs will be evaluated as part of the RI. In addition, two pump tests will be performed at the facility as part of the RI. Observation wells will be installed in the overburden and bedrock and monitored during the pump test to evaluate potential connectivity at these locations.

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			This conclusion in the report that the unconsolidated and top of bedrock ground water zones can be represented by a single potentiometric surface does not support the separate potentiometric maps for the unconsolidated and top of bedrock zones. Plates A & B show many locations where different ground water flow directions and potentiometric surface elevations appear to be present in the two ground water zones in the same area of the facility. Ohio EPA noted that different static water levels are listed on the "compiled" water table map as compared to the bedrock and unconsolidated flow maps. According to the report (p.32), there is more than a 77-foot difference between the July 2012 ground water elevation in well LL10mw-003 screened in the Homewood Sandstone and well SCFmw-001 screened in the "basal"	recommends these units be represented as separate ground water zones and potentiometric surfaces, unless it can be adequately demonstrated that these two zones can be represented by the same potentiometric surface.	

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			portion of the Sharon Conglomerate, and the average difference in head between the "upper" Sharon Sandstone is about eight feet. The report cites these differences in ground water measurements as evidence that the "basal" Sharon Conglomerate is a separate ground water zone from ground water in the Homewood and upper portion of the Sharon Sandstone. Ohio EPA agrees that groundwater in the "basal" Sharon Conglomerate and the Homewood and upper portion of the Sharon Sandstone are different ground water zones. However, Ohio EPA disagrees that it has been adequately demonstrated that ground water in the Homewood Sandstone and upper portion of the Sharron Sandstone are in the same ground water zone as implied by Plate B. Also, it is unclear if the bedrock map for the Homewood Sandstone and the upper Sharon Sandstone have been		

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			compiled as one map or if separate flow maps were constructed for each bedrock unit, but depicted on one map.		
O-6	Pg. 34, lines 25-27 and Table 3-5		Regarding several well pads that were either cracked or had stability issues including LL8mw-003.	Please fix.	As indicated in last paragraph of Section 3.2.1 repairs are ongoing and will continue in to the spring of 2013 as weather permits. The following sentence will be added to the end of the second to last bullet; *"These wells will be repaired in the Spring of 2013."*
O-7	Pg. 38, Section 3.3, LL-12		The report discusses the interaction between the drainage ditch and GW based on seasonal flow patterns, with the drainage ditch either discharging to GW or GW discharging to the ditch. The wells at LL-12 are installed in the unconsolidated and bedrock. (1) Ohio EPA is assuming the Army has combined the static water levels for these wells and is using this data for interpretation. As stated above, Ohio EPA does not concur with combining the two GW zones and additional information has been requested; (2)	Please clarify how well static water levels were combined or not combined to interpret the flow direction and how the water in the ditch was measured and compared to the MWs. Ohio EPA suggests for clarity sake, cross sections depicting changing seasonal levels.	Section 3.3 has been revised for clarification. There are four wells that have been listed as bedrock wells in Load Line 12: LL12mw-113, LL12mw-183, LL12mw-186, and LL12mw-189. Our review of the well logs found that the bulk of the screen interval is within the overburden (all 10 feet in wells LL12mw-113 and LL12mw-186 and 8.5 feet in well LL12mw-189; we do not have the well construction details for LL12mw-183, but we assume it was constructed in the same manner). Essentially, the bottoms of these wells are installed at the soil-bedrock

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			There was no discussion if the water level in the ditch was measured at the same time as the water levels in the wells. Were stream gauges installed in the ditch?		interface. On this basis, we interpreted the static water levels in all of the Load Line 12 wells to be representative of the water table. The water in the drainage ditch was not measured; there is no reference for measuring the ditch and there are no current plans for installing stream gauges.
O-8	Pg. 40, Section 3.4.2		Ohio EPA noted that LL1mw-086 had a pH reading of 10 s.u. for April 2012 and >9 s.u. for July 2012. Grout?	Please discuss.	In October 2012, EQM redeveloped this well prior to sampling; the water was clear, there was no evidence of grout impact, and the pH was lowered from 10.06 to 7.31 s.u. During purging and sampling the well had a pH of 6.93 s.u. The pH in this well will continue to be monitored in the future.
O-9	Pg. 54, Table 4-3.		Re: LL-12. It was the understanding of Ohio EPA that all wells at LL-12 were sampling for nitrate. According to the table, LL12mw-187 (NT) wasn't sampled for nitrate for January 2012. Please discuss. Are all wells at LL-12 sampled for nitrate?		Section 3.2.1 of the January 2012 Report states that "...due to a chain of custody error nitrate/nitrates were not analyzed at LL12mw-187." This well will be sampled for nitrate/nitrites during future sampling events. The Load Line 12 wells listed in the Semiannual Monitoring Addendum (EQM,

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
			LL12mw-242 and LL12mw-246, nitrate-nitrite result, have a "JB" qualifier. Please specify the blank they were detected in.		January 2012) are sampled for nitrate. These include the following wells: LL12mw-182, LL12mw-185, LL12mw-187, LL12mw-242, LL12mw-245, and LL12mw-247. Historically all wells at Load Line 12 were sampled and analyzed for Nitrate/Nitrites by EPA General Chemistry method 353.2. FWGEQUIPRINSE-2-1895-GW had nitrate-nitrite detected at 0.013 mg/L. Consequently, the nitrate-nitrite results for LL12mw-242 and LL12mw-246 in January 2012 were qualified with a "B."
O-10	Pg. 63, Table 4-4, note field and chromium		NI = not tested. Chromium was detected as 7.6 JB for LL12mw-245 for July 2012. It is unclear why it is flagged "J." It appears to be above the RL.	Please change to "NT." Please discuss the "J" value for chromium.	We will make this change to NT. Table 4-3, pg. 54, lists a chromium value of "7.6 JB" for well LL12mw-245. The closing MRL check was above control limits for chromium per the LS to the DoD QSM.
O-11	Table 4-6		A background column was not included in this table.	Please add a background column and values.	We will add this column.

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
O-12	Pg. 67, Table 4-6		Ohio EPA noted that the RL for BEHP for DETmw-003 was 10 µg/L for Oct. 2011 sampling event. The MCL is 6 µg/L.	Please discuss why the MDL and RL were high for this constituent. Please check that all COCs had the appropriate MDLs and RLs.	For October 2011 the BEHP reporting limit as stated was above the MCL of 6ug/L, however; the laboratory reported MDL was below the MCL at 0.8ug/L. Any detected concentration above the MDL but below the reporting limit would be reported as an estimated value. As noted in Section 4.1 several analytical methods used to analyze a number of explosives, volatile organic compounds (VOCs), metals, semivolatile organic compounds (SVOCs), and pesticides currently do not meet the RVAAP QAPP reporting limits or RSLs. Tables listing the reporting limits that currently do not meet the RVAAP QAPP PQLs and/or RSL levels are presented in Appendix H of the report.
O-13	Pg. 71, lines 16 and 17		Report states, "Consideration should be made for a re-evaluation of background criteria for inorganics with thought given to inclusion of the FWGWMP data."	Please discuss this statement in more detail.	The background criteria are not going to be reevaluated or changed at this stage of the process. The following sentences (lines 13-17 on page 71) will be removed: "*These criteria were calculated from data collected prior to implementation of the FWGWMP. With implementation of the FWGWMP, many of the inorganics with a*

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
					"0" background criterion are found to be present at concentrations greater than their respective FWGWMP RLs. Consideration should be made for a re-evaluation of background criteria for inorganics with thought given to inclusion of the FWGWMP data."
O-14	Pg. 85, Section 4.17, LL-12		The discussion regarding nitrate does not state that nitrate has an MCL.	Please add to the paragraph.	The text will be changed to read as follows: *"Nitrate as nitrite was identified in one well (LL12mw-187) at a concentration exceeding its MCL value, and bis(2-ethylhexyl)phthalate was identified in five wells (LL12mw-182, LL12mw-182ss, LL12mw-242, LL12mw-245, and LL12mw-247) at concentrations exceeding the RSL value during this reporting period."* In addition, Table 4-6 lists the MCL and RSL values as 1.0 and 1.6 µg/L, respectively. However, nitrate as nitrite has an MCL of 1000 µg/L and an RSL of 1600 µg/L. Table 4-6 will be modified with the correct values.
O-15	Pg. 91, Section 4.22,		Refers to "Table 4-4." Should this be Table 4-6?	Please verify/change.	This should refer to Table 4-6; we will make this change.

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
			Ohio EPA (V. Deppisch/A. Muller)		
	line 24				
O-16	Pg. 94, line 3, regarding "monzonite sand"		This should be "monazite" sand and should not be confused with the feldspathic igneous intrusive rock monzonite.	Please change in all appropriate places and other reports, as needed.	We will make this change.
O-17	General – July 2012 sampling event data		Due to previous questions regarding the Draft July 2012 Sampling Event Report data, all July 2012 data included in the 2012 Annual Report is suspect at this time.	No response required.	Noted, Draft July 2012 Sampling Event Report was resubmitted on February 14, 2013.
O-18	General – Comparison to RSLs		For all practical purposes and until the "final" RSLs have been identified for the RI/FS, the most recent version of the RSLs should be utilized for comparisons for the Annual and quarterly reports.	No response required.	Note that the April 2012 RSLs were in effect at the time of the sampling and analyses presented in this report. The RSLs will be updated for future quarterly reports and the ongoing RI/FS. See Section 4.1.
O-19	General – Misc. typos		Pg. 5, lines 37 & 40: "April 2011" should be "April 2012" and line 40 "July 2011" should be "July 2012." Pg. 26 letters in words in headers of Table 3-2 are missing.	Please change/correct/add, etc.	We will make these changes.

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

April 2, 2013

RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FWGWMP, RESPONSE TO OHIO EPA COMMENTS INCLUDED IN THE FINAL ANNUAL REPORT FOR 2012 DATED MARCH 20, 2013 (# 267-000859-036)

Mr. Mark Patterson
Installation Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

CERTIFIED MAIL
7012 1010 0000 9467 5953

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "Final, Facility-Wide Groundwater Monitoring Program (FWGWMP), Annual Report for 2012," document. The "Response to Ohio EPA Comments" is included in the report as Appendix K. The report was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on March 21, 2013, and is dated March 20, 2013. The report was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under GSA contract No. GS-10F-0293K. Ohio EPA provided comments on the "Draft Annual Report for 2012" to the Army in a letter dated January 15, 2013.

The "Responses to Ohio EPA Comments" were not submitted separately for review, prior to receiving the "Final Annual Report for 2012," as had been customary and consequently Ohio EPA reviewed the responses before beginning the review on the "Final" report. Ohio EPA determined that there are multiple responses to Ohio EPA's comments that have not been adequately addressed. Since there are still outstanding issues with Ohio EPA comments, Ohio EPA did not review the "Final" report, because the unresolved issues may require a "Revised Final" report submittal.

In addition, there are still some issues that are unresolved with the potentiometric surface maps that have been revised and are part of the July 2012 Sampling Event Report and also the Annual Report for 2012. These issues need to be resolved and the potentiometric surface maps redrawn and submitted for both of these reports prior to approval.

The annual report summarizes the results of the October 2011, January, April, and July 2012 sampling events completed under the FWGWMP. Additional activities included installation of 38 monitoring wells, well maintenance, and preparation of potentiometric surface maps.

Included in the annual report is the recommendations section, which specifies goals and identifies activities yet to be completed. The goals and the activities are broad and conceptual in nature. Defining the path forward from the conceptual to the finite has not been defined or discussed. Some of the unresolved issues were identified in Ohio EPA's comment letter, dated January 15, 2013, to the Army.

E-MAILED 4-8-2013 GH

Scanned
By: GH
Date: 4-8-2013

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 4-8-2013 GH

Ohio EPA Comments:

The following are Ohio EPA's comments in response to the Army's response to Ohio EPA's comments. The numbers correspond to the same number as depicted in Appendix K:

1. Adequately addressed.

2. Adequately addressed.

3. Adequately addressed.

4. Adequately addressed.

5. Regarding the potentiometric surface maps: Ohio EPA is preparing additional comments on the revised maps that will be forwarded under separate cover. The maps will, in all likelihood, require another revision.

   To summarize, Ohio EPA has previously reviewed the March 2013 revised July 2012 potentiometric maps for the Unconsolidated, Homewood Sandstone, and Upper Sharon Sandstone hydrostratigraphic units referred to in the response and has determined that those maps are inadequate. The March 2013 revised July 2012 potentiometric maps need further revision to present a realistic interpretation of ground water flow in those zones.

   Also, based on the response for O-7, data from monitoring wells LL12MW-113, LL12MW-186, and LL12MW-189 need to be removed from the March 2013 revised July 2012 potentiometric maps for the Upper Sharon, and those data need to be included on the March 2013 revised potentiometric maps for the Unconsolidated ground water zone. As the response to Comment O-7 indicates that there are no well construction details for well LL12MW-183, data from that well should not be used for any potentiometric map, until it can be adequately demonstrated what ground water zone that well represents. (Ohio EPA could not locate any information for this well either.) Additionally, the response for O-7 calls into question if the data from LL3MW-245 represents the unconsolidated or Upper Sharon hydrostratigraphic units. Ohio EPA could not locate a log or well construction details for LL2MW-245. These issues need to be addressed.

6. Adequately addressed.

7. The submitted response does not adequately respond to Ohio EPA's comment. The interpretation of ground water flow in the vicinity of Load Line 12 needs further clarification.

   Ohio EPA agrees that wells LL12MW-113, LL12MW-186, and LL12MW-189 appear to be screened in the unconsolidated ground water zone. However, the response indicates that there are no well construction details for well LL12MW-183; data from that well should not be used for any potentiometric map until it can be adequately demonstrated what ground water zone that well represents. Additionally, the response calls into question if the data from LL3MW-245 (located close to LL-12 wells) represents the unconsolidated or Upper

Sharon hydrostratigraphic units. Ohio EPA could not locate a log or well construction details for LL3MW-245. (See comment # 5 above).

The interpretation of alternating ground water flow in the unconsolidated ground water zone in the vicinity of Load Line 12 is unclear and needs to be better explained. Ohio EPA suggested (but did not receive) geologic cross-sections through Load Line 12 that would better explain the alternating ground water flow interpretation.

It appears that the Army may be suggesting that the interpretation of groundwater flow reversals in the immediate vicinity of the ditch during high flow/flooding may be of short duration and of little consequence. Ohio EPA concurs with this opinion. Also, we do not believe this short term variable data should be considered in future groundwater models.

8. Adequately addressed.

9. The last paragraph of the Army's response states nitrate-nitrite was detected in the rinse water, which consequently resulted in a "B" designation for the results in wells LL12mw-242 and LL12mw-246, in January 2012. Please include a discussion of why nitrate-nitrite was detected in the rinse sample and how this will affect the data and the screening process.

10. The Army's response states "closing MRL check was above control limits for chromium ....." Please indicate if this data is good and how it will be used.

11. Adequately addressed.

12. (A) The Army's response indicates the table listing the reporting limits that currently do not meet the RVAAP QAPP PQLs and/or the RSL levels are presented in Appendix H of the report. Ohio EPA located this table in Appendix G. Please verify the Appendix letter and change where appropriate.

    (B) The reporting limits table indicates the MDL is 0.8 and the RL is listed as 2. Ohio EPA restates that the RL for BEHP for DETmw-003 was 10 ug/L in the Oct. 2011 sampling event. The MCL is 6 ug/L. Please explain why the RL listed in the table as 2 ug/L could not be achieved by the lab and discuss how this data will be used and screened. It is important that the lab achieve levels below designated MCLs, as the Ohio National Guard has (and is) planning on using groundwater as the potable water source.

13. During the February 4, 2013 FWGWMP meeting, a revised screening method using MCLs was discussed. Ohio EPA is awaiting a revised proposed screening method from the Army. The use of MCLs and elimination of the background values would eliminate the discrepancies regarding the background wells that have been stated in previous reports.

14. Adequately addressed.

15. Adequately addressed.

16. Adequately addressed.

17. Adequately addressed. Note: During the February 4, 2013 FWGWMP meeting, EQM indicated that the data included in the Annual Report for 2012 is accurate.

18. Regarding the most current RSLs to be used in submitted reports to Ohio EPA: During the February 4, 2013 FWGWMP meeting, it was discussed that one version of the RSLs would need to be designated and used throughout the Remedial Investigation/Feasibility Study (RI/FS) process. The RSLs used in the "Draft, Annual Report for 2012" was discussed, but never agreed upon to use throughout the RI and the FS reports. The mechanism to update the RSLs to their current values in the future would be the Five-Year Review. This also was discussed, but never agreed upon. Ohio EPA is waiting for a final determination from the Army regarding this issue.

19. Adequately addressed.

The above comments and concerns first need to be resolved and approved by Ohio EPA. Based upon the resolution of the comments, a "Revised Final" report determination should be made by the Army. Depending on this outcome, Ohio EPA will review and approve/disapprove the "Final" or "Revised Final" Annual Report for 2012.

Pursuant to the June 14, 2004 Director's final Findings and Orders (DFFOs); Ohio EPA has prepared this notice of deficiency documenting Ohio EPA's disapproval of the Draft Annual report for 2012.

Pursuant to the DFFOs, Paragraph 41, and this notification, the "Respondent shall within thirty (30) days from the date of actual receipt of the disapproval, correct the deficiencies and submit" revised page(s) to Ohio EPA for approval. "This time limitation may be extended by mutual written agreement of the Project Managers. The revised submission shall incorporate all of the uncontested changes, additions, and/or deletions specified by Ohio EPA in its notice of deficiency."

Paragraph 42 of the DFFOs provides for a meeting request by the Respondent to discuss and clarify issues. The DFFOs state, "....the meeting shall commence within fifteen (15) days of the close of the comment period" and again can be extended by mutual written agreement of the Project Managers. Please let Ohio EPA Project Manager, Eileen Mohr, know if the Army wants to request a meeting.

