



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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May 30, 2013

Commander,
Radford Army Ammunition Plant
Attn: SJMRF-OP-EQ (Jim McKenna)
P.O. Box 2
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Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems, Inc.
Radford Army Ammunition Plant
114 Peppers Ferry Road, P.O. Box 1
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VIA Electronic Mail

Re: Radford Army Ammunition Plant, Radford, Virginia
Solid Waste Management Unit 40
SWMU 40 Draft Final LTM Report

Dear Mr. McKenna and Mr. Stewart:

The U.S. Environmental Protection Agency and Virginia Department of Environmental Quality have reviewed the U.S. Army's Solid Waste Management Unit 40, Landfill Nitro Area Long Term Monitoring Report (Report), located at the Radford Army Ammunition Plant (RFAAP) in Radford, Virginia. Based upon our review, there are no comments, and in accordance with Part II. (E)(5)(a) of RFAAP's Corrective Action Permit, the Report is considered final. If you have any questions, please call me at 215-814-3284.

Sincerely,

A handwritten signature in cursive script that reads "Erich Weissbart".

Erich Weissbart, P.G.
RCRA Project Manager
Office of Remediation (3LC20)

c: James Cutler, VDEQ

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April 25, 2013

Mr. Erich Weissbart
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Mr. James L. Cutler, Jr.
Virginia Department of Environmental Quality
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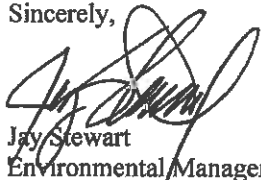
**Subject: With Certification, SWMU 40 (RAAP-009), Landfill Nitro Area, Annual Long Term Monitoring Report,
Draft Final, April 2013
EPA ID# VA1 210020730**

Dear Mr. Weissbart and Mr. Cutler:

Enclosed is the certification for the subject documents that were sent to you on April 25, 2013. Also enclosed is the April 25, 2013 transmittal email.

Please coordinate with and provide any questions or comments to myself at 540 639 7785 or Mr. Jim McKenna, ACO Staff at 540 731 5782.

Sincerely,



Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems Inc.

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J. McKenna, ACO Staff
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Coordination:

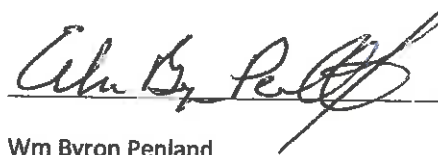

J. McKenna

Concerning the following:

Radford Army Ammunition Plant
Solid Waste Management Unit 40 (RAAP-009)
Landfill Nitro Area
Annual Long Term Monitoring Report
Draft Final, April 2013

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE:

 8 MAY 2013

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TITLE:

Lieutenant Colonel, US Army
Commanding

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 7 MAY '13

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Rochotte; Davie, Robert N.
Subject: RFAAP SWMU 40 Draft Final LTM Report FedEx Shipping Numbers (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

All:

Note the contractor will ship the subject document with a copy of this email to the POCs and tracking numbers below. Certification will follow by separate letter. Note this plan contains recommendations for future sampling that we anticipate approval. With the next sampling event planned for June 2013 it would greatly appreciated if review and action on this report could be expedited.

Jim McKenna - 2 hard Copies each w/CD - 7996 0311 6344

Tom Meyer - 1 Hard Copy w/CD - 7996 0317 7460

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Susan Ryan - 1 CD - Shipping together with Rich Mendoza's copy

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Thank you for your support of the Radford Army Ammunition Plant Installation Restoration Program.

Jim McKenna

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Classification: UNCLASSIFIED

Caveats: FOUO

RADFORD ARMY AMMUNITION PLANT
RADFORD, VIRGINIA

Performance Based Acquisition
Solid Waste Management Unit 40 (RAAP-009)
Landfill Nitro Area
Annual Long Term Monitoring Report

DRAFT FINAL
April 2013

PREPARED BY:



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Contract No. W912DY-10-D-0027
Delivery Order Number: DA01

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**PERFORMANCE BASED ACQUISITION
INTERIM MEASURES COMPLETION REPORT
TABLE OF CONTENTS**

Section	Page
1.0 INTRODUCTION	1
1.1 Background	1
1.1.1 Site Description	1
1.1.2 Site History	2
1.2 Corrective Measures Objectives.....	3
1.3 Project Objectives	3
2.0 LONG TERM MONITORING AND MAINTENANCE.....	4
2.1 Long Term Monitoring Plan.....	4
2.2 Long Term Inspection and Maintenance Plan	5
2.3 Groundwater Sampling.....	6
2.4 Data Evaluation	6
2.4.1 SVOC.....	6
2.4.2 SVOC PAH.....	6
2.4.3 VOC.....	7
2.4.4 Metals	7
2.4.5 Perchlorate	8
2.4.6 Pesticides	8
2.4.7 Dioxins/Furans.....	8
3.0 CONCLUSIONS.....	9
3.1 Groundwater Statistics	10
4.0 REFERENCES	12

**PERFORMANCE BASED ACQUISITION
INTERIM MEASURES COMPLETION REPORT
TABLE OF CONTENTS
(CONTINUED)**

LIST OF FIGURES

Figure 1 - Site Location Map

Figure 2 - SWMU 40, RAAP-009 Site Layout

**PERFORMANCE BASED ACQUISITION
INTERIM MEASURES COMPLETION REPORT
TABLE OF CONTENTS
(CONTINUED)**

LIST OF TABLES

Table 1 - SVOC Analytical Year 1 LTM

Table 2 - SVOC PAH Analytical Year 1 LTM

Table 3 - VOC Analytical Year 1 LTM

Table 4 - Metals Analytical Year 1 LTM

Table 5 - Perchlorate Analytical Year 1 LTM

Table 6 - Pesticide Analytical Year 1 LTM

Table 7 - Dioxin and Furan Analytical Year 1 LTM

Table 8 - Year 2 LTM Analyte List

PERFORMANCE BASED ACQUISITION

**INTERIM MEASURES COMPLETION REPORT
TABLE OF CONTENTS
(CONTINUED)**

LIST OF APPENDICES

Appendix A – Inspection Sheets and Site Photographs

Appendix B – Field Documentation (CD-ROM)