Pursuant to the CERCLA process, the property owner usually can provide the expected land use to assist in ensuring the investigation addresses all receptors for both current and future land uses. However, it is the understanding of Ohio EPA that the end use for groundwater has not yet been finalized. Therefore, please be advised that future modifications may be required by Ohio EPA to address incompatible land uses with the findings of this report.

Please call Eileen Mohr if you wish to schedule a conference call.

Sincerely,

Nancy Zikmanis, CHMM
Environmental Supervisor
Division of Environmental Response and Revitalization

VD:NZ/kss

cc: Katie Tait, OHARNG RTLS
Ann Wood, NGB

ec: Eileen Mohr, Ohio EPA, NEDO, DERR
Vicki Deppisch, Ohio EPA, NEDO, DERR
Al Muller, Ohio EPA, NEDO, DDAGW
Justin Burke, Ohio EPA, CO, DERR
Kevin Palombo, Ohio EPA, NEDO, DERR

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

OHIO EPA
NORTHEAST DISTRICT OFFICE
2110 EAST AURORA ROAD
TWINSBURG OH 44087

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

MARK PATTERSON
RAVENNA ARMY AMMUNITION PLANT
8451 STATE ROUTE 5
RAVENNA OH 44266

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by (Printed Name) Gail Harris
C. Date of Delivery 4-8-2013

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number 7012 1010 0000 9467 5953 (04/02/13 K.Schillo for VD)
(Transfer from service label) 03

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

COPY

DEPARTMENT OF THE ARMY
RAVENNA ARMY AMMUNITION PLANT
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

REPLY TO
ATTENTION OF

May 6, 2013

Ms. Eileen Mohr
Ohio Environmental Protection Agency
Northeast District Office
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant, Portage/Trumbull Counties, FWGWMP, Response to Ohio EPA Comments Included in the Final Annual Report for 2012 Dated March 20, 2013 (# 267-000859-036)

Dear Ms. Mohr,

On April 8, 2013, the Army received the above-referenced letter (Certified Mail 7012 1010 0000 9467 5953), dated April 2, 2013, which included Ohio Environmental Protection Agency (Ohio EPA) comments on the "Final Facility-Wide Groundwater Monitoring Program (FWGWMP), Annual Report for 2012." Ohio EPA noted additional outstanding and unresolved issues. Ohio EPA also noted the revised report, submitted by the Army on March 20, 2013, was not reviewed by the Ohio EPA due to the outstanding, unresolved issues. The Army understands that the revised report has not been reviewed by the Ohio EPA, and an additional submittal of the revised report is not warranted at this time. This letter is intended to address the Ohio EPA's additional issues presented in the April 2, 2013 letter.

Consistent with the DFFOs, Paragraph 41 and the OEPA's notification, the Army is submitting the below comment responses within thirty (30) days of our receipt of the Ohio EPA's April 2, 2013 letter. We believe our responses adequately address the outstanding, unresolved issues. Therefore, we respectfully request the OEPA's review and approval of this response letter.

Please note that this response letter does not rely on the "Technical Memorandum for Risk Assessment Issues: Land Uses and Facility-Wide Clean Up Goals" currently undergoing Ohio EPA review. Our responses that do reference facility-wide clean up goals (FWCUGs) merely describe the process of how the FWCUGs will be used in a data screening process.

The following text presents the Ohio EPA's comments presented in the April 2, 2013 letter. The Ohio EPA's comments are followed by the Army's responses:

> The "Responses to Ohio EPA Comments" were not submitted separately for review, prior to receiving the "Final Annual Report for 2012," as had been customary and consequently Ohio EPA reviewed the responses before beginning the review on the "Final" report. Ohio EPA determined that there are multiple responses to Ohio EPA's comments that have not been adequately addressed. Since there are still outstanding issues with Ohio EPA comments, Ohio EPA did not review the "Final" report, because the unresolved issues may require a "Revised Final" report submittal.
>
> ***Army Response:*** *The above comments are noted and understood.*

> In addition, there are still some issues that are unresolved with the potentiometric surface maps that have been revised and are part of the July 2012 Sampling Event Report and also the Annual Report for 2012. These issues need to be resolved and the potentiometric surface maps redrawn and submitted for both of these reports prior to approval.
>
> ***Army Response:*** *Understood! The Army received the Ohio EPA's letter (Certified Mail # 7012 1010 0000 9467 6264), dated April 22, 2013, on April 25, 2013. We noted the Ohio EPA's specific review comments pertaining to the potentiometric surface maps, and will revise the maps accordingly.*

> The annual report summarizes the results of the October 2011, January, April, and July 2012 sampling events completed under the FWGWMP. Additional activities included installation of 38 monitoring wells, well maintenance, and preparation of potentiometric surface maps.
>
> Included in the annual report is the recommendations section, which specifies goals and identifies activities yet to be completed. The goals and the activities are broad and conceptual in nature. Defining the path forward from the conceptual to the finite has not been defined or discussed. Some of the unresolved issues were identified in Ohio EPA's comment letter, dated January 15, 2013, to the Army.
>
> ***Army Response:*** *The text has been substantially revised to better identify the goals and activities associated with the Remedial Investigation/Feasibility Study (RI/FS). It should be noted however that the annual report only presents a summary of these activities. Details concerning the RI/FS are presented in the RI/FS Work Plan.*

Ohio EPA Comments :

The following are Ohio EPA's comments in response to the Army's response to Ohio EPA's comments. The numbers correspond to the same number as depicted in Appendix K:

1. Adequately addressed.

2. Adequately addressed.

3. Adequately addressed.

4. Adequately addressed.

5. Regarding the potentiometric surface maps: Ohio EPA is preparing additional comments on the revised maps that will be forwarded under separate cover. The maps will, in all likelihood, require another revision.

To summarize, Ohio EPA has previously reviewed the March 2013 revised July 2012 potentiometric maps for the Unconsolidated, Homewood Sandstone, and Upper Sharon Sandstone hydrostratigraphic units referred to in the response and has determined that those maps are inadequate. The March 2013 revised July 2012 potentiometric maps need further revision to present a realistic interpretation of ground water flow in those zones.

> ***Army Response:*** *As indicated above, the Army received the Ohio EPA's letter (Certified Mail # 7012 1010 0000 9467 6264), dated April 22, 2013, on April 25, 2013. We noted the Ohio EPA's specific review comments pertaining to the potentiometric surface maps, and will revise the maps accordingly. The March 2013 revised July 2012 potentiometric maps were modified based on the Ohio EPA's previous comments requesting that the Homewood and Upper Sharon formations be presented in separate figures, equipotential lines be dashed where limited data exists, and flow lines be drawn to show recharge/discharge along stream lines, where appropriate.*

Also, based on the response for 0-7, data from monitoring wells LL12MW-113, LL12MW-186, and LL12MW-189 need to be removed from the March 2013 revised July 2012 potentiometric maps for the Upper Sharon, and those data need to be included on the March 2013 revised potentiometric maps for the Unconsolidated ground water zone. As the response to Comment 0-7 indicates that there are no well construction details for well LL12MW-183, data from that well should not be used for any potentiometric map, until it can be adequately demonstrated what ground water zone that well represents. (Ohio EPA could not locate any information for this well either.) Additionally, the response for 0-7 calls into

question if the data from LL3MW-245 represents the unconsolidated or Upper Sharon hydrostratigraphic units. Ohio EPA could not locate a log or well construction details for LL2MW-245. These issues need to be addressed.

Army Response: *We will move Load Line 12 wells LL12mw-113, LL12mw-183, LL12mw-186, and LL12mw-189 from the Upper Sharon map to the Unconsolidated map. This transition will not affect either groundwater flow map.*

A well construction log for LL12mw-183 was found in the Phase II Remedial Investigation Report for Load Line 12 at the Ravenna Army Ammunition Plant, Ravenna, Ohio (SAIC, 2004) and is attached. The boring was advanced 2 feet into weathered shale (34 to 36 feet below grade), but the well was completed in the overburden (23.3 to 33.3 feet below grade).

Well LL12mw-245 was completed as part of the recent remedial investigation for facility-wide groundwater at RVAAP. This well was completed fully in bedrock with the screen set from 36.5 to 46.5 feet below grade. The soil boring log/well construction diagram is presented in the Monitoring Well Installation Report (EQM, December 2012); a copy is attached. Well LL3mw-245 was not used for preparing the Load Line 12 potentiometric map. A notation to this effect will be added to the map.

6. Adequately addressed.

7. The submitted response does not adequately respond to Ohio EPA's comment. The interpretation of ground water flow in the vicinity of Load Line 12 needs further clarification.

Ohio EPA agrees that wells LL12MW-113, LL12MW-186, and LL12MW-189 appear to be screened in the unconsolidated ground water zone. However, the response indicates that there are no well construction details for well LL12MW-183; data from that well should not be used for any potentiometric map until it can be adequately demonstrated what ground water zone that well represents. Additionally, the response calls into question if the data from LL3MW-245 (located close to LL-12 wells) represents the unconsolidated or Upper Sharon hydrostratigraphic units. Ohio EPA could not locate a log or well construction details for LL3MW-245. (See comment# 5 above).

Army Response: *Refer to our response for Comment 5.*

The interpretation of alternating ground water flow in the unconsolidated ground water zone in the vicinity of Load Line 12 is unclear and needs to be better explained. Ohio EPA suggested (but did not receive) geologic cross-sections through

Load Line 12 that would better explain the alternating ground water flow interpretation.

Army Response: *Geologic cross-sections have been completed for Load Line 12 in previous reports. One cross-section was included in the Phase II Remedial Investigation Report for Load Line 12 (SAIC, 2004). A copy is attached. Four cross-sections were submitted in the Final Characterization of 14 AOCs at Ravenna Army Ammunition Plant, Volume II, Appendix A-1 (MKM, March 2007); copies of these cross-sections are also attached.*

It appears that the Army may be suggesting that the interpretation of groundwater flow reversals in the immediate vicinity of the ditch during high flow/flooding may be of short duration and of little consequence. Ohio EPA concurs with this opinion. Also, we do not believe this short term variable data should be considered in future groundwater models.

Army Response: *Depth-to-groundwater measurements were again collected in January 2013. These results will be submitted with the January 2013 quarterly report. However, based on these data the following textual revision will be incorporated into the January 2013 report "Groundwater measurements have been collected quarterly since January 2012. Groundwater flow has generally been to the east toward the drainage ditch as evidenced during the January, July, and October 2012 and January 2013 sampling events. As mentioned previously, only the April 2012 event showed groundwater flow away from the ditch to the west. This appears to be a seasonal phenomenon related to periods of higher precipitation. Based on the Load Line 12 water level data, localized flow is controlled by the drainage ditch and precipitation events. Consequently, fluctuating conditions are expected to occur on a seasonal basis in the Load Line 12 area. Groundwater flow may also be partially influenced by preferential flow paths in the unconsolidated sediment." We agree that the reversals are of short duration and of little consequence.*

8. Adequately addressed.

9. The last paragraph of the Army's response states nitrate-nitrite was detected in the rinse water, which consequently resulted in a "8" designation for the results in wells LL12mw-242 and LL12mw-246, in January 2012. Please include a discussion of why nitrate-nitrite was detected in the rinse sample and how this will affect the data and the screening process.

Army Response: *At RVAAP, the sample pump is cleaned per the FSP following sampling at every location. Rinse blanks are collected daily to determine residual contamination that may*

impact sample results so that a false positive is not used in the groundwater assessment. Concentrations reported above the detection limit in the rinse blank are considered contamination and associated sample results less than 5x reported blank results are considered to be the result of blank contamination. In the instance of FWGEQUIPRinse2-1895-GW, the detected concentration was 0.013mg/L. Contamination in the rinse blank may be due to inadequate cleaning of the pump following sample collection. The nitrate-nitrite results for FWGLL12mw-242 and FWGLL12mw-246 that were qualified as a result of the contamination had concentrations at 0.019mg/L and 0.017mg/L, respectively. The "B" designation will have no effect on the screening process for these data. The data will be screened as if the data had no qualifiers.

10. The Army's response states "closing MRL check was above control limits for chromium ....." Please indicate if this data is good and how it will be used.

Army Response: *The MRL check is a standard analyzed by the laboratory at the beginning and end of the analytical sequence to determine the accuracy of the laboratory measurement at the reporting limit. The MRL recovery criteria are 70-130%. In this instance, the MRL for chromium recovered at 155%, possibly biasing detected results for chromium high. Results are considered detected and usable, albeit estimated. Consequently, detected chromium results, specifically the result for LL12mw-245, bracketed by the MRL were qualified as estimated, "J". The "J" designation will have no effect on the screening process for this data. During the screening process "J" qualified data is used in the same way as data with no qualifiers.*

11. Adequately addressed.

12. (A) The Army's response indicates the table listing the reporting limits that currently do not meet the RVAAP QAPP PQLs and/or the RSL levels are presented in Appendix H of the report. Ohio EPA located this table in Appendix G. Please verify the Appendix letter and change where appropriate.

Army Response: *The revised FWGWMP Annual Report for 2012, dated March 20, 2013, presents the referenced information in Appendix H.*

(B) The reporting limits table indicates the MDL is 0.8 and the RL is listed as 2. Ohio EPA restates that the RL for BEHP for DETmw-003 was 10 ug/L in the Oct. 2011 sampling event. The MCL is 6 ug/L. Please explain why the RL listed in the table as 2 ug/L could not be achieved by the lab and discuss how this data

will be used and screened. It is important that the lab achieve levels below designated MCLs, as the Ohio National Guard has (and is) planning on using groundwater as the potable water source.

Army Response: *The bis(2-ethylhexyl)phthalate (BEHP) RL listed in the Appendix as 2ug/L was not met by the lab for data in the October 2011 event, because the laboratory was reporting to requirements specified in the QAPP, where the PQL for BEHP was 10ug/L.*

Data for January 2012 and after was required to be reported per the DOD Quality Systems Manual (QSM). The DOD QSM provides specific instructions on the reporting format for the laboratory, specifically that the laboratory data sheets must report DL, LOD and LOQ. No provisions are made for reporting data to the PQL as presented in the October 2011 report.

Despite the elevated reporting limits presented in the October 2011 report, the data provided by the laboratory is usable for evaluation in the screening process. The BEHP reporting limit was above the MCL of 6ug/L; the laboratory reported MDL was below the MCL at 0.8ug/L. Any detected concentration above the MDL but below the reporting limit would have been reported as an estimated value.

13. During the February 4, 2013 FWGWMP meeting, a revised screening method using MCLs was discussed. Ohio EPA is awaiting a revised proposed screening method from the Army. The use of MCLs and elimination of the background values would eliminate the discrepancies regarding the background wells that have been stated in previous reports.

Army Response: *The screening criteria outlined in the FWGWMP Annual Report for 2012, et al, did not fully reflect the entirety of the screening process, only three of the primary elements. In order to put these elements in proper perspective, we are revising the "Draft Facility-Wide Groundwater Monitoring Program, RVAAP-66 Facility-Wide Groundwater Remedial Investigation/Feasibility Study Work Plan" (Groundwater RI/FS Work Plan). A summary of these changes are provided below.*

There are three main steps in the screening process. The first step involves the determination of site-related compounds (SRCs). Under this step, detected and validated analytes collected between October 2006 through January 2013 from the new and existing monitoring wells will be evaluated relative to background concentrations, essential nutrients, and frequency of detection. This process follows the general guidance of the RVAAP's Facility Wide Human Health Risk

Assessor Manual (Risk Manual; USACE, 2005). This process is discussed more fully in Section 4.5 of the March 2013 Draft Groundwater RI/FS Work Plan. However, it should be noted that the presence of non-naturally occurring constituents in some of the background wells does not imply that these constituents will be eliminated from further consideration. On the contrary, only essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium), inorganic compounds that are below background levels, and chemicals that have never been detected shall be eliminated during this step.

All chemicals retained through the SRC screening will proceed through the process of identifying chemicals of potential concern (COPCs). This is the second step of the screening process and involves comparison of the maximum detected result to the most restrictive of the MCL or EPA RSL (equal to 10^{-6} and HI=0.1) for the Resident Receptor. The updated RSLs from November 2012 will be used throughout the COPC and COC screening processes for the facility-wide groundwater RI. This procedure is discussed more fully in Section 4.6.3 and Appendix E of the March 2013 Draft Groundwater RI/FS Work Plan. The Five-Year Review will be the mechanism to update the RSLs.

The final step in the process is to identify chemicals of concern (COCs) for the Feasibility Study (FS). As discussed during the February 4, 2013, meeting, determination of COCs for groundwater will comprise screening of the chemical concentrations of each COPC to RSLs for the Resident Receptor and to the updated FWCUGs of all other RVAAP-specific receptors except the Resident Farmer. (The RSLs will be used in lieu of the FWCUGs for the Resident Farmer). For carcinogens, site-specific groundwater exposure point concentrations (EPC) will be compared to the FWCUGs at a 10^{-4}, 10^{-5}, and 10^{-6} risk level. Any chemical that exceeds the 10^{-5} level will be considered a COC for the FS. For noncarcinogens, the "sum of ratios" approach outlined in the FWCUG Report will be used to identify COCs. This sum of ratios approach helps account for the potential cumulative impact of multiple chemicals that affect a similar target organ. If chemical concentrations are less than the restrictive and applicable RSLs (10^{-5} and HI=1) and FWCUGs, then these chemicals do not qualify as COCs. This screening approach is discussed in Section 4.6.6 and Appendix E of the March 2013 Draft Groundwater RI/FS Work Plan, and will be included in our next revision of the subject work plan.