Appendix C – Potentiometric Maps

Appendix D – Laboratory Reports and Data Validation Reports (CD-ROM)

Appendix E – Analytical Data Tables (CD-ROM)

Appendix F – Schedule

**PERFORMANCE BASED ACQUISITION
INTERIM MEASURES COMPLETION REPORT
TABLE OF CONTENTS
(CONTINUED)**

LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
CMOs	Corrective Measures Objectives
COC	Constituent of Concern
COPC	Constituent of Potential Concern
CSL	Carcinogenic Screening Level
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
ECs	Engineering Controls
ICs	Institutional Controls
IM	Interim Measures
IMCR	Interim Measures Completion Report
IMWP	Interim Measures Work Plan
IRP	Installation Restoration Program
KM	Kaplan-Meyer
KEMRON	KEMRON Environmental Services, Inc.
LOD	Limit of Detection
LOQs	Limits of Quantitation
LTM	Long Term Monitoring
MMA	Main Manufacturing Area
NRU	New River Unit
NTP	Notice to Proceed
OCDD	Octachlorodibenzodioxin
PAHs	Polycyclic Aromatic Hydrocarbons
PBA TO	Performance Based Acquisition Firm Fixed Price Task Order
QAPP	Quality Assurance Project Plan
QSM	Quality Systems Manual
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFAAP	Radford Army Ammunition Plant
RL	Reporting Limit
ROS	Robust Regression on Order Statistics
RSL	Regional Screening Level
SOP	Standard Operating Procedure
SSL	Soil Screening Level
SWMU	Solid Waste Management Unit
TEF	Toxic Equivalence Factor
T-RBC	Tapwater Risk Based Concentration
TW	Tarone-Ware
URS	URS Corporation
USACE	United States Army Corp of Engineers
USEPA	United State Environmental Protection Agency
UTL	Upper Tolerance Limit
UXB-KEMRON	UXB-KEMRON Remediation Services, LLC
VDEQ	Virginia Department of Environmental Quality
2,3,7,8-TCDD	2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin

1.0 INTRODUCTION

UXB-KEMRON Remediation Services, LLC (UXB-KEMRON) has been contracted by the U.S. Army Corps of Engineers (USACE) to perform Interim Measures (IM) at the Landfill Nitro Area, Solid Waste Management Area (SWMU) 40, at Radford Army Ammunition Plant (RFAAP), Radford, Virginia. This SWMU also is identified as RAAP-009 for purposes of the Army Environmental Database – Restoration (AEDB-R).

The Interim Measures Completion Report (IMCR), which included details of mobilization, installation of one additional downgradient monitoring well, repairs to the landfill cap North Slope, and implementing institutional controls (ICs) was approved as Final by US Environmental Protection Agency (USEPA) and the Virginia Department of Environmental Quality (VDEQ) in correspondence dated July 10, 2012. All work was performed in accordance with the IM Work Plan (IMWP) as approved by the United States Environmental Protection Agency (USEPA) and the (VDEQ). In addition to the repairs specified in the IMWP, limited additional maintenance was conducted adjacent to SWMU 40 to further enhance and assure the stability of the landfill north slope and control stormwater runoff. Following completion of the Interim Measures, Long Term Monitoring was initiated November 2011.

This SWMU 40 LTM is being performed under a Performance Based Acquisition Firm Fixed Price Task Order (PBA TO) for environmental remediation services at RFAAP. The site is being addressed under the Installation Restoration Program (IRP). The Department of Defense (DoD) established the Defense Environmental Restoration Program (DERP) to address environmental contamination located on current and former military installations. Remedial action at this site also is authorized and conducted under the authority of the federal Resource Conservation and Recovery Act (RCRA). The contract was issued by the United States Army Corps of Engineers (USACE) – Baltimore located at 10 S. Howard Street, Box 1715, Room 7000 in Baltimore, Maryland. This TO # DA01 was issued under UXB-KEMRON's Worldwide Environmental Remediation Services contract number W912DY-10-D-0027, with an award date of 30 June 2010 and a Notice to Proceed (NTP) date of 15 July 2010.

1.1 Background

1.1.1 Site Description

RFAAP is a government owned; contractor operated manufacturing facility located in southwestern Virginia approximately eight (8) miles southwest of Blacksburg. BAE Systems is the current operator along with a variety of other tenants. RFAAP consists of two noncontiguous areas, the Main Manufacturing Area (MMA) and the New River Unit (NRU). RFAAP is operating under a 2000 RCRA Corrective Action permit, with a new permit currently being negotiated.

SWMU 40 is located within the south-central portion of the MMA at RFAAP (Figure 1). Figure 2 shows the site layout, which includes the approximate 2-acre landfill area that comprises SWMU 40.

SWMU 40 consists of an undeveloped open area covered with grass. A gravel covered and fenced area used for temporary storage of asbestos is located at the eastern edge of the site (Figure 2). A paved road, identified as Landfill South Road for purposes of this LTM Report, is located immediately south of the landfill area and undeveloped land borders the landfill area to the north (field) and west (wooded area).

1.1.2 Site History

The RCRA Facility Assessment (RFA) was conducted by the USEPA in 1987 and identified SWMU 40 as having the potential to release contaminants into the environment. SWMU 40 is included in the RFAAP RCRA Permit for Corrective Action (USEPA, 2000).

The Final RFI/CMS was approved by USEPA and VDEQ in April 2009. According to the Final RFI/CMS (URS, April 2009), SWMU 40 was used for the burial of materials, such as paper, office trash, concrete, and rubber tires in the 1970s and early 1980s. The unit was not permitted by the Commonwealth of Virginia as a solid waste landfill. Operations ceased and the unit was closed with a clay cap and grass cover. Subsequently, areas located northeast of the unit were used to stockpile soil derived from construction-related activities. In approximately 1991, a fenced enclosure was constructed in the northeastern corner of the SWMU 40 area for use as temporary asbestos accumulation area (Figure 2).