Please note that the facility-wide groundwater RI will include a screen of the groundwater quality data to identify SRCs, COPCs, and COCs (as described above). This process is intended to determine if groundwater contaminants pose a risk

to groundwater use, either on the RVAAP facility or off-post. It is not the purpose of the RI to specifically screen for potable water use with the RSLs and the MCLs. Screening for potable water use is outside the scope of the CERCLA RI process, and is beyond the scope of this investigation. As previously indicated, the Army will tentatively identify those areas of the former RVAAP facility that might be considered for potable water use, based on the results of the RI study.

A summary of the key elements of the screening method were included in Section 4.1 of the Final FWGWMP Annual Report for 2012, which the Ohio EPA did not review. The following text had been added:

"A summary of the constituents detected above background levels or above reporting limits (RLs) at each of the FWGWMP wells during the 2011-12 monitoring period is discussed in the following subsections. Table 4-1 presents the COPCs at the RVAAP Facility as presented in the Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio (SAIC, March 2010) and updated based on the results of the sampling conducted over the past year.

As part of the ongoing RI for the facility-wide groundwater, detected and validated analytes from the monitoring wells will be subjected to the SRC screen. The facility-wide SRC screen will follow the general guidance of the RVAAP's Facility Wide Human Health Risk Assessor Manual (Risk Manual; USACE, 2005) with the following clarifications listed below. Note that the screening process described below is part of the RI and is not part of this annual report. The comparison of detected constituents to RSLs in this report is for the purpose of determining the need for additional assessment prior to the risk assessment process in the RI.

*1.**Background Screen** - A background screen will be used to eliminate an inorganic chemical from the facility-wide COPC list as described in the Risk Manual. Specifically, if chemical concentrations are less than the established background values, then these chemicals do not qualify as COPCs. If the chemical concentrations are equal to or greater than the background values, or there are no background values, then the chemicals qualify for further screening.*

*2.**Frequency of Detection Screen** - Because the facility-wide data set is large, chemicals meeting the <5% detection rule will not be screened out per Section 3.4.1 of the Risk Manual if they are known to be present in a single AOC (e.g., nitrate/nitrite at Load Line 12) since 5% of the large data set could represent a valid contamination issue. Chemicals that were never detected shall be eliminated as COPCs.*

*3. **Essential Nutrients** - Consistent with the Risk Manual, chemicals identified as essential nutrients will be screened out. Chemicals that are considered essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium) are an integral part of the human food supply and are often added to foods as supplements. EPA recommends that these chemicals not be evaluated as COPCs as long as they are: a) present at low concentrations (i.e., only slightly elevated above naturally occurring levels, and b) toxic at very high doses (i.e., much higher than those that could be associated with contact at an AOC).*

All chemicals that are retained during the SRC screening process will proceed through the process for identifying COPCs. On February 4, 2013, the Army and Ohio EPA agreed to identify COPCs by comparing the maximum detected result to the most restrictive EPA RSL [equal to 10^{-6} and hazard index (HI) = 0.1]. If chemical concentrations are less than the RSLs, then these chemicals do not qualify as COPCs. If the chemical concentrations are equal to or greater than the RSLs, then these chemicals qualify as COPCs unless there is evidence that a single detection is a true anomaly. Chemicals detected below the screening levels will be screened from further consideration (i.e., eliminated from the COPC list). Detected chemicals that do not have existing RSLs will not be eliminated from the COPC list in this phase of the screening.

Groundwater analytical results were compared to the USEPA RSL Summary Table (April 2012). This table was developed by the USEPA to replace the Region 9 PRGs and the Region 3 Risk Based Cleanup (RBC) table. Note that the April 2012 RSLs were in effect at the time of the sampling and analyses presented in this report. The RSLs will be updated for future quarterly reports and the ongoing RI/FS.

The RSLs (with risk factors of 10^{-5} and HI=1) and/or facility-wide cleanup goals (FWCUGs) will be used to address groundwater remedial actions. In addition, the USEPA's MCLs will be used to assist in the identification of chemicals of concern (COCs) and will serve as alternate cleanup goals for groundwater contaminants (as applicable and appropriate). The more conservative of the FWCUGs and MCLs will be used to address groundwater mitigation efforts."

14. Adequately addressed.

15. Adequately addressed.

16. Adequately addressed.

17. Adequately addressed. Note: During the February 4, 2013 FWGWMP meeting, EQM indicated that the data included in the Annual Report for 2012 is accurate.

Army Response: *This is correct.*

18. Regarding the most current RSLs to be used in submitted reports to Ohio EPA: During the February 4, 2013 FWGWMP meeting, it was discussed that one version of the RSLs would need to be designated and used throughout the Remedial Investigation/Feasibility Study (RI/FS) process. The RSLs used in the "Draft FWGWMP Annual Report for 2012" was discussed, but never agreed upon to use throughout the RI and the FS reports. The mechanism to update the RSLs to their current values in the future would be the Five-Year Review. This also was discussed, but never agreed upon. Ohio EPA is waiting for a final determination from the Army regarding this issue.

Army Response: *Refer to our response to Comment 13.*

19. Adequately addressed.

Thank you for your review of the above responses, and the identification of the issues in your letter. Please contact the undersigned at (330)358-7312 or mark.c.patterson@us.army.mil if there are issues or concerns with this response.

Sincerely,

Mark C. Patterson

Mark C. Patterson
RVAAP Facility Manager
Base Realignment and Closure

Division

Electronic/hardcopy enclosures/Attachments

cc: Nancy Zikmanis, Ohio EPA, NEDO, DERR
Ann Wood, ARNG
Brett Merkel, ARNG
Katie Tait, OHARNG Camp Ravenna
Glen Beckham, USACE Louisville
Nat Peters, USACE Louisville
Mark Nichter, USACE Louisville
Mark Patterson, RVAAP Facility Manager/Gail Harris, Vista Sciences
REIMS - attn. Pat Ryan, SAIC

ATTACHMENTS

WELL LOGS / CROSS SECTIONS

HTRW DRILLING LOG

	DISTRICT: USACE - Louisville	BOREHOLE NUMBER: LL3 MW-245
1. COMPANY NAME: EQM	2. DRILLING SUBCONTRACTOR: Frontz Drilling	SHEET 1 OF 4

3. PROJECT: RVAAP-66 RI	4. LOCATION: RVAAP 8451 State Route 5 Ravenna, OH 44266
5. NAME OF DRILLER: Joe Tetu / Aaron Mackey	6. MAKE/MODEL OF DRILL: CME 55
7. SIZES AND TYPES OF SAMPLING EQUIPMENT: 4¼" ID HSA; 2" x 24" Split Spoon; N Series Rock Core Sampler	8. BOREHOLE LOCATION: PW-7 ; LL3 road between LL3 & LL12
	9. SURFACE ELEVATION/DATUM: 478.70
	10. DRILL DATE/TIME: STARTED: 3/15/12 COMPLETED: 04/02/12
	15. DEPTH GROUNDWATER ENCOUNTERED: 10' / 16' / 35.3'
	16. DEPTH TO WATER/ELAPSED TIME AFTER BOREHOLE COMPLETION: —
12. OVERBURDEN THICKNESS: 24'	
13. DEPTH DRILLED INTO BEDROCK: 23'	17. OTHER WATER LEVEL MEASUREMENTS (INCLUDE DATE/TIME): —
14. TOTAL DEPTH OF BOREHOLE: 47'	

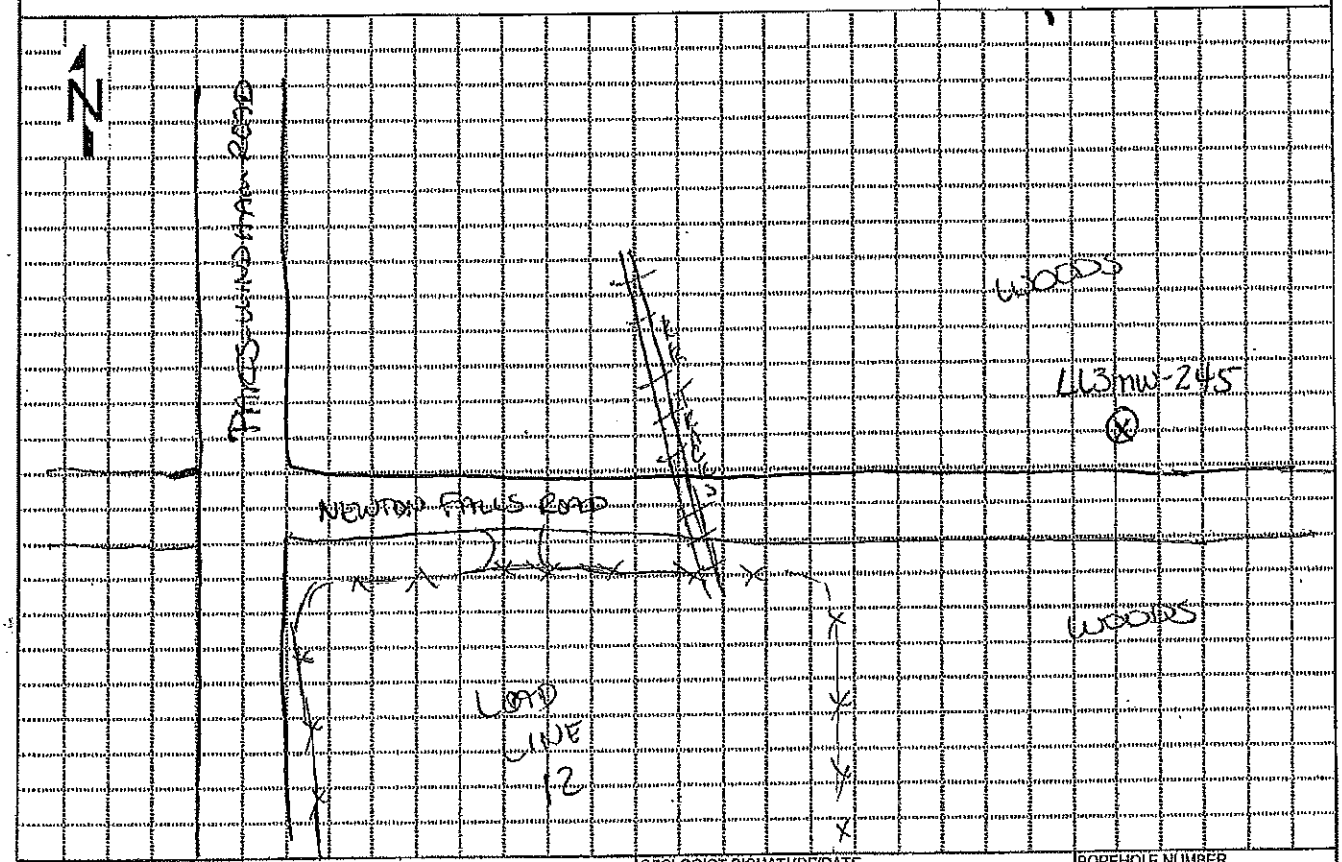
18. GEOTECHNICAL SAMPLES	UNDISTURBED:	DISTURBED: ———	19. TOTAL NUMBER OF CORE BOXES: 2
20. CHEMICAL SAMPLES	CHEM: ———	RAD: NA	OTHER: ——— 21. TOTAL CORE RECOVERY %: 84%
22. DISPOSITION OF BOREHOLE	DATE STARTED/INSTALLED: 04/02/12		DATE COMPLETED/ABANDONED: 04/02/12

BACKFILL TYPE: ☐ GROUT ☐ BENTONITE ☐ TEMPORARY WELL POINT ☑ MONITORING WELL

23. NOTES: BKG: ≤Background; BGS: Below Ground Surface; CPM: Counts per Minute; PPM: Parts per Million

▽ : First Water Encountered ▼ : Static Water Level NA: Not Applicable

LOCATION SKETCH/COMMENTS SCALE: None



PROJECT: RVAAP-66 RI	GEOLOGIST SIGNATURE/DATE: Amanda Frontz 04/02/12	BOREHOLE NUMBER: LL3 MW-245

HTRW DRILLING LOG (continued)

DISTRICT: USACE - Louisville

BOREHOLE NUMBER: LL3 MW-245

1. COMPANY NAME: EQM

2. DRILLING SUBCONTRACTOR: Fronta Drilling

SHEET 2 OF 4

3. PROJECT: RVAAP-66 RI

4. LOCATION: RVAAP 8451 State Route 5, Ravenna, OH 44266

5. NAME OF DRILLER: Joe Tetel

6. DIRECTION OF BOREHOLE: ☑ VERTICAL ☐ INCLINED DEGREES

7. NOTES: PID MAKE/MODEL: Sirius MSA; PID SERIAL#: A2-1861; WATER LEVEL MAKE/MODEL: ; WATER LEVEL SERIAL#: ; Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
	0-2		Upper 4" Silty clay topsoil, dk brn, moist, soft, roots	1-2-2-3	0	0-2 ft; 1349
			Next 11" Fill, silty clay w/ gravel, dk brn, moist, few cinders, trilly soft	R= 23/24		
	5'	CL	Remainder silty clay, brn w/ gray clay vertical fract., damp, trilly soft, few iron oxides			
	2-4	CL	Silty clay, brn w/ gray clay vertical fractures, few iron oxides, damp, mod. stiff	4-5-7-9	0	2-4 ft; 1355
	10'			R= 18/24		
	4-6	CL	Silty clay, brn w/ gray clay fractures, few small gravel, dry, U bed, stiff	6-8-10-11	0	4-6 ft; 1400
	15'			R= 24/24		
	6-8	CL	Silty clay, brn, few small gravel, dry, mod. stiff, slightly plastic; from 3-5" wet, brn, silty sand, fn-med grained	9-13-11-13	0	6-8 ft; 1405
	20'			R= 20/24		
	8-10	CL	Upper 8.5" Silty clay, brn, few small gravel, mod. stiff	8-11-13-14	0	8-10 ft; 1413
		ML	Lower 7" Silt, gray, little clay, dry, mod. stiff	R= 15.5/24		
	10-12	CL	Upper 10" Silty clay, brn w/ gray mottles, wet, soft, little sand & gravel	1-2-7-7	0	10-12 ft; 1419
	25'			R= 24/24		
		ML	Remainder Silt, gray, some clay, plastic, sticky, moist			
	12-14	ML	Clayey silt, gray, plastic, damp	7-9-11-10	0	12-14 ft; 1426
	30'			R= 21/24		

PROJECT: RVAAP-66 RI

GEOLOGIST SIGNATURE/DATE: [signature] 3/15/12

BOREHOLE NUMBER: LL3 MW-245

HTRW DRILLING LOG (continued)	DISTRICT USACE - Louisville	BOREHOLE NUMBER LL3 MW-245
1. COMPANY NAME EQM	2. DRILLING SUBCONTRACTOR Frontz Drilling	SHEET 3 OF 4

3. PROJECT RVAAP-66 RI	4. LOCATION RVAAP 8451 State Route 5 Ravenna, OH 44266
5. NAME OF DRILLER Joe Teter	6. DIRECTION OF BOREHOLE VERTICAL INCLINED DEGREES
7. NOTES PID MAKE/MODEL: Sirius MSA Amt 03/30/12 Mini RAE 2000 WATER LEVEL MAKE/MODEL: —	PID SERIAL#: A2-1861 Amt 03/30/12 110-005816 WATER LEVEL SERIAL#: —

Colors from Munsell Soil Color Chart, Rev

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.5 Feet)	MONITORING (PPM/CPM)	REMARKS (Sample IDs/Depths/Core Box/Elo.)
	14	ML	Clayey silt, gray, damp, fairly pliable, few small gravel	2-3-5-7 R=18/24	0	14-16 ft; 1433
	16 ~~35~~	ML	Clayey silt, gray, wet, pliable, fairly soft	5-7-6-6 R=24/24	0	16-18 ft; 1436
	18 ~~35~~	ML	Upper 9" As above	wt of hammer-2-3-6 R=19/24	0	18-20 ft; 1449
		SM	Next 2" Sand, gray, med-crs, some silt, wet			
		ML	Then 2" Silt, gray, wet			
		SM	Then 4" Silty sand, wet, gray, fn-crs			
		ML	Last 2" Silt, gray, wet, fairly soft			
	20 ~~35~~	SP	Upper 12" Sand, brn-gray, med-crs, wet, few small gravel, fairly loose	1-2-2-3 R=24/24	0	20-22 ft; 1458
		SM	Next 3" Silty sand, brn-gray, fn-grained, wet			
		ML	Lower 9" Clayey silt, gray, pliable, fairly soft, wet			
	22 ~~50~~	SM	Upper 2" Sand, gray, wet, med-grained, few silt	3-4-6-8 R=20/24	0	22-24 ft; 1514
		CL	Next 15" Silty clay, gray, damp, few sand & small gravel, slightly pliable			
		SH	Lower 3" Weathered shale, dk gray, damp, silty clay			
	24 ~~50~~		Upper 5" wet sand, probably carry down	8-15-27-48 R=18/24	0	24-26 ft; 1529
		SH	Remainder Weathered shale, dk gray, damp, fairly brittle, clayey, hard @ tip			
			Confirmatory split spoon;			
	28 ~~30~~	SH	5" SHALE (SH); dry; very dark gray; Somewhat brittle; Micaceous; drill to 29'	50/5		28-30 ft 03/30/12 0924
			- SET 6" casing 5' INTO BEDROCK			

PROJECT	GEOLOGIST SIGNATURE/DATE	BOREHOLE NUMBER
RVAAP-66 RI	[signature] 3/15/12 Amanda Trenton 03/30/12	LL3MW-245

HTRW DRILLING LOG (continued)

DISTRICT: USACE - Louisville

BOREHOLE NUMBER: LL3MW-245

1. COMPANY NAME: SAIC

2. DRILLING SUBCONTRACTOR: Frontz Drilling

SHEET 4 OF 4

3. PROJECT: RVAAP-66 RI

4. LOCATION: RVAAP 8451 State Route 5 Ravenna, OH 44266

5. NAME OF DRILLER: AARON MACKEY

6. DIRECTION OF BOREHOLE: (VERTICAL) INCLINED ____ DEGREES

7. NOTES: PID MAKE/MODEL: MiniRAE 2000 PID SERIAL#: 11ϕ-ϕϕ5816

WATER LEVEL MAKE/MODEL: ____ WATER LEVEL SERIAL#: ____

Colors from Munsell Soil Color Chart, Rev 2000 Rev ED.

ELEVATION	DEPTH (Feet)	USCS	CLASSIFICATION OF MATERIALS	SPT DATA (0.6 Feet)	MONITORING (PPM)/(CPM)	REMARKS (Sample IDs/Depths/Core Box/Etc.)
			(29-35.3') SHALE (SH); dry; brittle; very	29'-39'	0.0	Portion of shale
		SH	dark gray; trace gravel; few sand partings	7.2/10.0	(Ambient)	core lost
			micaceous.			CORE BOX #1
			(34.0-35.3') LESS BRITTLE			04/02/12 @ 1110
	35		(35.3'-47') SANDSTONE (SS); wet;			29'-39'
	35.3	SS	grayish white; some shale partings			7.2'/10.0'
	40			39-47	0.0	CORE BOX #2
			(41.3'-41.85') SHALE SEAM	7.85/8.0'	(Ambient)	04/02/12 @ 1235
						39'-47'
			(43.35'-43.55') SHALE			7.85'/8.0'
	45		(44.85-45.2') INTERMITTENT SHALE LENSES			
			(45.54') SHALE PARTING			
			(46.23') SHALE PARTING			
			(46.46'-46.65') SHALE; GRAVEL W/DEPTH			
			BORING TERMINATED AT 47 FT BGS			
	50					
	55					
	60					

PROJECT: RVAAP-66 RI

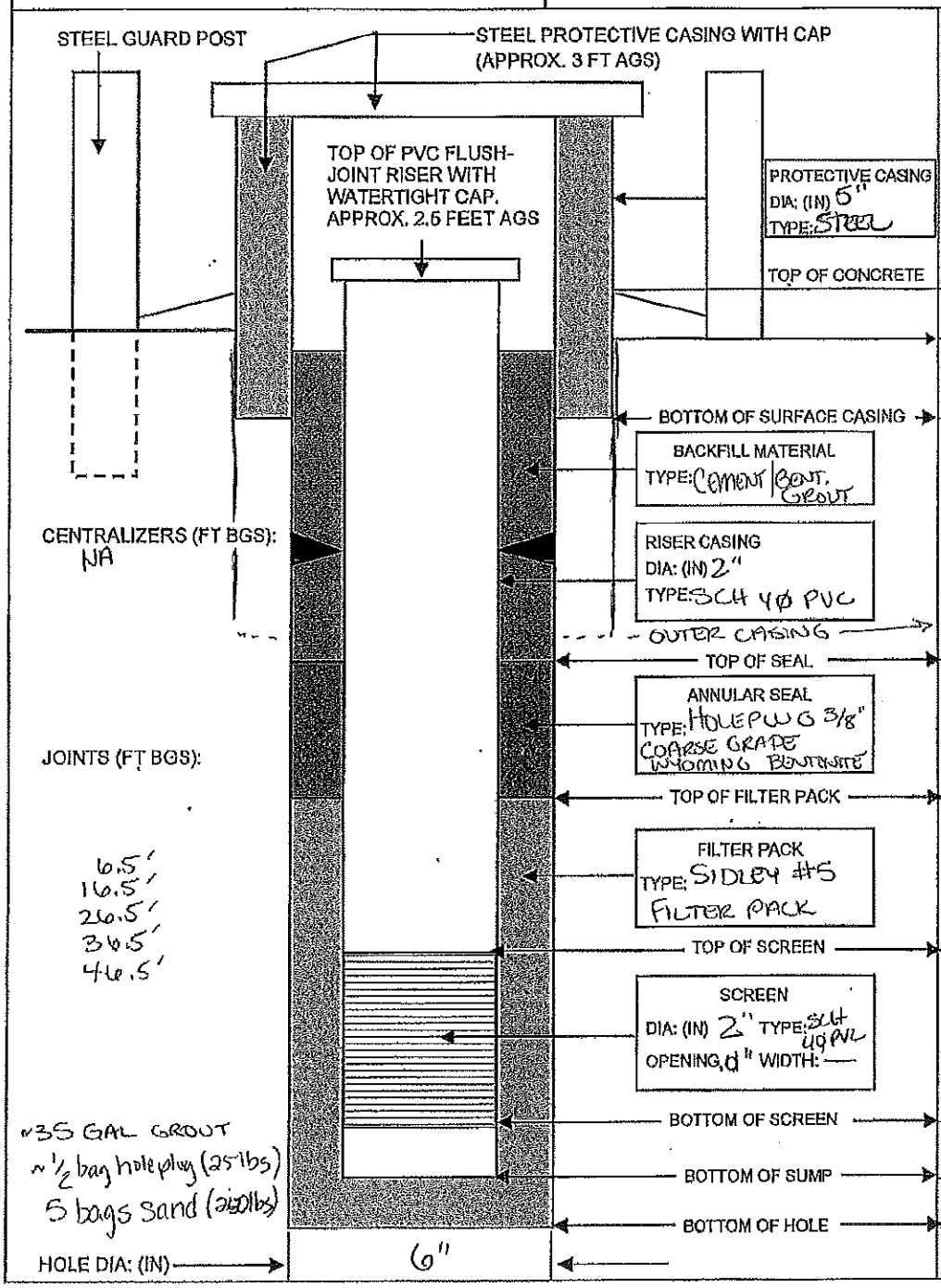
GEOLOGIST SIGNATURE/DATE: Amanda Trexler 04/02/12

BOREHOLE NUMBER: LL3MW-245

MONITORING WELL

PROJECT NAME: RVAAP-66 FWGWMP RI **PROJECT NO:** 30174.0016.001.02

WELL NUMBER: LL3mw-245	**BEGIN:** 04/02/12; 1304	**END:** 04/02/12; 1540
COORDINATES: N: 558573 E: 2369249	**REFERENCE POINT:** TOC	**ELEVATION:** MSL 981.24



DEPTH	ELEVATION
0	
5	
29'	
30	
33	
36.5	
~~3~~ 46.5	
46.7	
47	

Recorded by: Amanda Trenton 04/02/12 QA performed by: _____

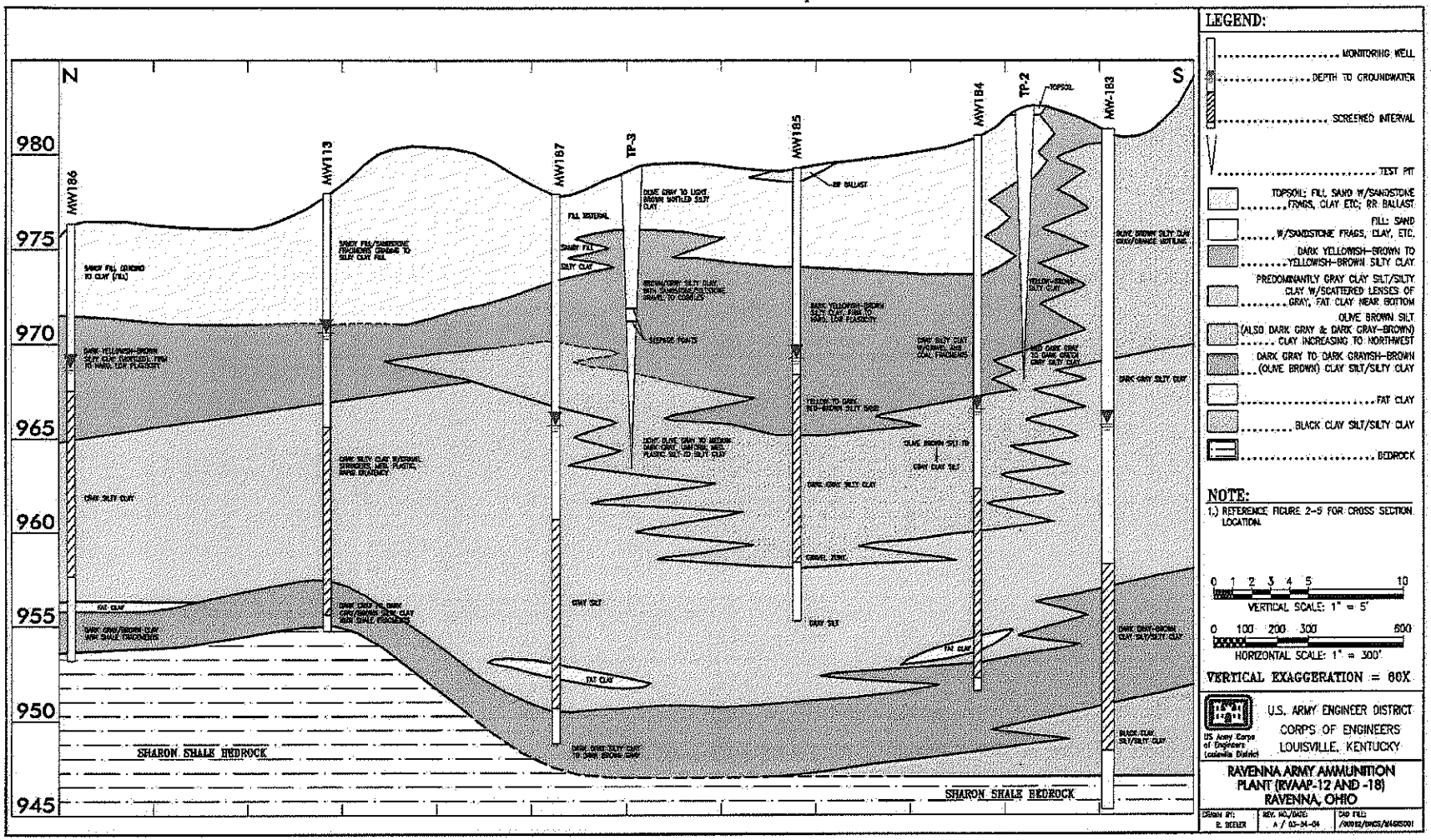


Figure 2-3. Generalized Geologic Cross Section of Unconsolidated Deposits at Load Line 12

Table 3-5. Load Line 12 Phase II RI Monitoring Well Construction Data

Well ID	Total Depth (ft bgs)	Ground Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Screened Interval (ft below top of casing)	Stratigraphy in Screened Interval
Load Line 12mw-088	29.0	978.94	981.06	14.8 to 24.8	Unconsolidated zone – silt and silty clay
Load Line 12mw-107 (converted P3)	31.0	978.03	980.15	20.7 to 30.7	Unconsolidated zone – silt and silty clay
Load Line 12mw-113	23.0	977.67	980.18	12.3 to 22.3	Unconsolidated zone – silt and silty clay
Load Line 12mw-128 (converted P5)	31.3	976.21	978.24	21.1 to 31.1	Unconsolidated zone – silt and silty clay
Load Line 12mw-153	26.0	975.34	977.85	12.3 to 22.3	Unconsolidated zone – silt and silty clay
Load Line 12mw-154 (converted P7)	29.0	977.0	979.06	16.35 to 26.35	Unconsolidated zone – silt and silty clay
Load Line 12mw-182 (converted P1)	36.1	982.2	984.42	25.2 to 35.2	Unconsolidated zone – silt and silty clay
Load Line 12mw-183 (converted P2)	36.0	980.59	982.98	23.3 to 33.3	Unconsolidated zone – silt and silty clay
Load Line 12mw-184	29.5	980.96	983.16	18.8 to 28.8	Unconsolidated zone – silt and silty clay
Load Line 12mw-185	24.0	979.09	981.31	10.8 to 20.8	Unconsolidated zone – silt and silty clay
Load Line 12mw-186	23.0	976.34	978.31	8.8 to 18.8	Unconsolidated zone – silt and silty clay
Load Line 12mw-187	29.0	977.9	979.94	17.2 to 27.2	Unconsolidated zone – silt and silty clay
Load Line 12mw-188	20.5	978.46	980.63	9.8 to 19.8	Unconsolidated zone – silt and silty clay
Load Line 12mw-189	18.5	976.17	978.04	7.5 to 17.5	Unconsolidated zone – silt and silty clay
P4	34.3	N/A	981.01	21.7 to 31.7	Unconsolidated zone – silt and silty clay
P6	34.0	N/A	978.94	20.8 to 30.7	Unconsolidated zone – silt and silty clay
P8	20.5	N/A	981.55	9.8 to 19.8	Unconsolidated zone – silt and silty clay
P9	23.5	N/A	980.30	12.8 to 22.8	Unconsolidated zone – silt and silty clay
P10	19.0	N/A	978.32	8.3 to 18.3	Unconsolidated zone – silt and silty clay

amsl = above mean sea level.
bgs = below ground surface.
N/A = not available.
RI = Remedial Investigation.

For those piezometers that were not completed as monitoring wells, the casings and screens were pulled and the borings abandoned according to the procedures presented in Section 4.3.2.5 of the Facility-wide SAP, as specified in the Phase II RI SAP Addendum.

90

HTRW DRILLING LOG

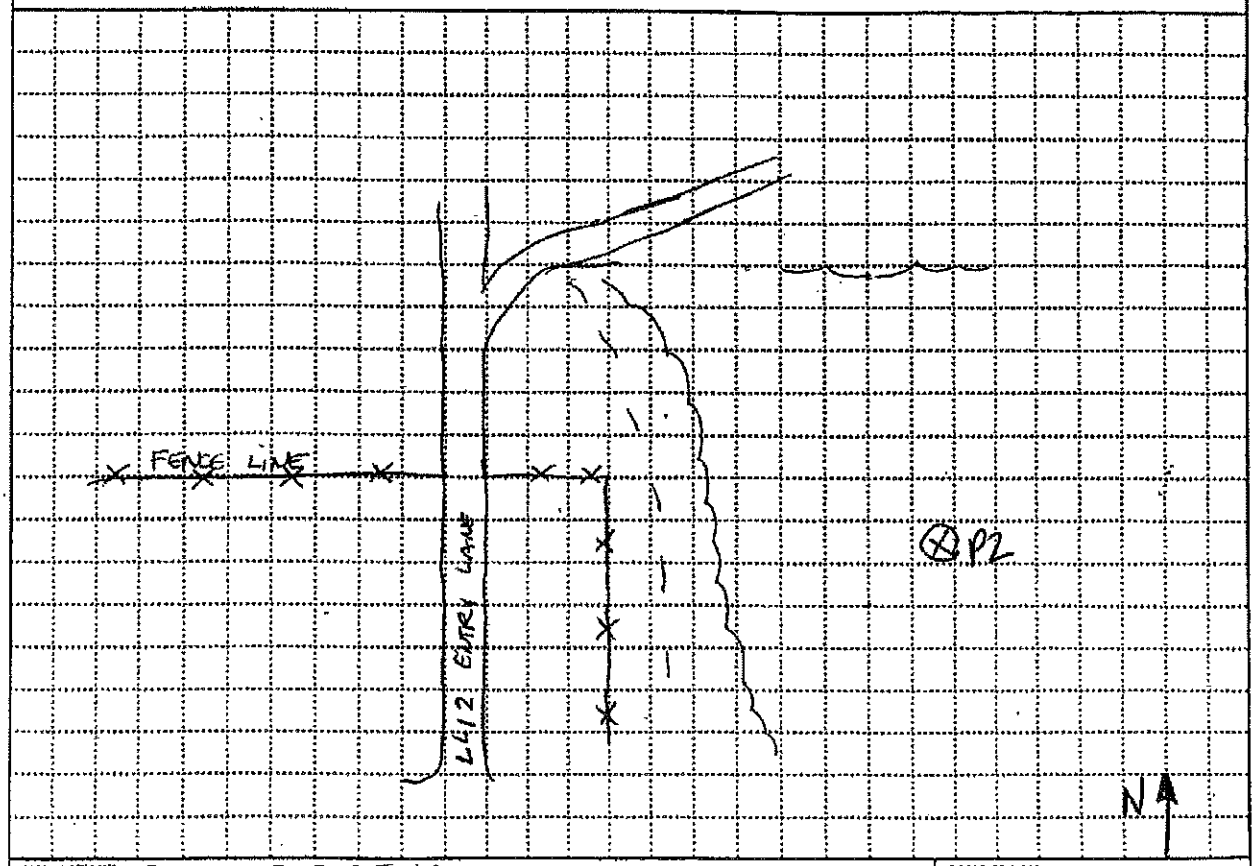
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Miller	DISTRICT: Louisville
3. PROJECT: RVAAP PH II RI LL12	4. LOCATION: LL12 RVAAP	HOLE NUMBER: P2
5. NAME OF DRILLER: Bruce Goodrich	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B61	SHEET 1 OF 5 SHEETS
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4¼" ID HSA; 2' Split Spoon Sampler; 3" Shelby Tube	8. HOLE LOCATION: LL12	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 09/28/00	11. DATE COMPLETED: 09/28/00 1906
12. OVERBURDEN THICKNESS: 34'	15. DEPTH GROUNDWATER ENCOUNTERED: 7.6'	
13. DEPTH DRILLED INTO ROCK: 2.0	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 15.55 TOC 09/29/00 0758	
14. TOTAL DEPTH OF HOLE: 36.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):	

18. GEOTECHNICAL SAMPLES (FROM OFFSET)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
Shelby Tubes		0-2.5 23.5-25.5	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
TOC Grab Samples				TOC 0-2.5 23.5-25.5		N/A

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Monitor Well		LL2 MW-183		

LOCATION SKETCH/COMMENTS — SCALE: NOT TO SCALE



PROJECT: RVAAP PH II RI LL-12 — HOLE NO.: P2

ENG FORM 5056-R, AUG 94 (Proponent CECW-EG)