The results of the human health risk assessment included in the Final RFI/CMS (URS, 2009) indicated that calculated cancer risks and hazard indices are within the USEPA target risk range for each receptor with the exception of the cumulative risk for the hypothetical future lifetime resident due primarily to arsenic and PCBs in soil. A future construction worker also had potential risk based upon potential aluminum exposure via the inhalation pathway. The RFI/CMS documented that soil Constituents of Potential Concern (COPCs) are primarily limited to the landfill material itself with the exception of a surficial area of PCB contamination in soil located adjacent to the northern escarpment of the landfill.

Additionally, the Final RFI/CMS identified chloroform as a groundwater COPC. Extensive source characterization was conducted at SWMU 40 during the RFI, including the collection of 91 soil samples, many of which were collected from landfill material and soil below the landfill material at SWMU 40. Chloroform was not detected in these samples. The RFI/CMS notes that the lack of detections and absence of other volatile organic constituents in groundwater samples suggests a potential alternate source for chloroform in groundwater at SWMU 40. During conduct of the RFI, chloroform was detected in samples collected from wells 40MW3 (19 µg/L), 40MW5 DUP AVG (23 µg/L), and 40MW6 (24 µg/L) at concentrations above its unadjusted tapwater risk based concentration (T-RBC) (0.155 µg/L) but below the USEPA MCL of 80 µg/L for total trihalomethanes. The Final RFI/CMS notes that the landfill area is located downgradient of developed areas containing water lines that could be leaking, and which may be the source of chloroform in groundwater at SWMU 40. Therefore, based upon the site specific data, a SWMU 40 chloroform source is not identifiable. However, based upon the groundwater detections of chloroform, chloroform was retained as a COPC in groundwater at this time.

Perchlorate has been detected in numerous wells at RFAAP at low concentrations. The RFI/CMS noted that updated laboratory analytical detection limits that are lower than historic limits may be the reason for low level detections. The RFI/CMS also noted that groundwater samples located immediately adjacent to and downgradient of the landfill (40MW3, 40MW5, and 40MW6) were below the unadjusted T-RBC; therefore, perchlorate was not identified as a COPC in groundwater. However, the Army agreed to retain perchlorate as a groundwater monitoring analyte at this time, based on detections reported in the RFI/CMS.

The RAAP-009, SWMU 40 Final RFI/CMS was reviewed and approved by USEPA and VDEQ in correspondence dated 30 June 2009. The USEPA and VDEQ agreed to the use of Interim Measures as a means to accelerate closure of this site and begin long-term maintenance and monitoring. UXB-KEMRON prepared the Interim Measures Work Plan (IMWP) on behalf of the Army in conformance with the specifications detailed for Alternative 2 in the approved Final RFI/CMS. The IMWP included the repair to the landfill cap in areas impacted by surface erosion, placement of cover to address the

potential exposure to the surficial area of PCB contamination in soil located adjacent to the northern escarpment of the landfill, installation of one additional downgradient monitoring well, and initiation of Long Term Monitoring and Maintenance (LTM) activities associated with cap maintenance and monitoring and groundwater monitoring. The IMWP was approved by USEPA and VDEQ on August 26, 2011. The IMCR provided documentation of the completion of the IM and was approved by USEPA and VDEQ July 10, 2012. The LTM activities and resulting data are contained within this LTM Report in accordance with the approved August 2011 IMWP.

1.2 Corrective Measures Objectives

The Corrective Measures Objectives (CMOs) for SWMU 40 are:

- Maintain containment of the landfill material at the site and implement necessary controls to prevent future uncontrolled human exposure to this landfill material.
- Implement any necessary measures to stabilize and repair the landfill cover at the northern edge of the landfill area to prevent any further mass transport of soil material in this area.

1.3 Project Objectives

In accordance with the *SWMU 40 Final RFI/CMS*, April 2009, and the Final IMWP, August 2011, IMs were conducted to accelerate closure of this site and begin LTM. The IMs included:

- 1. Engineering Controls (ECs) and Landfill Cap Repairs:** ECs included repairs to the landfill cap where evidence of erosion had been noted, primarily the north face of the unit. Repaired areas were stabilized and seeded to support a vegetative cover and minimize additional erosion.
- 2. Monitoring Well Installation:** Installation of 40MW7 on the downgradient side of SWMU 40. A location was preselected approximately 135 feet west-northwest of the landfill area as indicated and more fully described in the approved RAAP-009 SWMU 40 Final RFI/CMS.
- 3. Long Term Monitoring and Maintenance:** Conduct of LTM per the LTM Plan.

Section 2 of this report provides additional details of the IM implementation (specifically Long Term Monitoring and Maintenance) to achieve the project objectives.

2.0 Long Term Monitoring and Maintenance

2.1 Long Term Monitoring Plan

The groundwater monitoring network at SWMU 40 consists of one upgradient well, LFMW01, and three downgradient wells. The three downgradient wells include existing wells 40MW5, 40MW6, and the new well 40MW7. Installation of this new well was presented in the IMCR. The table below summarizes the long term monitoring program that is being implemented as part of the Corrective Measures at SWMU 40.

Long Term Groundwater Monitoring Program, SWMU 40, RAAP-009:

Monitoring Well Designation	Relative Position to SWMU 40	Monitoring Frequency	Analytical Parameters
LFMW01	Upgradient	Year 1: Quarterly Years 2-5: Every 9 months Years 6-30: Annual	Field water quality: pH, turbidity, specific conductance, temperature, dissolved oxygen, oxidation/reduction potential
40MW05	Detection Well at edge of landfill boundary		TCL VOCS, SW846 Method 8260B; TCL SVOCs, SW846 Method 8270C SIM; TCL Pesticides, SW846 Method 8081A; TAL Metals, SW846 Method 6000/7000; Perchlorate, SW846 6850; Dioxins/furans, SW846 Method 8290 included in initial sampling event only
40MW06	Detection Well at edge of landfill boundary		
40MW07	Well downgradient of Landfill		

The first year of long term monitoring (LTM) included four quarterly monitoring events with the exception of dioxins and furans which were sampled and analyzed only in the first quarterly sampling event of the first year of LTM as specified in the approved IMWP and CMS. . This LTM report summarizes the sampling and analysis conducted and presents both summarized LTM results and laboratory analytical results. Analytical results are summarized in tabular form, and complete laboratory analyses are presented in electronic form (e.g., CD ROM or equivalent).