DRILLING LOG

PROJECT: RVAAP LL12 RI PH II | INSPECTOR: Rick L Darr | BORING NUMBER: P2/mw183 | SHEET: 2/5

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		7.5YR 3/2 DK Brown Clay loam, root struc. MOIST, Non Plastic, blocky				ST spoon pushed. Recovery 2/2 Penetrometer: 2.25 to 0.5, >4.5 remaining
	1.0	2.5 Y 4/3 olive Brown Silty clay, orange & gray mottling 10YR5/8 & 10YR6/1, pebbles to 1/4" (fine gravel) oxidized & leached, blocky, MOIST	CL	0-2.5' SHELBY FROM OFFSET LI255-183-0619-SO		
	2.0	2.5 Y 4/4 OLIVE Brown Some gray mottling to 2.5', as above.	CL			Spoon pushed Recovery 1.9/2 Penetrometer >4.5
	3.0					
	4.0	As above; gravel to 1.5" size, oxidized & leached, Some gray Mottling	CL			Spoon pushed Recovery 1.7/2 Penetrometer >4.5
	5.0					
	6.0	As above, Some orange mottling 7.5YR 5/6 (Strong brown)	CL			Spoon pushed Recovery 1.7/2 Penetrometer >4.5
	7.0					
		Clay silt, blocky, moist, colors as above	MH			Penetrometer 2.5
	8.0	Fine clayey sand, wet-sc	SC			
		Fine sand trace clay olive Brown 2.5 Y 4/4)	SP-SC			Spoon pushed Recovery 2/2
		Silty clay small sand seam at 8.7' (1/2") wet	CL			
	9.0					
		2.5 Y 4/4 olive Brown Silty clay, trace oxidized gravel, trace Orange mottling	CL			
	10.0					

PROJECT: RVAAP LL12 RI PH II | HOLE NO: P2/mw183

DRILLING LOG

PROJECT: RVAAP LL12 RI PH II | INSPECTOR: Rick L Darer | HOLE NUMBER: P2/mw183 | SHEET: 3/5

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	11.0	Silty Clay 2.5Y 4/4 olive Brown with gray mottling 2.5Y 5/1 gravel oxidized & leached (to 1.5" size) Blocky, Non-plastic	CL			Spoon pushed Recovery 2/2 Penetrometer >4.5
	12.0	As Above				
	13.0	5Y5/1 Gray silty Clay, firm, non Plastic, some gravel, trace of leaching	CL			Spoon pushed Recovery 2/2 Penetrometer >4.5, grading to slightly over 2 at 14'
	14.0	Clay silt 5Y5/1 and 2.5Y 4/3 olive brown very moist	MH			
		As Above	MH			Spoon pushed Recovery 1.8/2 Penetrometer - 3 grading to <1 at 16'
	15.0	Gray 2.5Y 5/1 slightly Moist, grading to Saturated at 15', ~~Clay~~ Silt ~~MH~~ RD 10-3	~~MH~~ RD 10-3 ML			
	16.0	Gray ~~Clay~~ silt as above RD	~~MH~~ RD 10-3 ML			Spoon pushed Recovery 2/2 Penetrometer 1.25
	17.0					
	18.0	As Above	~~MH~~ RD 10-3 ML			Spoon pushed Recovery 2/2 Penetrometer 1.25
	19.0					
	20.0					

PROJECT: RVAAP LL12 RI PH II | HOLE NO: P2/mw183

DRILLING LOG

PROJECT: RVAAP LL12 PH II RI | DIRECTOR: Rick L Darr | HOLE NUMBER: P2/MW183 | SHEET: 4/5

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	21.0	As Above, slightly less moist	~~MH~~ ML RLD 10-3			Spoon pushed Recovery 2/2 Penetrometer: .75
	22.0	As Above, more Clay Plastic, 5Y 4/2 olive color at 24'	MH			Spoon pushed Recovery 2/2 Penetrometer .5-1: 22'-23' - 1 23'-24' - .5
	23.0					
	24.0	5Y 4/2 olive, wet sandy clay silt As Above	MH	SHELBY TUBE 23.5-25.5 FROM OFFSET L1250-183-0620-0		
	25.0	2.5Y 4/2 DK grayish brown clay silt grading to silty clay at 25', blocky, moist; sand parting at 24.9 and 25.1; gravel to 1/2" in silty clay	~~MH~~ ML RLD 10/3 CL			Spoon pushed Recovery 1.8/2 Penetrometer range: 1 at 24.5 2.75 at 25 4.5 at 25.5
	26.0	silty clay; sand parting at 26.3'; color grading from 2.5Y 4/2 to 2.5 5/1 gray, gravel (some) to 3/16" size, some leaching	CL			Spoon pushed Recovery 2/2 Penetrometer 2.5 Sand parting very moist
	28.0	2.5Y 4/2 silty clay grading to 2.5Y 4/1 dark gray. Slightly plastic, blocky, moist, some gravel.	CL			Spoon pushed Recovery 2/2 Penetrometer ranging from 1.25 to 1.75 with depth
	30.0	As Above (2.5Y 4/1 dark gray), Moist, Soft	CL			Spoon pushed Recovery 2/2
		Black 5Y 2.5/1 clay silt, very stiff, dry, crumbles.	MH			Penetrometer > 4.5
	32.0	Black silty clay with Shale fragments increasing with depth, Non Plastic	CL			Spoon pushed Recovery 17/2 Penetrometer > 4.5
	34.0					

27.0 29.0 31.0 33.0

DRILLING LOG

PROJECT	RVAAP LL12 PHII RI	DISTRICT	COLLAR NUMBER P2
			SHEET 5/5

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		Black 5Y 2.5/1 Shale, Weathered, dry. Tip of shoe wet				Spoon pushed. Recovery 1.25/2 Penetrometer >4.5
	35.0					
	36.0	T.D. 36'				

PROJECT RVAAP LL12 PHII RI D-57 HOLE NO P2/MW 183

MONITORING WELL INSTALLATION LOG

PROJECT NAME: Ravenna Load Line 12 Phase II RI **DELIVERY ORDER:** CY06

MONITORING WELL ID: P2

INSTALLATION START: DATE: 09/28/00 TIME: 1710

INSTALLATION FINISH: DATE: 09/28/00 TIME: 1906

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: DSI #1 QUANTITY: 7 X 50# BAGS

BENTONITE SEAL: TYPE: DRISOR-PLUG 3/8" QUANTITY: 1 X 50# BAGS

GROUT: TYPE: ~~#1 SAND~~ PORTLAND/BENTONITE QUANTITY: 35 gal

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.010 SLOT CONFIGURATION: MACHINE CUT

TOTAL OPEN AREA PER FOOT OF SCREEN: _____

OUTSIDE DIAMETER: 2.375" NOMINAL INSIDE DIAMETER: 2.00"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: #1 SAND

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.375" NOMINAL INSIDE DIAMETER: 2.00

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION: THREADED PVC

CENTRALIZERS DESIGN AND COMPOSITION: NA

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: ~~5"~~ 5.75" COMPOSITION: Steel

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

_____

_____

_____

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [X] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [X] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [ ] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 5GAL DI POURED ON PELLETS

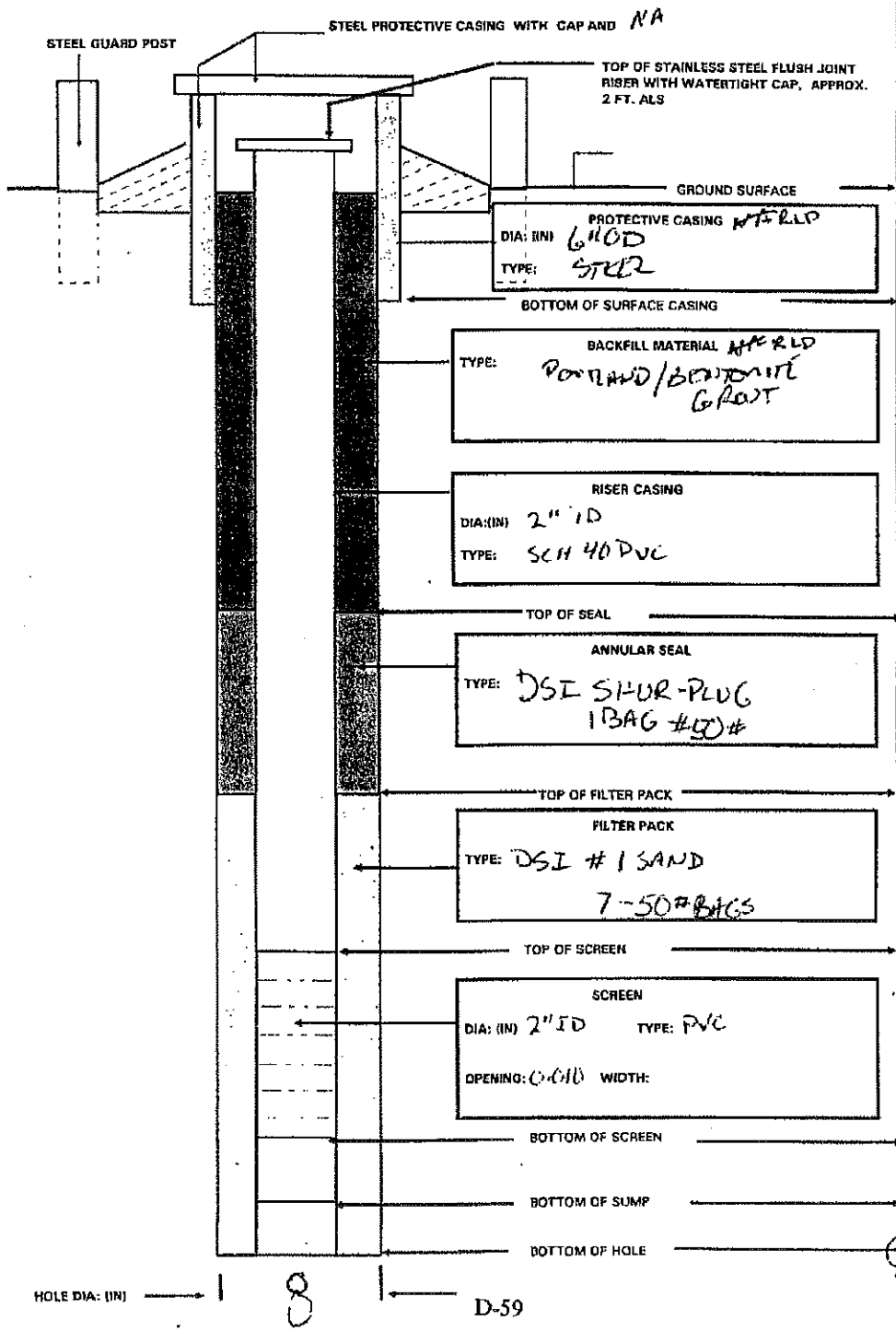
RECORDED BY: _____ 09/29/00
(Signature & Date)

QA CHECK BY: _____ 10-18-00
(Signature & Date)

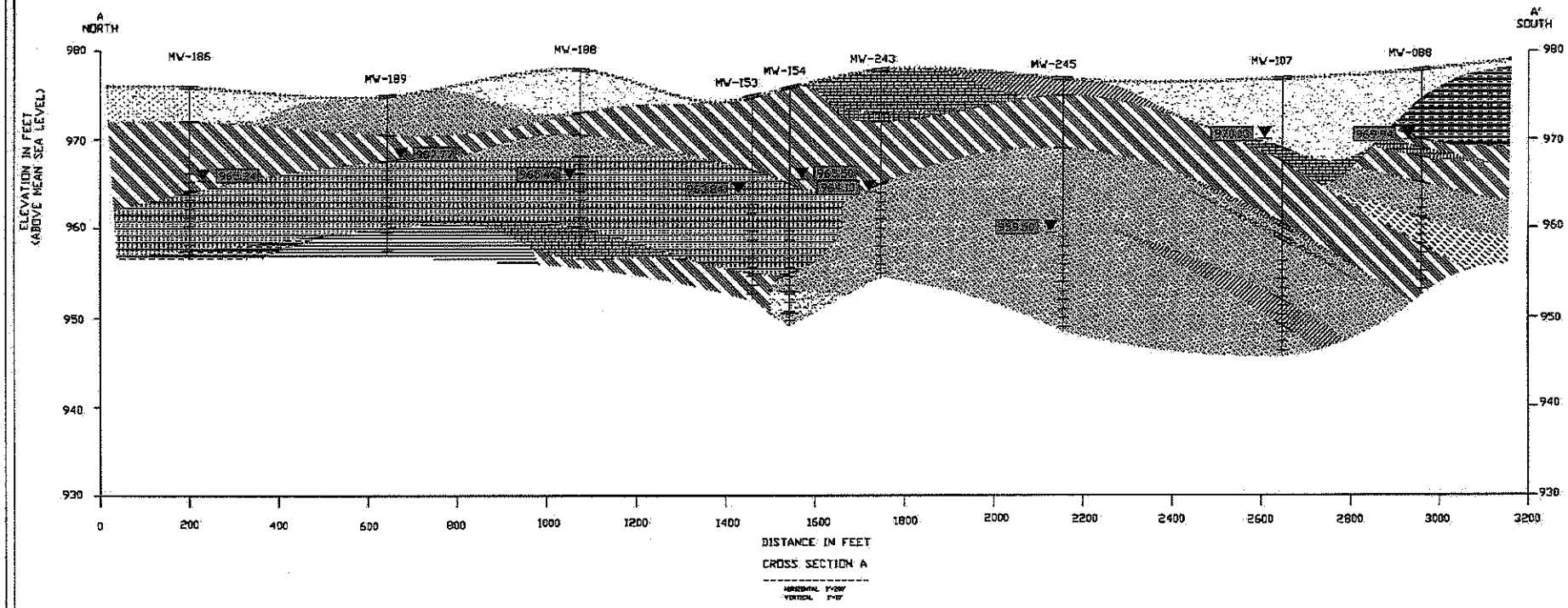
MONITORING WELL

PROJECT NAME: Ravenna Load Line 1-2 Phase II RI **DELIVERY ORDER NO:** CY06

WELL NUMBER: P 2 (LU2-HW-183)	**BEGIN:** 09/28/00 1710	**END:** 09/28/ 1906
COORDINATES: N: 556067.67 E: 2369225 SRA 3/22/01	**REFERENCE POINT:** brass cap TOC	**ELEVATION:** 980.59 983.04



DEPTH	ELEV
0	
5	
17.4	
20.0	
23.3	
33.3	
33.6	
36.4/34' 2" SPOON HOLE	



VERTICAL EXAGGERATION = 10X

LEGEND

TOP SOIL | SAND STONE | SAND & GRAVEL | CLAYEY SAND | SAND | GROUNDWATER ELEVATION (Ft)

SILTY SAND | CLAYEY SILT | SILT | CLAY | SCREEN INTERVAL | KNOWN SUBSURFACE SOIL CONDITIONS

SANDY SILT | SILTY CLAY | SANDY CLAY | SHALE | DEPTH GROUNDWATER ENCOUNTERED | EXPECTED SUBSURFACE SOIL CONDITIONS

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
			05/25/06	MS

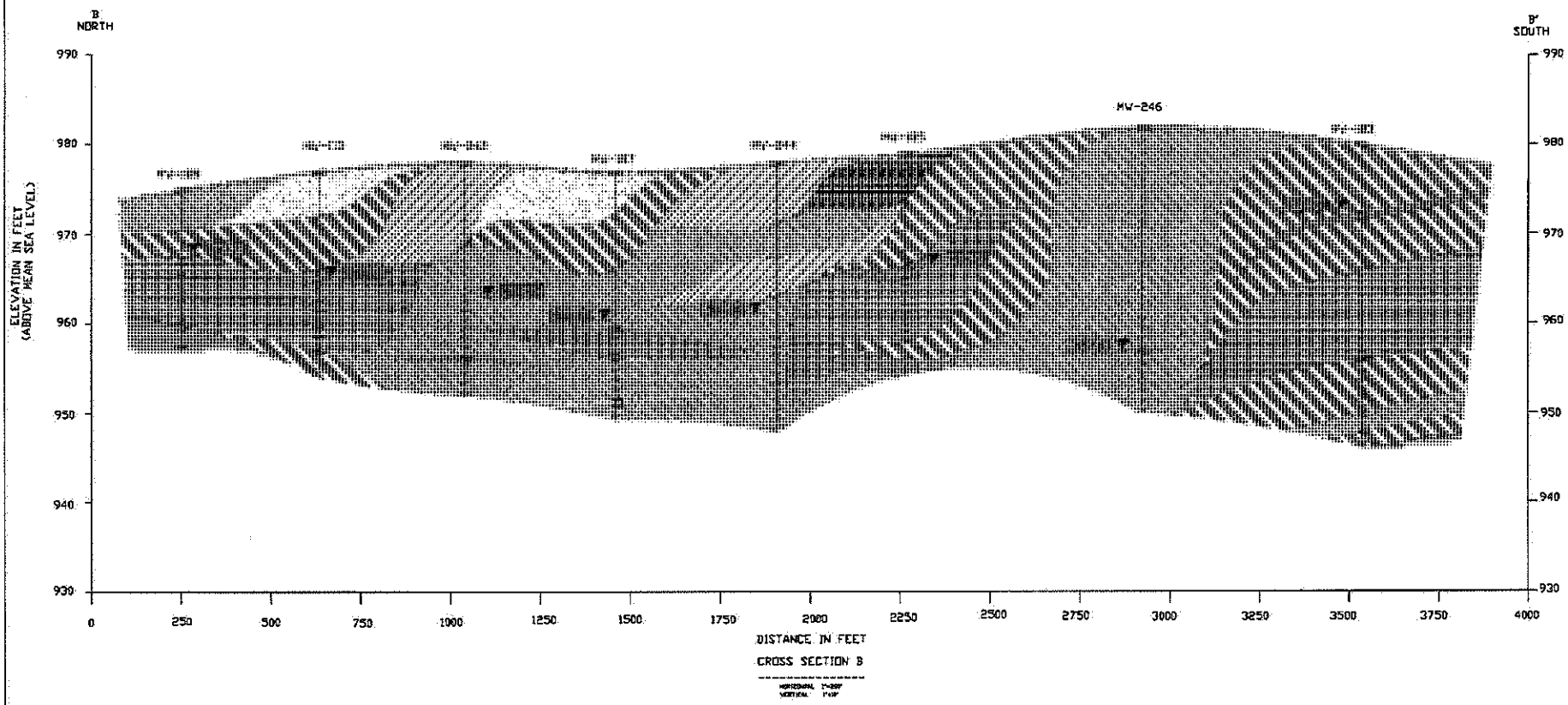
MKM ENGINEERS, INC.