The groundwater data were screened in accordance with the approved IMWP. Data screening was conducted to eliminate any analytes that were not detected above laboratory limit of quantitation (LOQ) during the first four quarters of monitoring from the analytical reporting list for future sampling events. In addition, the four quarters of monitoring in the upgradient well were used to calculate background for the detected analytes. The downgradient wells were compared to the calculated background values and any analyte below background in all three downgradient wells were eliminated from the analytical reporting list for future sampling events. This information is noted in more detail in Sections 2.4 and 3 for this first LTM report based on the first four quarters of data. Retention of analytes in the LTM monitoring and reporting will be evaluated in reports for each subsequent sampling and analysis event based upon the site specific dataset that will be included and evaluated.

A list of the specific analytes included in the groundwater LTM program and their associated limits of detection (LODs) and limits of quantitation (LOQs) were presented in the site-specific Quality Assurance Project Plan (QAPP), Appendix B, Master Work Plan Addendum #30 (KEMRON, 2011).

The following criteria established in the IMWP were applied to the data evaluation and optimization of the monitoring program after the first four quarters of data generation, and will continue to be implemented throughout the LTM program:

- 1) Analytes that did not exceed the laboratory LOD during three (3) consecutive monitoring events or exceed the LOQ during the first four (4) monitoring events will not require further sampling and analysis;
- 2) Analyte detections that did not exceed the established background concentration for 3 successive sampling events will not require further sampling and analysis;
- 3) Analyte detections that did not exceed half the relevant MCL or half the relevant Regional Screening Level (RSL) as presented in the approved IMWP for 3 successive sampling events and the results displayed a static or downward trend will not require further sampling and analysis.

The site specific data was evaluated using appropriate statistical methodologies, and data assessment was conducted in general conformance with the recommendations of USEPA guidance entitled *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, March 2009* (EPA 530/R-09-007). A more detailed description on the data evaluation and remaining analytes is discussed in Sections 2.4 and 3.

2.2 Long Term Inspection and Maintenance Plan

Additional long term maintenance was conducted at SWMU 40, RAAP-009; including inspection of the landfill cap to ensure that the landfill cap integrity is maintained. Inspections were conducted in conjunction with groundwater monitoring events and thus follow the same schedule specified in the table in Section 2.1, Long Term Groundwater Monitoring Program.

Inspections included visual evaluation and documentation of negative effects of the following:

1. Precipitation run-on and runoff;
2. Water and/or wind erosion;
3. Rodent and/or vector activity;
4. Deep root vegetation;
5. Vegetative stress and other cover condition;
6. Subsidence or cracks in cap;
7. Excavation or other manmade intrusive work conducted within the landfill footprint.

The first landfill cap inspection was completed November 15, 2011 after completion of the Interim Measures. No issues needing corrective action were identified during the first inspection. During the second quarter inspection (March 7, 2012) several small low areas were noted. The low areas were repaired during the third quarter inspection (June 14, 2012). The fourth quarter inspection (September 27, 2012) revealed no deficiencies. The only element of the approved inspection program that is absent is required signage for the landfill that will complete institutional controls (ICs) for this SWMU. This is noted on each inspection as needing installed. However, as previously agreed with USEPA and VDEQ, the signage will be prepared and installed following final approval of the RFAAP RCRA Permit, which will establish final language of the sign. The sign will be prepared and installed after the final language is agreed upon, providing consistent language for all similarly restricted areas at RFAAP requiring identification with signage. Completed inspection sheets and supporting photos for the four quarters of inspections are included in Appendix A.

2.3 Groundwater Sampling

Groundwater samples were collected as part of the LTM. The groundwater monitoring network at SWMU 40 consists of one upgradient well, LFMW01, and three downgradient wells. The three downgradient wells include existing wells 40MW5 and 40MW6, as well as 40MW7. Monitoring wells locations are shown on Figure 2.

Sampling was conducted in conformance with approved standard operating procedure (SOP) 30.2 of the approved work plan and as described in the Section 5.2.10 of the MWP (URS, 2003). Groundwater sampling was conducted using low flow purge and sampling, consistent with past sampling events. All non-dedicated sampling equipment was decontaminated in accordance with SOP 80.1 of the approved work plan. Completed field documentation is included in Appendix B.

During each groundwater sampling event water level measurements were collected and the subsequent potentiometric maps are included in Appendix C. Based on the first four quarters of monitoring, ground water at SWMU 40 generally flows in a northwest direction.

2.4 Data Evaluation

The site specific data was evaluated using appropriate statistical methodologies, and data assessment was conducted in general conformance with the recommendations of USEPA guidance entitled *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, March 2009* (EPA 530/R-09-007) in accordance with the approved work plan. Appendix D contains supporting data validation with analytical reports and Appendix E contains analytical summarization tables.

The following sections provide a summary of the data evaluation for each analyte group.

2.4.1 SVOC

Applying the data screening and evaluation methods listed in Section 2.1 and established in the approved IMWP, all analytes for SVOCs met these requirements, and no SVOCs are retained for future sampling and analysis. It is noted that benzoic acid analytical results were rejected in 50% of the sampling events (see data validation reports). However, this constituent is listed in the DOD Quality Systems Manual (QSM); Version 4.2 dated October 25, 2010, as a known poor performing analyte based on studies performed. The QSM states: “this compound produces low mean recoveries and high standard deviations resulting in wide limits, and sometimes negative values”. Based on this knowledge, the fact that both accepted and rejected analysis were below the LOD, and the absence of any other SVOC detections exceeding the LOD and/or LOQ per Section 2.1 screening standards, this analyte is not considered a constituent of concern (COC) and has been removed from the requirement list. Refer to Table 1 for a summary of the first four quarters of SVOC laboratory analytical data.

2.4.2 SVOC PAH

Applying the data screening established for the LTM program, the only analytes for SVOC PAH's that exceeded the LOD and/or LOQ are Benzo(k)fluoranthene, Chrysene, Benzo(a)anthracene, Benzo(a)pyrene, and Benzo(b)fluoranthene. Over the course of sampling monitor wells 40MW05, 40MW06 and 40MW07 only chrysene in 40MW06 showed two samples with quantified measurements at or above the LOQ. On 6/12/12 a concentration of 0.89 J µg/L was reported in the normal sample and 0.0301 µg/L was reported in the field duplicate sample. These samples, however, were taken on the same date and so do not qualify as concentrations above the LOQ on two consecutive dates. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and benzo(k)fluoranthene also showed reportable (but J-flagged) concentrations in the normal sample taken on 6/12/12 but these PAHs did not show reportable concentrations in the field duplicate sample. A subsequent sample of PAHs taken on 9/25/12 did not show

concentrations of any of the PAHs above their LOD. These five analytes will remain in the upcoming monitoring event to verify presence/absence of detectable concentrations in groundwater. . Table 2 summarizes the SVOC PAH analytical results for the first four quarters.

2.4.3 VOC

Chloroform was the only analyte to exceed the SWMU 40 established screening criteria. Extensive source characterization was conducted at SWMU 40 during the RFI, including the collection of 91 soil samples, many of which were collected from landfill material and soil below the landfill material at SWMU 40. Chloroform was not detected in these samples. The RFI/CMS notes that the lack of detections and absence of other volatile organic constituents in groundwater samples suggests a potential alternate source for chloroform in groundwater at SWMU 40. Based on information provided by the facility the site drinking water concentrations for chloroform averaged 27.86 ug/L from 2011 through 2012 site wide. Analytical results for chloroform in drinking water are summarized below:

Drinking Water Sample Date	Chloroform Concentration (ug/L)
2/2/2011	13
4/12/2011	9.2
4/12/2011	16
8/2/2011	80
8/2/2011	73
12/6/2011	11
12/13/2011	16
2/21/2012	5.8
2/21/2012	4.5
8/28/2012	44
8/28/2012	34

The highest downgradient detection at SWMU 40 was 3.48 ug/L detected at 40MW5 on September 25, 2012. A number of drinking water supply lines and distribution tanks are located upgradient in the vicinity of SWMU 40. Based on the large variance of site wide drinking water versus groundwater chloroform detections, chloroform is not considered a constituent of concern at SWMU 40 and is removed from the monitoring list. Alternate source demonstrations have been used at other sites at RFAAP for removal of chloroform for groundwater monitoring and consistent with the information presented for other portions of the site are applicable at SWMU 40. . Acetone and 2-Chloroethyl Vinyl Ether were rejected during data validation of each sampling event due to low response factors. Based on the previous statement these two analytes will remain on the requirement list to provide sufficient data before removing from the requirements. Table 3 provides a summary of the first four quarters of VOC data.

2.4.4 Metals

The metals analytes that have been removed based on the screening criteria are Beryllium, Silver, Thallium, Antimony, Cadmium, and Mercury. In addition to this, analyte detections that did not exceed half the relevant MCL or half the relevant RSL for 3 successive sampling events have been removed from the requirement list, in accordance with the approved IMWP. The analytes that have been removed based

on this screening criterion are Zinc, Nickel, Chromium, and Copper. Table 4 summarizes the first four quarters of metals data.

2.4.5 Perchlorate

Perchlorate exceeded the limits for screening by the LOD, LOQ, and MCL as stated within the IMWP. Refer to Table 5 for the first four quarters of perchlorate data.

2.4.6 Pesticides

All analytes for Pesticides met the first two screening requirements; therefore, pesticides are not retained for future sampling and analyses. Please refer to Table 6 for a summary of the first four quarters of pesticides data.

2.4.7 Dioxins/Furans

Dioxin and Furan data was collected for the first quarter of the LTM in accordance with the approved IMWP and in accordance with the SWMU 40 & 71 Final RFI/CMS Report (URS, 2009). As stated in the RFI/CMS Report, dioxin congener 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (2,3,7,8 TCDD) was detected in one soil sample at SWMU 40 above the soil screening level (SSL). A single groundwater monitoring event was planned during LTM to confirm 2,3,7,8 TCDD was not migrating to groundwater. This congener was not detected above laboratory detection limits in any of the SWMU 40 groundwater monitoring wells.

All congeners for dioxins and furans for the first quarter of the LTM were below the level detection level (LOD) in the downgradient wells except for Octachlorodibenzodioxin (OCDD), (CAS 3268-87-9). This congener is considered to be one of the least toxic dioxin compounds and once the Toxic Equivalence Factor (TEF) is applied this single congener does not exceed the carcinogenic screening level (CSL). For Dioxin/Furan data, a TEF must first be applied to adjust the measured concentrations to a toxicity equivalent concentration. Table 7 contains the various Dioxin-like toxicity equivalency factors for Dioxins and Furans (Van den Berg et al. 2006), which are the World Health Organization 2005 values. The downgradient well samples' OCDD concentrations are less than the upgradient well concentration. The driving factor in the exceedance for Dioxins versus the CSL is the LOD; the resulting non-detect data for each Dioxin congener applied with the TEF still exceeds the CSL for single dioxin congeners and the sum of the total TEF adjusted values. Unfortunately, the CSL for Dioxins is not attainable by currently available laboratory analytical methods. OCDD was also detected in field blank 40112011FB at 13.8 pg/L (picograms per liter). Samples from monitoring well 40MW5 displayed the highest concentration in the downgradient well in the normal sample, 40MW5GW112011, at 43.7 pg/L at the same time the duplicate sample, 40DUPGW112011, at this well had a result of 18.3 pg/L, showing variability in analysis. For this same monitoring event (November 2011), the upgradient well LFMW01 sample had a reported concentrations of 162 pg/L, which was higher than any result for the downgradient wells for OCDD. Based on the highest detections of Dioxins and Furans being identified in the upgradient well, Dioxins and Furans are not considered a COC and are removed from the sampling requirements for future LTM events. Table 7 summarizes the Dioxins and Furans data for the first quarter. The complete analytical report for the Method 8290 analysis is contained within Appendix D.