DATE DRAWN 03/18/05

FIGURE LL12-2
LOAD LINE 12 GEOLOGIC CROSS SECTION
GEOLOGIC CROSS SECTION A
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO

SIZE	PROJECT NO.	DWG NO.	REV
D		LL12-2	

DRAWN BY	ST	APPR. BY	SRL



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
			05/25/06	MS

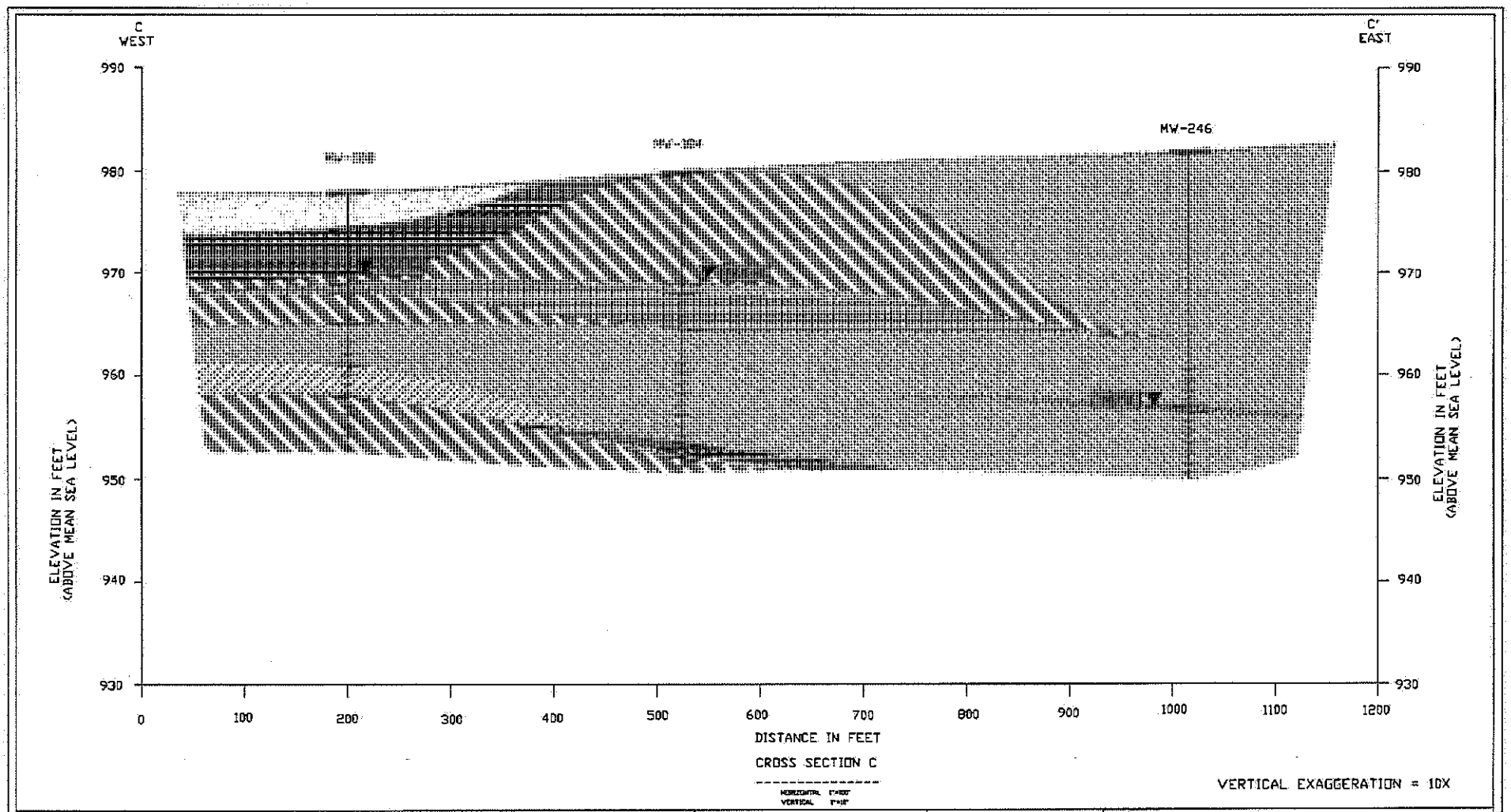
MKM ENGINEERS, INC.

DATE DRAWN 03/18/05

FIGURE LL12-3
LOAD LINE 12 GEOLOGIC CROSS SECTION
GEOLOGIC CROSS SECTION B
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO

SIZE	PROJECT NO.	DWG NO.	REV
D		LL12-3	

DRAWN BY	ST	APPR. BY	SRL



LEGEND

TOP SOIL | SAND STONE | SAND & GRAVEL | CLAYEY SAND | SAND | GROUNDWATER ELEVATION (Ft)

SILTY SAND | CLAYEY SILT | SILT | CLAY | SCREEN INTERVAL | KNOWN SUBSURFACE SOIL CONDITIONS

SANDY SILT | SILTY CLAY | SANDY CLAY | SHALE | DEPTH GROUNDWATER ENCOUNTERED | EXPECTED SUBSURFACE SOIL CONDITIONS

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
			05/25/05	MS

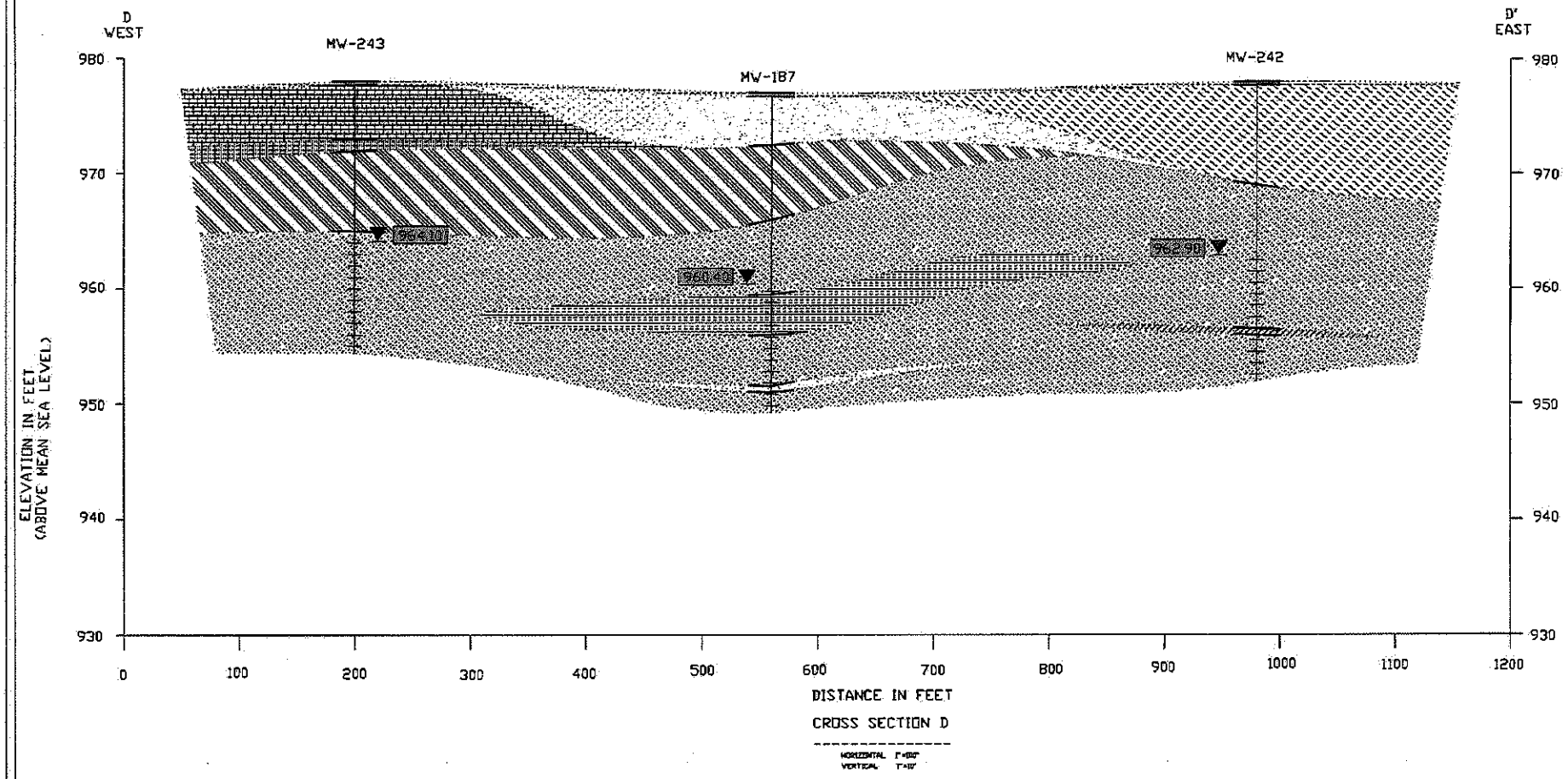
MKM ENGINEERS, INC.

DATE DRAWN 03/18/05

FIGURE LL12-4
LOAD LINE 12 GEOLOGIC CROSS SECTION
GEOLOGIC CROSS SECTION C
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO

SIZE	PROJECT NO.	DWG NO.	REV
D		LL12-4	

DRAWN BY	ST	APPR. BY	SRL



LEGEND

TOP SOIL | SAND STONE | SAND & GRAVEL | CLAYEY SAND | SAND | GROUNDWATER ELEVATION (Ft)

SILTY SAND | CLAYEY SILT | SILT | CLAY | SCREEN INTERVAL | KNOWN SUBSURFACE SOIL CONDITIONS

SANDY SILT | SILTY CLAY | SANDY CLAY | SHALE | DEPTH GROUNDWATER ENCOUNTERED | EXPECTED SUBSURFACE SOIL CONDITIONS

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
			05/25/06	MS

MKM ENGINEERS, INC.

DATE DRAWN 03/18/05

FIGURE LL12-5
LOAD LINE 12 GEOLOGIC CROSS SECTION
GEOLOGIC CROSS SECTION D
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO

SIZE	PROJECT NO.	DWG NO.	REV
D		LL12-5	

DRAWN BY	ST	APPR. BY	SRL

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

June 24, 2013

RE: RAVENNA ARMY AMMUNITION PLANT, PORTAGE/TRUMBULL COUNTIES, FWGWMP, RESPONSE TO OHIO EPA COMMENT LETTER RE: THE FINAL ANNUAL REPORT FOR 2012 DATED MARCH 20, 2013 (# 267-000859-036)

Mr. Mark Patterson
Installation Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

CERTIFIED MAIL
7012 1010 0002 2260 4381

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) received the "Ravenna Army Ammunition Plant, Portage/Trumbull Counties, FWGWMP, Response to Ohio EPA Comments included in the Final Annual report for 2012" document. It was received at Ohio EPA's NEDO on May 8, 2013 and is dated May 6, 2013. The May 6 document is in response to Ohio EPA's comment letter, dated April 2, 2013 (the Final Annual Report is dated March 20, 2012).

The first "Responses to Ohio EPA Comments" (in response to Ohio EPA's letter, dated January 15, 2013) were included in Appendix K of the Final Report. Ohio EPA reviewed the responses before beginning the review on the "Final" report and determined that there were multiple responses to Ohio EPA's comments that had not been adequately addressed. Since there were still outstanding issues with Ohio EPA's comments, Ohio EPA did not review the "Final" report, because the unresolved issues may require a "Revised Final" report submittal.

Specific issues Ohio EPA had with the potentiometric surface maps in the Draft Final Report submittal were resolved based on Comments submitted by Ohio EPA, dated April 22 and April 25, 2013. The final revised maps must be provided for inclusion in the Final Report before approval of the report.

The Annual Report summarizes the results of the October 2011, January, April, and July 2012 sampling events completed under the FWGWMP. Additional activities included installation of 38 monitoring wells, well maintenance, and preparation of potentiometric surface maps.

Included in the annual report is the recommendations section, which specifies goals and identifies activities yet to be completed. The goals and the activities are broad and conceptual in nature. Defining the path forward from the conceptual to the finite has not been defined or discussed. Some of the unresolved issues were identified in Ohio EPA's comment letter, dated January 15, 2013, to the Army.

E-MAILED 06-26-2013 RMH

Scanned By: RMH Date: 06-26-2013

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 06-26-2013

Ohio EPA Comments:

The following are Ohio EPA's comments in response to the Army's response, dated May 6, 2013, to Ohio EPA's comment letter, dated April 2, 2013. The numbers correspond to the same number as the original response provided in Appendix K of the document:

1. Adequately addressed.

2. Adequately addressed.

3. Adequately addressed.

4. Adequately addressed.

5. Adequately addressed, but final maps must be submitted with the Revised Final version of the Annual Report.

6. Adequately addressed.

7. Adequately addressed.

8. Adequately addressed.

9. Adequately addressed.

10. Adequately addressed.

11. Adequately addressed.

12. Adequately addressed.

13. The screening method stated in the response is different than the agreed upon method from the February 4, 2013 meeting for FWGWMP. The use of MCLs and elimination of the background values would eliminate the discrepancies regarding the background wells that have been stated in previous reports. Please revise this comment and provide the screening method that was agreed upon at the February 4, 2013 meeting.

The document states the RSLs from November 2012 will be used throughout the compounds of potential concern (COPC) and chemicals of potential concern (COC) screening processes for the facility-wide ground water Remedial Investigation (RI); however, in another portion of the document the opposite is stated. Extension deadlines only increase more changes to the RSL database. Please clarify. Ohio EPA suggests the use of the most recent RSLs be used when the Army is actually ready to screen the data.

Paragraph 5: This paragraph should be revised to state that both carcinogens and non-carcinogens should have a multiple chemical evaluation. This paragraph indicates that only non-carcinogens will include a sum of ratios step. Ohio EPA's Division of Environmental Response and Revitalization (DERR) risk goal is set at a cumulative 1E-5 excess lifetime cancer risk; therefore, an evaluation should be conducted to ensure that carcinogenic compounds in ground water meet the cumulative excess lifetime cancer risk goal of 1E-5. See:

http://epa.ohio.gov/portals/30/rules/HH%20Cumulative%20Carc%20Risk%20and%20Non-Carc%20Hazard%20Goals.pdf

Comment 13 provides information provided from the Army related to data screening and risk assessment interpretations. Ohio EPA commented in broad terms on issues such as "background," "RSLs," and "cancer risk goals." As of this writing, Ohio EPA and the USACE are negotiating Risk Assessment methodologies. The results of those discussions will supersede any comments made in response to this question 13. Specific risk assessment decisions will be made globally based on Ohio EPA and USACE agreements and not in this Annual Report.

The above-comments and concerns first need to be resolved and approved by Ohio EPA. Based upon the resolution of the comments, a "Revised Final" report determination should be made by the Army. Depending on this outcome, Ohio EPA will review and approve/disapprove the "Final" or "Revised Final" Annual Report for 2012.

Pursuant to the June 14, 2004 Director's Final Findings and Orders (DFFOs), Ohio EPA has prepared this notice of deficiency documenting Ohio EPA's disapproval of the Draft Annual Report for 2012.

Pursuant to the DFFOs, Paragraph 41, and this notification, the "Respondent shall within thirty (30) days from the date of actual receipt of the disapproval, correct the deficiencies and submit" revised page(s) to Ohio EPA for approval. "This time limitation may be extended by mutual written agreement of the Project Managers.' The revised submission shall incorporate all of the uncontested changes, additions, and/or deletions specified by Ohio EPA in its notice of deficiency."

Paragraph 42 of the DFFOs provides for a meeting request by the Respondent to discuss and clarify issues. The DFFOs state, "...the meeting shall commence within fifteen (15) days of the close of the comment period" and again can be extended by mutual written agreement of the Project Managers. Please let Ohio EPA's Environmental Supervisor, Nancy Zikmanis, know if the Army wants to request a meeting.

Pursuant to the CERCLA process, the property owner usually can provide the expected land use to assist in ensuring the investigation addresses all receptors for both current and future land uses. However, it is the understanding of Ohio EPA that the end use for groundwater has not yet been finalized. Therefore, please be advised that future modifications may be required by Ohio EPA to address incompatible land uses with the findings of this report.

Please call me at (330) 963-1160 if you wish to schedule a conference call.