3.0 CONCLUSIONS

The following Table 8 represents the remaining analytes for Year 2 long term monitoring at RFAAP SWMU 40. All screening of the data was completed in accordance with the approved IMWP, Section 9.1.

Table 8 Year 2 LTM Analytes		
Constituent	LTM Plan	Note
Volatile Organic Compounds		
2-Chloroethyl Vinyl Ether	Continue Monitoring	Continue monitoring to confirm validated Non detect data.
Acetone	Continue Monitoring	Continue monitoring to confirm validated Non detect data.
Metals		
Aluminum	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Arsenic	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Barium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Calcium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Cobalt	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Iron, Ferrous	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Lead	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Magnesium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Manganese	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Potassium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Selenium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Sodium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Vanadium	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
SVOC PAHs		
Benzo(a)anthracene	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Benzo(a)pyrene	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Benzo(b)fluoranthene	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Benzo(k)fluoranthene	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Chrysene	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.
Other		
Perchlorate	Continue Monitoring	Exceeded LOD, LOQ, or ½ the MCL in at least one prior sampling event.

The analyte list above (Table 8) will be implemented for the sampling and analysis in LTM Year 2, currently scheduled to occur in June 2013.

3.1 Groundwater Statistics

The IWMP for SWMU 40 indicated that the initial annual LTM report will include calculation of a background dataset, based upon the first four sampling events. The background well at SWMU 40 is LFMW01. The concentrations of contaminants in downgradient wells (40MW5, 40MW6 and 40MW7) that were not eliminated due to LOQ, LOD and MCL screening criteria are to be compared to the calculated background values and any analyte below background in all three of the downgradient wells will be eliminated from the analytical reporting list for future sampling events.

Within the first five years of monitoring, a remedy effectiveness evaluation will be conducted for SWMU 40. The remedy effectiveness evaluation will include a presentation of the groundwater data collected throughout the LTM program to date. The analytical results from the remaining analytes will be statistically evaluated against the background dataset, and to determine if any trends are exhibited.

While a statistical evaluation of both background and downgradient groundwater data is envisioned, the Final IMWP does not specify the statistical approach that will be used to evaluate groundwater data against the background data set. In fact, it anticipates that data collected after the first four quarters will be reviewed, and if appropriate, the monitoring program will be amended. This approach was agreed upon with USEPA and VDEQ due to the absence of available groundwater data from a monitoring network at SWMU 40.

RCRA regulations at 40 CFR 257.23(g) indicate that one (or a combination) of the following statistical methods be used in evaluating groundwater monitoring data for hazardous constituents.

1. A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each downgradient well's mean and the background mean levels for each constituent.
2. An analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each downgradient well's median and the background median levels for each constituent.
3. A tolerance interval or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each downgradient well is compared to the upper tolerance or prediction limit.
4. A control chart approach that gives control limits for each constituent.

The requirement to compare the concentrations in downgradient wells with calculated background values implies that the measurements of the concentrations of constituents in the background well as well as those in the downgradient well support the calculation of meaningful statistics on which to base the comparison. In general, if the measurements of a particular constituent do not include too many non-detects, and if the detected amounts can be characterized by a statistical distribution, then a parametric statistical approach can be used. If these characteristics of the data are not met, then a non-parametric approach may be possible. While statistical analysis was initiated for the first four quarters of data, statistics are not presented in this report based on the current limited sample size. Using the reduced monitoring list presented in Table 8, the Year 2 LTM event will be conducted and the data will be further evaluated at that time. The report for Year 2 LTM will present the dataset available at that time, and determine if initial statistical evaluation is appropriate. The dataset and potential statistically based decisions will be presented in the report for determination of future LTM needs, based upon the currently available data and in conjunction with technical discussion among the Army, UXB-KEMRON, USEPA

Region 3 and VDEQ. The Year 2 LTM event will be conducted in June 2013. At least one week prior notice of the mobilization date for the LTM event will be provided to USEPA and VDEQ. It is anticipated the Year 2 LTM report will be submitted within ninety (90) days of completion of the LTM event.

4.0 REFERENCES

Alliant Techsystems, Inc. (ATK), 2005. *Safety, Security and Environmental Rules for Contractors, Subcontractors, Tenants and Government Employees*. March 2005.

Intergovernmental Data Quality Task Force, 2005. *Uniform Federal Policy for Implementing Environmental Quality Systems; Evaluating, Assessing, and Documenting Environmental Data Collection/Use and Technology Program* (UFP QAPP), Final, Version 2. March 2005.

URS Corporation (URS), 2009. SWMU 40 (RAAP-009) and 71 (RAAP-002) RCRA Facility Investigation/Corrective Measures Study Report. Final. April 2009.

URS Corporation (URS), 2003. *Final Master Work Plan, Quality Assurance Plan, Health and Safety Plan*. Radford Army Ammunition Plant, Radford, Virginia. Prepared for the U.S. Army Corps of Engineers, Baltimore District. August 2003.

U.S. Environmental Protection Agency (USEPA), 2000. *Permit for Corrective Action and Waste Minimization: Pursuant to the Resource Conservation and Recovery Act as Amended by the Hazardous and Solid Waste Amendment of 1984*, Radford Army Ammunition Plant, Radford, Virginia. VA1210020730.

U.S. Environmental Protection Agency, 2011. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, November 2011 revision. Available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm.

U.S. Environmental Protection Agency, 2011. *List of Contaminants and Their Maximum Contaminant Levels (MCLs)*. Available at: <http://water.epa.gov/drink/contaminants/index.cfm#List>.

UXB-KEMRON, 2011. *Radford Army Ammunition Plant, Final Performance Based Acquisition Solid Waste Management Unit 40 (RAAP-009) Landfill Nitro Area Interim Measures Work Plan*. August 2011.

Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, March 2009 (EPA 530/R-09-007)

FIGURES



0 500 1000 2000 3000 4000
Feet



Source: Google Earth; Imagery Date: February 1, 2007



UXB-KEMRON Remediation Services, LLC
2020 Kraft Drive, Suite 2100
Blacksburg, VA 24060

PROJECT NO. MR0669

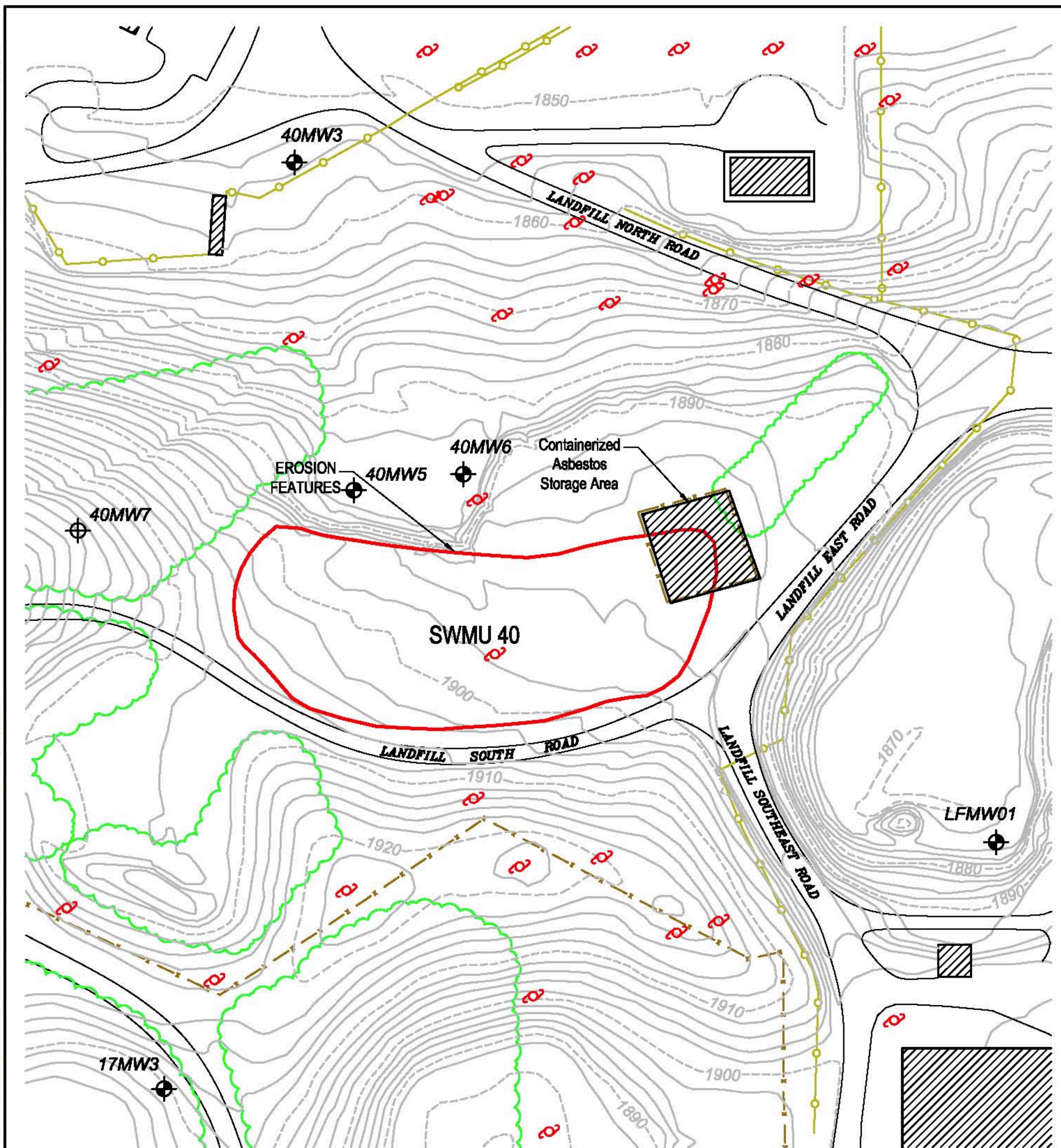
DRAWING DATE: 01/17/2013

DESIGNED
DRP
DETAILED
DRP
CHECKED
JA

SITE LOCATION MAP SWMU 40 LTM REPORT

LOCATION:
RADFORD ARMY AMMUNITION PLANT, RADFORD, VIRGINIA

FIGURE:
1



Note: Base map developed from fig. 2-2
Provided by URS Group, Inc., 1-2008



LEGEND

- | | | | |
|---|---------------------------|---|--------------------------|
|  | BUILDINGS |  | MONITORING WELL LOCATION |
|  | VEGETATION |  | OVERHEAD ELECTRIC POLE |
|  | APPROXIMATE SWMU BOUNDARY |  | TOPOGRAPHIC CONTOUR |
|  | ABOVEGROUND PIPING |  | FENCE LINE |



0 60 120
SCALE 1"=120'
(Approximate)

DRAWN BY:	KG	DATE	17 JAN 2013
REVIEWED:	R 5	PROJECT NO.	MR0669
APPROVED:		DWG. FILE NO.	SWMU 40. SITE MAP

FIGURE 2

SWMU 40 LTM REPORT
SITE LAYOUT
RADFORD ARMY AMMUNITION
PLANT-009
RADFORD, VIRGINIA

APPENDIX A
Inspection Sheets and Site Photographs

INSPECTION OF CLOSED WASTE MANAGEMENT FACILITIES

Name of Waste Management Facility: RFAAP SUMMU 40 (RAAP-009)

EPA Permit No. N/A

Date of Inspection 11 / 15 / 11

Time of Inspection 8 : 00 AM/PM

Reason for Inspection: Quarterly / Major rainfall event (2" in 8 hr period) / catastrophic event