Sincerely,

Nancy Zikmanis, CHMM
Environmental Supervisor
Division of Environmental Response and Revitalization

KP:NZ/kss

cc: Ann Wood, NGB
Cullen Grasty, USACE

ec: Eileen Mohr, Ohio EPA, NEDO, DERR
Vicki Deppisch, Ohio EPA, NEDO, DERR
Al Muller, Ohio EPA, NEDO, DDAGW
Justin Burke, Ohio EPA, CO, DERR
Kevin Palombo, Ohio EPA, NEDO, DERR
Brian Tucker, Ohio EPA, CO, DERR
Nancy Zikmanis, Ohio EPA, NEDO, DERR

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

MARK PATTERSON
RAVENNA ARMY AMMUNITION PLANT
8451 STATE ROUTE 5
RAVENNA OH 44266

COMPLETE THIS SECTION ON DELIVERY

A. Signature
x Rebecca Haney ☒ Agent ☐ Addressee

B. Received by (Printed Name) Rebecca Haney C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number 7012 1010 0002 2260 4381 (06/24/13 K.Schillo for KP)
(Transfer from service label)

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

OHIO EPA
NORTHEAST DISTRICT OFFICE
2110 EAST AURORA ROAD
TWINSBURG OH 44087

COPY

Comment Response Table
Army Responses to Ohio EPA Comment Letter Dated June 24, 2013, Regarding:
Notice of Deficiency
Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Final Annual Report for 2012

Comment Number	Page or Sheet	New Page or Sheet	Comment	Response
5			Adequately addressed, but final maps must be submitted with the Revised Final version of the Annual Report.	Agreed.
13			The screening method stated in the response is different than the agreed upon method from the February 4, 2013 meeting for FWGWMP. The use of MCLs and elimination of the background values would eliminate the discrepancies regarding the background wells that have been stated in previous reports. Please revise this comment and provide the screening method that was agreed upon at the February 4, 2013 meeting. The document states the RSLs from November 2012 will be used throughout the compounds of potential concern (COPC) and chemicals of potential concern (COC) screening processes for the facility-wide ground water Remedial Investigation (RI); however, in another portion of the document the opposite is stated. Extension deadlines only increase more changes to the RSL database. Please clarify. Ohio EPA suggests the use of the most recent RSLs be used when the Army is actually ready to screen the data.	Agreed. The language will be changed to state: "*The most recent published RSLs will be used at the time the* when the data is screened."

Comment Response Table
Army Responses to Ohio EPA Comment Letter Dated June 24, 2013, Regarding:
Notice of Deficiency
Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Final Annual Report for 2012

Comment Number	Page or Sheet	New Page or Sheet	Comment	Response
13 (Paragraph 5)			This paragraph should be revised to state that both carcinogens and noncarcinogens should have a multiple chemical evaluation. This paragraph indicates that only noncarcinogens will include a sum of ratios step. Ohio EPA's Division of Environmental Response and Revitalization (DERR) risk goal is set at a cumulative 1E-5 excess lifetime cancer risk; therefore, an evaluation should be conducted to ensure that carcinogenic compounds in ground water meet the cumulative excess lifetime cancer risk goal of 1E-5. See: http://epa.ohio.qov/portals/30/rules/HH%20Cumulative%20Carc%20Risk%20and%20Non-Carc%20Hazard%20Goals.pdf.	Agreed, the text will be revised to state that both carcinogens and noncarcinogens will undergo a multiple chemical evaluation.
13			Comment 13 provides information provided from the Army related to data screening and risk assessment interpretations. Ohio EPA commented in broad terms on issues such as "background," "RSLs," and "cancer risk goals." As of this writing, Ohio EPA and the USACE are negotiating Risk Assessment methodologies. The results of those discussions will supersede any comments made in response to this question 13. Specific risk assessment decisions will be made globally based on	The decisions agreed upon relating to the Risk Assessment methods may affect the 2012 Annual Report. At the September 12, 2013 meeting between the Ohio EPA and the Army, it was agreed upon to note that *negotiations concerning the risk assessment methods are ongoing, and the results of the negotiations will result in revisions to the risk process*. This language will be inserted into Section 4 of the 2012 Annual Report. The text of Section 4 will also be changed as follows in order to mirror the current RI/FS Work Plan text. The text below will be inserted into Section 4.1

Comment Response Table
Army Responses to Ohio EPA Comment Letter Dated June 24, 2013, Regarding:
Notice of Deficiency
Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Final Annual Report for 2012

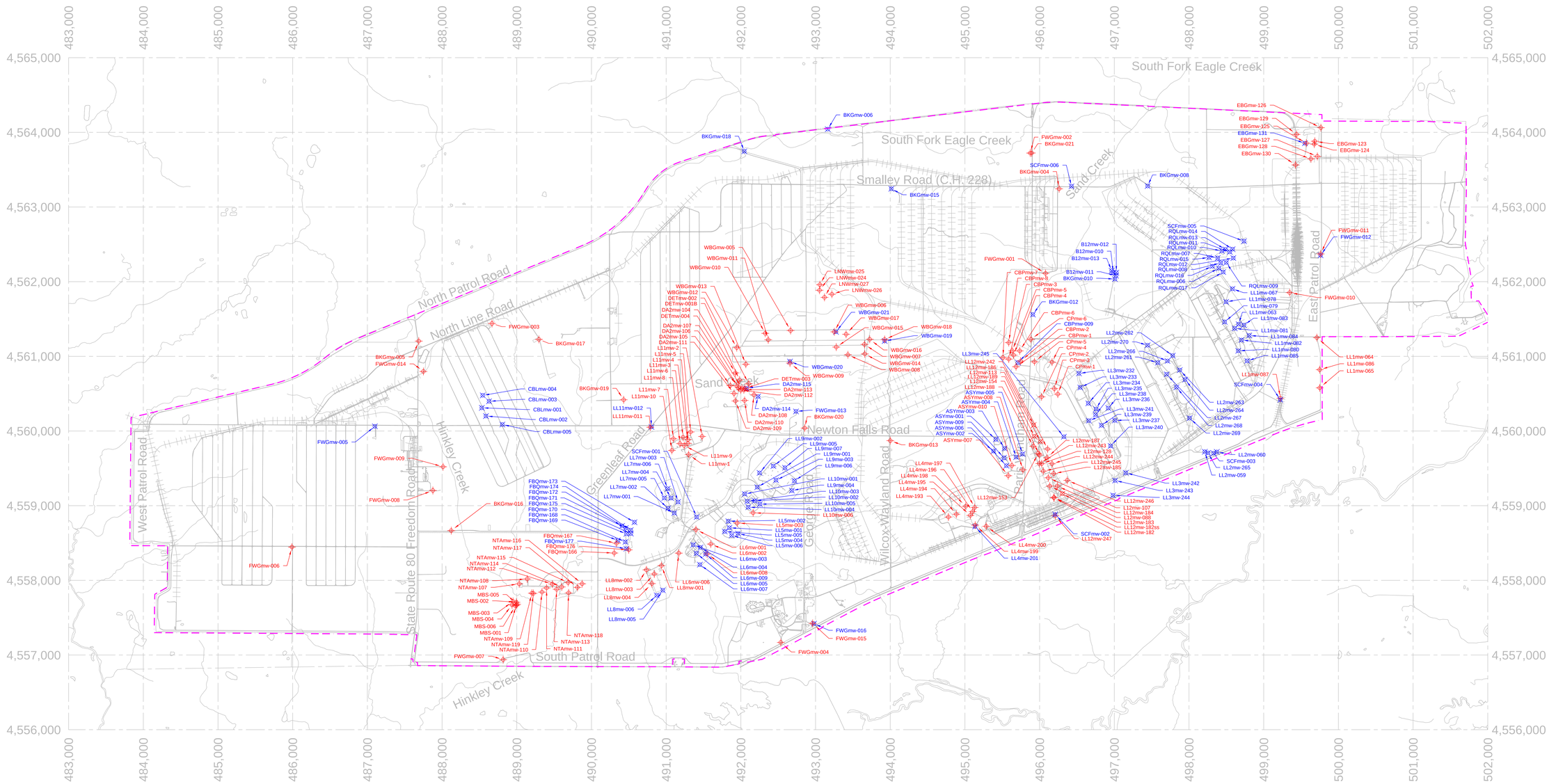
Comment Number	Page or Sheet	New Page or Sheet	Comment	Response
			Ohio EPA and USACE agreements and not in this Annual Report.	*Step 1. The lower portion of the Sharon formation is considered a potential potable source of groundwater beneath RVAAP.* *Step 2. Under the SRC screening step, detected and validated analytes collected between October 2006 through January 2013 from the new and existing monitoring wells will be evaluated relative to background concentrations, essential nutrients, and frequency of detection. This process follows the general guidance of the RVAAP's Facility Wide Human Health Risk Assessor Manual (Risk Manual; USACE, 2005). This process is discussed more fully in Section 4.5 of the RI/FS Work Plan. However, it should be noted that the presence of non-naturally occurring constituents in some of the background wells does not imply that these constituents will be eliminated from further consideration. Only essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorous, and sodium), inorganic compounds that are below background levels, and chemicals that have never been detected shall be eliminated during this step.* *Step 3. All chemicals retained through the SRC screening will proceed through the process of identifying chemicals of potential concern (COPCs). This is the second step of the screening process and involves comparison of the maximum detected result to the most restrictive of the MCL (or Secondary MCL) or USEPA RSL (equal to 10^{-6} and HI=0.1) for*

Comment Response Table
Army Responses to Ohio EPA Comment Letter Dated June 24, 2013, Regarding:
Notice of Deficiency
Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Final Annual Report for 2012

Comment Number	Page or Sheet	New Page or Sheet	Comment	Response
				the Resident Receptor. As discussed at the February 4 meeting, the updated RSLs in effect at the time of the COPC evaluation will be used going forward in the screening process for the facility-wide groundwater RI. This procedure is discussed more fully in Section 4.6.3 and Appendix E of the RI/FS Work Plan. The Five-Year Review would be the mechanism to update the RSLs. *Step 4. The final step in the process is to identify chemicals of concern (COCs) for the Feasibility Study (FS). As discussed during the February 4, 2013, meeting, determination of COCs for groundwater will comprise screening of the chemical concentrations of each COPC to MCLs and RSLs for the Resident Receptor and to the updated FWCUGs of National Guard Trainee. (). For, site-specific groundwater exposure point concentrations (EPC) will be compared to the FWCUGs at 10^{-5} risk leve for carcinogens and HQ = 1.0 for non-carcinogens. Any chemical whose EPC exceeds the 10^{-5} level or 1.0 for non-carcinogenic risks level will be considered a COC for the FS. In addition, all COPCs are subjected to a "Sum of Ratios" (SORs) evaluation to address potential additive effects from exposure to multiple carcinogens. For noncarcinogens, the SOR approach outlined in the FWCUG Report will be used to identify COCs. This SOR approach helps account for the potential cumulative impact of multiple chemicals that affect a similar target organ. If chemical concentrations are*

Comment Response Table
Army Responses to Ohio EPA Comment Letter Dated June 24, 2013, Regarding:
Notice of Deficiency
Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Final Annual Report for 2012

Comment Number	Page or Sheet	New Page or Sheet	Comment	Response
				less than the restrictive and applicable USEPA RSLs (10^{-5} and HI = 1) and FWCUGs, then these chemicals do not qualify as COCs.



LEGEND

- WELL COMPLETED IN UNCONSOLIDATED MATERIAL
- WELL COMPLETED IN BEDROCK
- PROPERTY LINE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED

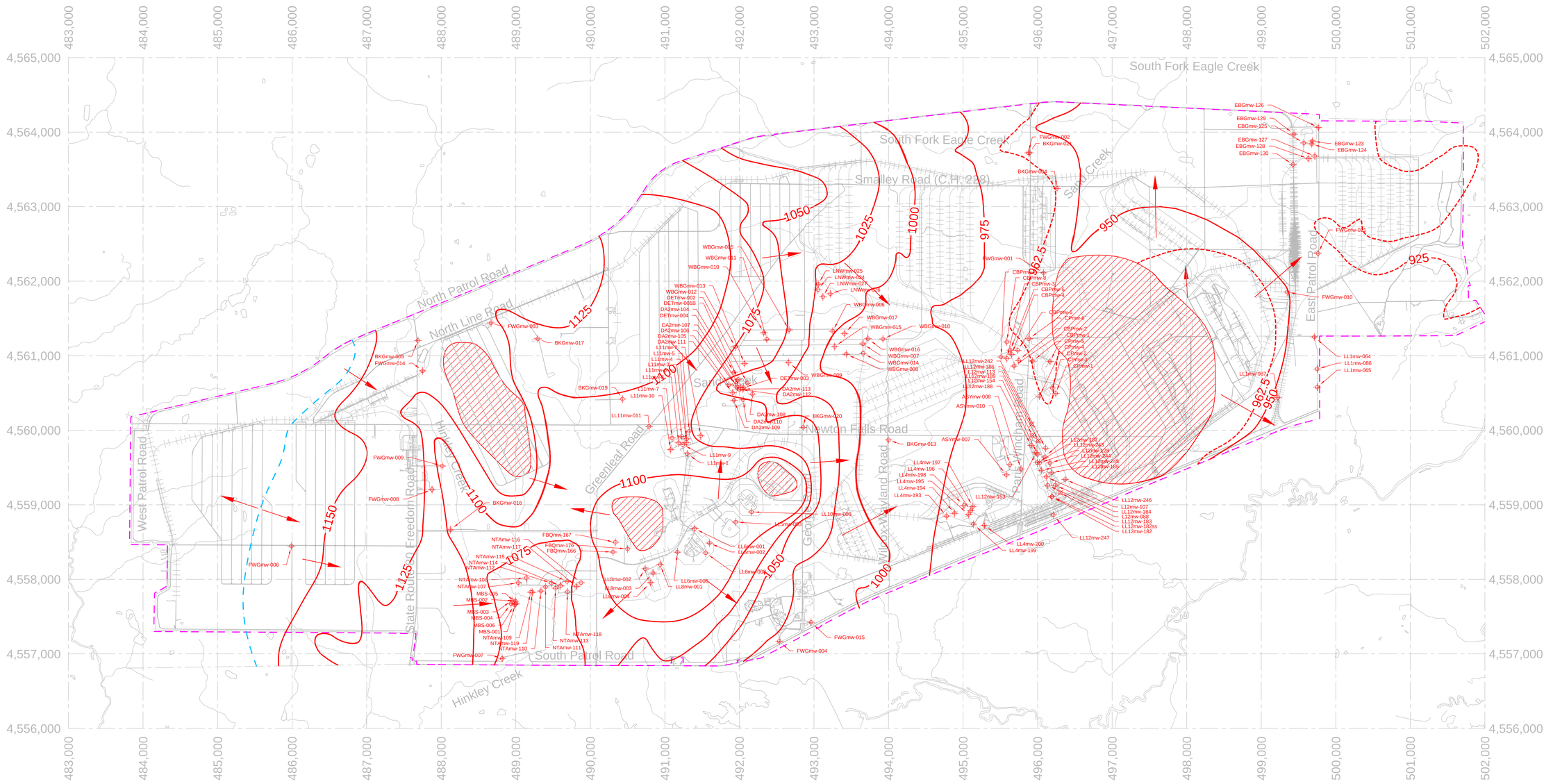
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	01-29-2013
CHECKED	S. SPESSHARDT	01-31-2013
APPROVED	J. MILLER	01-31-2013
SCALE:	AS SHOWN	

MONITORING WELLS
AT RVAAP

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 1	0



RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
Load Line 1	LL1mw-064	931.78
	LL1mw-065	930.39
	LL1mw-086	930.71
	LL1mw-087	927.83
Load Line 4	LL4mw-193	974.53
	LL4mw-194	973.03
	LL4mw-195	970.45
	LL4mw-196	970.43
	LL4mw-197	970.52
	LL4mw-198	972.18
	LL4mw-199	969.33
	LL4mw-200	969.80
Load Line 5	LL5mw-003	1106.82
Load Line 6	LL6mw-001	1109.14
	LL6mw-002	1106.98
	LL6mw-006	1108.71
	LL6mw-008	1107.39
Load Line 8	LL8mw-001	1108.28
	LL8mw-002	1104.28
	LL8mw-003	1104.39
	LL8mw-004	1102.56
Load Line 10	LL10mw-006	1109.82
Load Line 11	LL11mw-001	1086.66
	LL11mw-002	1074.51
	LL11mw-003	1083.39
	LL11mw-004	1081.76
	LL11mw-005	1068.90
	LL11mw-006	1077.86
	LL11mw-007	1065.80
	LL11mw-008	1081.85
	LL11mw-009	1084.84
	LL11mw-010	1075.00
	LL11mw-011	1070.90

RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
Load Line 12	LL12mw-088	973.70
	LL12mw-107	970.16
	LL12mw-113	971.55
	LL12mw-128	968.11
	LL12mw-153	970.72
	LL12mw-154	969.43
	LL12mw-182	973.01
	LL12mw-182rs	973.65
	LL12mw-183	969.73
	LL12mw-184	970.06
	LL12mw-185	972.92
	LL12mw-186	969.42
	LL12mw-187	968.99
	LL12mw-188	973.10
	LL12mw-189	968.70
	LL12mw-242	970.46
	LL12mw-243	971.37
	LL12mw-244	969.35
	LL12mw-245	973.68
	LL12mw-246	967.86
	LL12mw-247	977.46
Atlas Scrap Yard	ASYmw-007	968.96
	ASYmw-008	971.16
	ASYmw-010	968.39
Central Burn Pits	CBPmw-001	962.36
	CBPmw-002	961.32
	CBPmw-003	961.15
	CBPmw-004	959.54
	CBPmw-005	956.77
	CBPmw-006	958.99
	CBPmw-007	959.47
	CBPmw-008	956.48
Cobbs Pond	CPmw-001	968.32
	CPmw-002	967.32
	CPmw-003	967.32
	CPmw-004	967.82
	CPmw-005	961.60
	CPmw-006	955.97

RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
Demolition Area 2	DETmw-0018	1041.36
	DETmw-002	1028.38
	DETmw-003	1026.99
	DETmw-004	1027.76
	DA2mw-104	1052.18
	DA2mw-105	1040.92
	DA2mw-106	1034.01
	DA2mw-107	1031.77
	DA2mw-108	1025.36
	DA2mw-109	1054.80
	DA2mw-110	1051.99
	DA2mw-111	1033.75
	DA2mw-112	1029.29
	DA2mw-113	1028.32
Erie Burning Grounds	EBGmw-123	937.39
	EBGmw-124	937.10
	EBGmw-125	936.91
	EBGmw-126	937.72
	EBGmw-127	937.46
	EBGmw-128	936.99
	EBGmw-129	937.01
	EBGmw-130	936.22
Fuze and Booster Quarry	FBQmw-166	1101.81
	FBQmw-167	1109.39
	FBQmw-176	1121.55
Landfill North of Winklepeck	LNWmw-024	1024.02
	LNWmw-025	1023.15
	LNWmw-026	1014.96
	LNWmw-027	1018.38

RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
NACA Test Area	NTAmw-107	1067.38
	NTAmw-108	1067.70
	NTAmw-109	1067.31
	NTAmw-110	1067.71
	NTAmw-111	1072.78
	NTAmw-112	1068.69
	NTAmw-113	1067.88
	NTAmw-114	1070.97
	NTAmw-115	1073.62
	NTAmw-116	1085.77
	NTAmw-117	1077.89
	NTAmw-118	1071.05
	NTAmw-119	1067.17
Winklepeck Burning Grounds	WBGmw-005	1046.94
	WBGmw-006	1004.87
	WBGmw-007	982.20
	WBGmw-008	992.23
	WBGmw-009	1032.35
	WBGmw-010	1060.46
	WBGmw-011	1060.43
	WBGmw-012	1056.72
	WBGmw-013	1059.76
	WBGmw-014	979.29
	WBGmw-015	967.35
	WBGmw-016	978.83
	WBGmw-017	987.28
	WBGmw-018	969.75

RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
Suspected Mustard Agent Burial Site	MBSmw-001	1064.24
	MBSmw-002	1064.73
	MBSmw-003	1065.61
	MBSmw-004	1064.86
	MBSmw-005	1064.23
	MBSmw-006	1064.19
Facilitywide	FWGmw-001	946.02
	FWGmw-002	949.10
	FWGmw-003	1124.98
	FWGmw-004	1020.74
	FWGmw-006	1174.08
	FWGmw-007	1051.22
	FWGmw-008	1102.64
	FWGmw-009	1099.05
	FWGmw-010	949.96
	FWGmw-011	937.13
	FWGmw-014	1131.39
	FWGmw-015	1005.77
Background	BKGmw-004	953.86
	BKGmw-005	1137.27
	BKGmw-013	976.40
	BKGmw-016	1092.63
	BKGmw-017	1114.45
	BKGmw-019	1090.05
	BKGmw-020	1055.03
	BKGmw-021	959.32

LEGEND

- UNCONSOLIDATED WELL
- PROPERTY LINE
- 1100 LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl) [DASHED WHERE INFERRED]
- GROUNDWATER DIRECTION
- UNCONSOLIDATED AQUIFER MISSING
- INFERRED GROUNDWATER DIVIDE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED
2	REVISED PER OEPA COMMENTS	MAY 2013	JM
1	REVISED PER OEPA COMMENTS	MARCH 2013	JM

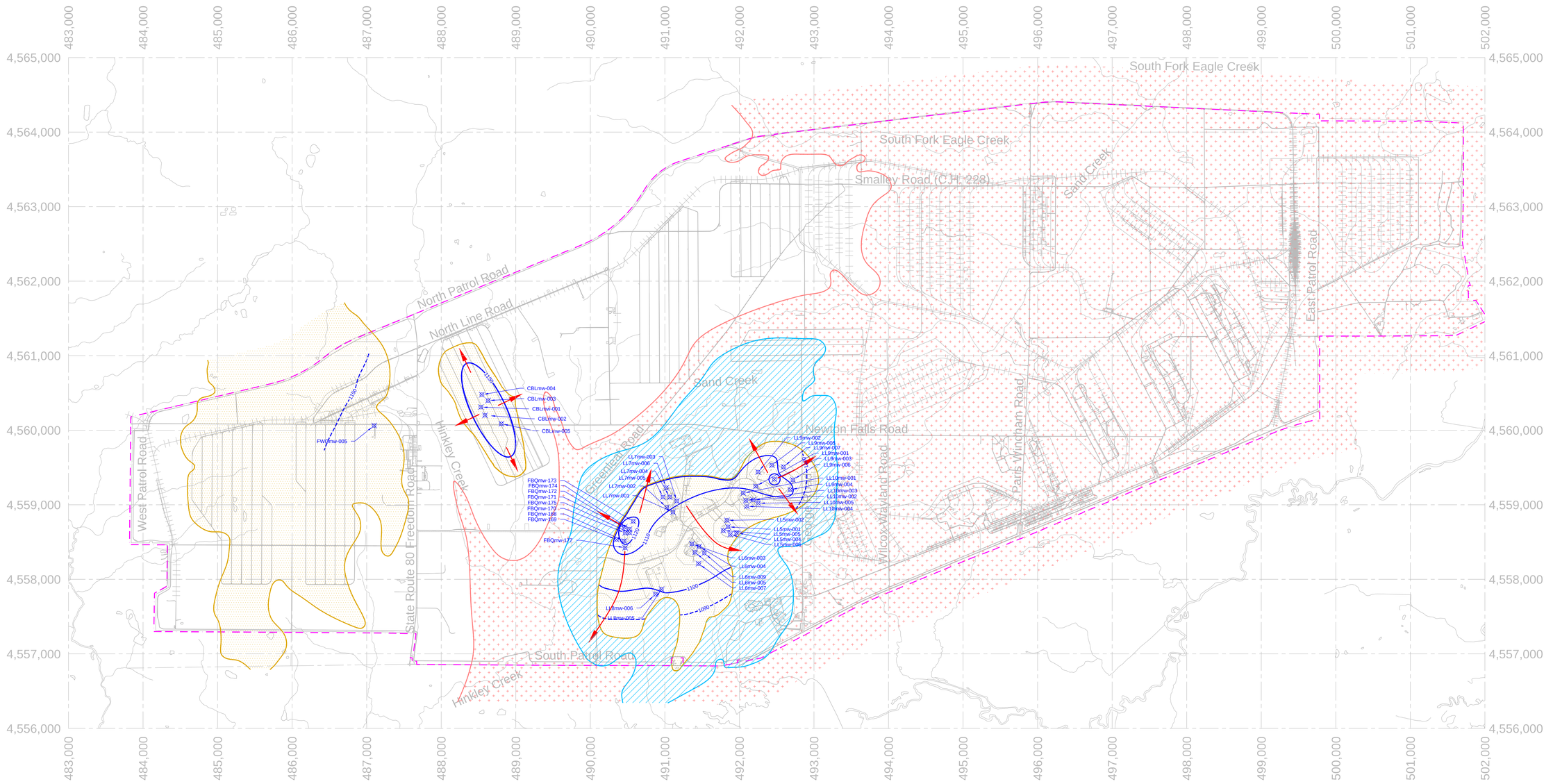
REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	01-29-2013
CHECKED	S. SPESSHARDT	01-31-2013
APPROVED	J. MILLER	01-31-2013
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF UNCONSOLIDATED AQUIFER (JULY 2012)

SIZE	PROJECT NO.	DWG. NO.	REV
E	030174.0016	PLATE 2	2



RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
Load Line 5	LL5mw-001	1106.50
	LL5mw-002	1106.51
	LL5mw-004	1106.43
	LL5mw-005	1106.50
	LL5mw-006	1106.47
Load Line 6	LL6mw-003	1107.92
	LL6mw-004	1107.09
	LL6mw-005	1107.24
	LL6mw-007	1106.83
	LL6mw-009	1107.43
Load Line 7	LL7mw-001	1107.81
	LL7mw-002	1111.40
	LL7mw-003	1107.99
	LL7mw-004	1111.09
	LL7mw-005	1112.88
	LL7mw-006	1110.63
Load Line 8	LL8mw-005	1100.67
	LL8mw-006	1096.18
Load Line 9	LL9mw-001	1117.70
	LL9mw-002	1112.11
	LL9mw-003	1121.47
	LL9mw-004	1110.14
	LL9mw-005	1112.95
	LL9mw-006	1109.52
	LL9mw-007	1109.16
Load Line 10	LL10mw-001	1107.54
	LL10mw-002	1106.42
	LL10mw-003	1108.66
	LL10mw-004	1107.78
	LL10mw-005	1106.90

RVAAP Area	Well ID	Potentiometric Elevation July 2012 (ft, amsl)
C-Block Quarry	CBLmw-001	1138.05
	CBLmw-002	1137.58
	CBLmw-003	1138.89
	CBLmw-004	1138.82
	CBLmw-005	1133.78
Fuze and Booster Quarry	FBQmw-168	1121.11
	FBQmw-169	1111.71
	FBQmw-170	1122.87
	FBQmw-171	1123.27
	FBQmw-172	1122.57
	FBQmw-173	1122.87
	FBQmw-174	1122.33
	FBQmw-175	1122.30
	FBQmw-177	1113.55
Facilitywide	FWGmw-005	1147.75

NOTES

1. BEDROCK GEOLOGY ADOPTED FROM "GEOLOGY AND GROUND-WATER RESOURCES OF PORTAGE COUNTY, OHIO" (WINSLOW AND WHITE, 1966). NOT ALL LITHOLOGIC UNITS ARE PRESENTED.

LEGEND

- HOMEWOOD MEMBER WELL
- PROPERTY LINE
- 1100 / 1030 — LINE OF EQUAL GROUNDWATER ELEVATION (ft.,amsl) (INTERMEDIATE DASHED)
- GROUNDWATER DIRECTION
- HOMEWOOD MEMBER
- SHARON MEMBER
- SHARON SHALE

N

0 500 1000

SCALE (METERS)

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED
2	REVISED PER OEPA COMMENTS	MAY 2013	JM
1	REVISED PER OEPA COMMENTS	MARCH 2013	JM

REVISIONS

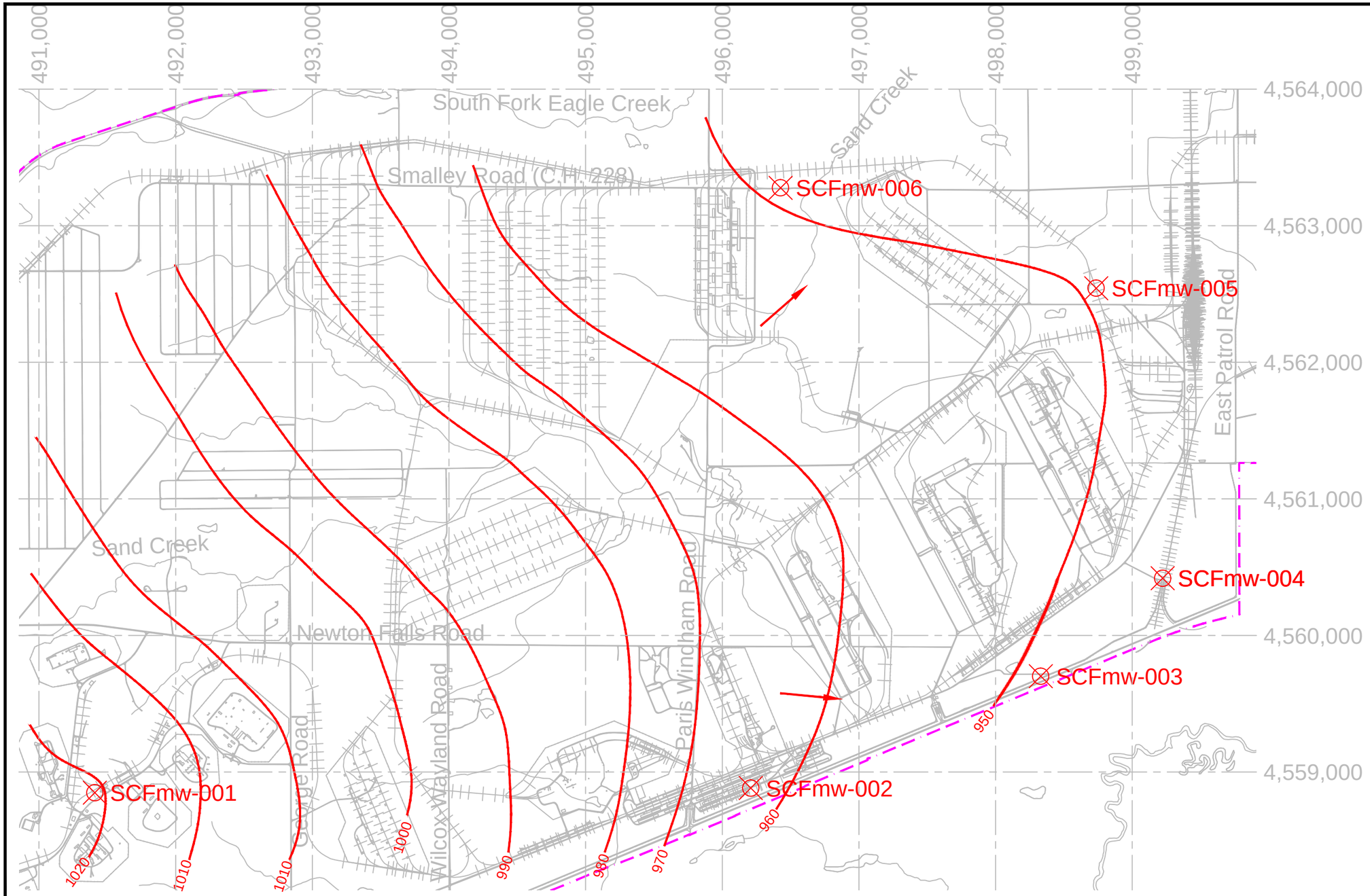
ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD., CINCINNATI, OHIO 45240
PHONE 513.825.7500 | FAX 513.825.7495
WWW.EQM.COM

DRAWN	R. RUSSELL	01-29-2013
CHECKED	S. SPESSHARDT	01-31-2013
APPROVED	J. MILLER	01-31-2013
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF HOMEWOOD (JULY 2012)

SIZE	PROJECT NO.	DWG NO.	REV
E	030174.0016	PLATE 3	2


483,000
484,000
485,000
486,000
487,000
488,000
489,000
490,000
491,000
492,000
493,000
494,000
495,000
496,000
497,000
498,000
499,000
500,000
501,000
502,000
4,565,000
4,564,000
4,563,000
4,562,000
4,561,000
4,560,000
4,559,000
4,558,000
4,557,000
4,556,000
South Fork Eagle Creek
Smalley Road (C.H. 228)
North Patrol Road
North Line Road
West Patrol Road
Hinkley Creek
State Route 82
Freedom Road
Greenleaf Road
Sand Creek
Newton Falls Road
George Road
Wilcox-Maitland Road
Paris Windham Road
East Patrol Road
South Patrol Road
BKGmw-018
BKGmw-006
BKGmw-015
EBGmw-131
BKGmw-008
WBGmw-021
WBGmw-019
WBGmw-020
WBGmw-013
OAXmw-114
LL11mw-012
CBPmw-009
LL3mw-245
ASYmw-005
ASYmw-004
ASYmw-003
ASYmw-001
ASYmw-009
ASYmw-006
ASYmw-002
B12mw-012
B12mw-010
B12mw-013
B12mw-011
BKGmw-010
BKGmw-012
RQLmw-014
RQLmw-013
RQLmw-011
RQLmw-010
RQLmw-007
RQLmw-015
RQLmw-012
RQLmw-008
RQLmw-019
RQLmw-006
RQLmw-017
RQLmw-009
LL11mw-077
LL11mw-078
LL11mw-079
LL11mw-080
LL11mw-083
LL11mw-081
LL11mw-084
LL11mw-082
LL11mw-086
LL11mw-085
LL2mw-262
LL2mw-270
LL2mw-266
LL2mw-261
LL3mw-232
LL3mw-233
LL3mw-234
LL3mw-235
LL3mw-236
LL3mw-238
LL3mw-239
LL3mw-241
LL3mw-239
LL3mw-237
LL3mw-240
LL2mw-263
LL2mw-264
LL2mw-267
LL2mw-268
LL2mw-269
LL2mw-060
LL2mw-265
LL2mw-059
LL3mw-242
LL3mw-243
LL3mw-244
LL4mw-201
FWGmw-016
1025
1000
975
1000
1025
1000
975
1000
1025
1000
1025
1000
1025



SHARON CONGLOMERATE WELLS

Well ID	Elevation (ft, amsl)
SCFmw-001	1031.20
SCFmw-002	966.28
SCFmw-003	949.98
SCFmw-004	943.72
SCFmw-005	948.99
SCFmw-006	947.56

N

0 500 1000

SCALE (METERS)

LEGEND

PROPERTY LINE

980 LINE OF EQUAL GROUNDWATER ELEVATION (ft,amsl)

GROUNDWATER DIRECTION

MONITORING WELL

COORDINATE SYSTEM UTM NAD 83 ZONE 17

REV	DESCRIPTION	DATE	APPROVED
1	REVISIONS PER OEPA COMMENTS	MARCH 2013	JM

REVISIONS

ENVIRONMENTAL QUALITY MANAGEMENT, INC.
1800 CARILLON BLVD.
CINCINNATI, OHIO 45240
P (513)825-7500
F (513)825-7495

DRAWN	R. RUSSELL	01-29-2013
CHECKED	S. SPESSHARDT	01-31-2013
APPROVED	J. MILLER	01-31-2013
SCALE:	AS SHOWN	

POTENTIOMETRIC SURFACE OF SHARON CONGLOMERATE (JULY 2012)

ORIGINAL SIZE	PROJECT NO.	DWG NO.	REV
B	30174.0016.001	PLATE 5	1