ITEM	INSPECT FOR	DEFICIENCIES NOTED	REMEDIAL ACTION REQUIRED
Final Soil Cover	Erosion ✓ Settlement, Subsidence, or Displacement ✓ Pooling ✓	NONE	N/A
Vegetative Cover	Dead vegetation, or inadequate growth ✓ Presence of trees, shrubs, or deep rooted vegetation ✓ Need to fertilize, irrigate, or cut grass ✓	COMPLETED NEW SEEDING 1 - MONTH PRIOR - INITIAL GROWTH LOOKS GOOD	NONE
PVC Liner (if applicable)	Liner exposed ✓	NO	NONE
Peripheral Drainage Swales	Erosion ✓ Subsidence ✓ Pooling ✓	NO	NONE
Stormwater Drainage Areas	Erosion ✓ Subsidence ✓ Vegetation growth ✓ Accumulated sediment ✓	LOOKS GOOD	NONE
Security (if applicable)	Access road in place ✓ Sign legible and in place ✓ Fences not breached and no visible damage ✓	NO FENCE @ SITE, SIGN NOT IN PLACE YET	NONE
Monitoring Wells Outer protective casing Well caps and locks Concrete pad Inner cap and riser	Casing in good condition ✓ In place and functioning ✓ Cracks or settlement ✓ Intact and functioning ✓	NONE	NONE
Benchmarks (2) (if applicable)	Monuments present and visible Damage to monument	N/A	N/A

Date and nature of repairs or remedial action: N/A

Printed Name of Inspector: JONATH ANDERSON

Signature of Inspector: [Signature]

Company: UXB-KEMRON

Date remedial action completed: N/A

Remedial action approved by: N/A

NOTE: WILL PLACE SIGN ONCE RFAAP RCRA PERMIT IS COMPLETE.

INSPECTION OF CLOSED WASTE MANAGEMENT FACILITIES

Name of Waste Management Facility: RFAMP SUMU 40 (RAAP-009)

EPA Permit No. N/A

Date of Inspection 3/7/12

Time of Inspection 2:00 AM PM

Reason for Inspection: Quarterly/ Major rainfall event (2" in 8 hr period)/ catastrophic event

ITEM	INSPECT FOR	DEFICIENCIES NOTED	REMEDIAL ACTION REQUIRED
Final Soil Cover	- Erosion ✓ - Settlement, Subsidence, or Displacement ✓ - Pooling ✓	SIGHT PENDING IN 5 AREAS	REPAIR PLANNED FOR DURING THE COMING SUMMER MONTHS
Vegetative Cover	- Dead vegetation, or inadequate growth ✓ - Presence of trees, shrubs, or deep rooted vegetation ✓ - Need to fertilize, irrigate, or cut grass ✓	STILL INITIAL GROWTH. EVERYTHING ELSE LOOKS GOOD	NONE
PVC Liner (if applicable)	Liner exposed ✓	NO	NONE
Peripheral Drainage Swales	- Erosion ✓ - Subsidence ✓ - Pooling ✓	NO	NONE
Stormwater Drainage Areas	- Erosion ✓ - Subsidence ✓ - Vegetation growth ✓ - Accumulated sediment ✓	LOOKS GOOD	NONE
Security (if applicable)	- Access road in place ✓ - Sign legible and in place ✓ - Fences not breached and no visible damage ✓	SIGN NOT YET PLACED	NONE
Monitoring Wells - Outer protective casing - Well caps and locks - Concrete pad - Inner cap and riser	- Casing in good condition ✓ - In place and functioning ✓ - Cracks or settlement ✓ - Intact and functioning ✓	NONE	NONE
Benchmarks (2) (if applicable)	- Monuments present and visible - Damage to monument	N/A	N/A

Date and nature of repairs or remedial action: N/A

Printed Name of Inspector: Jonathan Anderson Signature of Inspector: [Signature]

Company: UXB-KOMRON

Date remedial action completed: N/A

Remedial action approved by: N/A

INSPECTION OF CLOSED WASTE MANAGEMENT FACILITIES

Name of Waste Management Facility:

RFAAP SUMU 40 (RAAP-009)

EPA Permit No.

N/A

Date of Inspection

6/14/12

Time of Inspection

8:15 AM PM

Reason for Inspection: Quarterly Major rainfall event (2" in 8 hr period) catastrophic event

ITEM	INSPECT FOR	DEFICIENCIES NOTED	REMEDIAL ACTION REQUIRED
Final Soil Cover	- Erosion ✓ - Settlement, Subsidence, or Displacement ✓ - Pooling ✓	NO DEFICIENCIES NOTED	
Vegetative Cover	- Dead vegetation, or inadequate growth ✓ - Presence of trees, shrubs, or deep rooted vegetation ✓ - Need to fertilize, irrigate, or cut grass ✓	NO DEFICIENCIES NOTED	
PVC Liner (if applicable)	Liner exposed	N/A	
Peripheral Drainage Swales	- Erosion ✓ - Subsidence ✓ - Pooling ✓	NO DEFICIENCIES NOTED	
Stormwater Drainage Areas	- Erosion ✓ - Subsidence ✓ - Vegetation growth ✓ - Accumulated sediment ✓	NO DEFICIENCIES NOTED	
Security (if applicable)	- Access road in place ✓ - Sign legible and in place ✓ - Fences not breached and no visible damage ✓	NO SIGNS IN PLACE	
Monitoring Wells - Outer protective casing - Well caps and locks - Concrete pad - Inner cap and riser	- Casing in good condition ✓ - In place and functioning ✓ - Cracks or settlement ✓ - Intact and functioning ✓	NO DEFICIENCIES NOTED	
Benchmarks (2) (if applicable)	- Monuments present and visible - Damage to monument	N/A	

Date and nature of repairs or remedial action:

COMPLETED REPAIR OF LOW ALLOTS - GRADED & RESEED REPAIRED ALLOTS

Printed Name of Inspector:

JONATH ANDERSON

Signature of Inspector:

[Signature]

Company:

UXB - KEM ROW

Date remedial action completed:

6-13-12

Remedial action approved by:

JM

INSPECTION OF CLOSED WASTE MANAGEMENT FACILITIES

Name of Waste Management Facility: REAMP SUMMIT 40 (RAAP-009)

EPA Permit No. N/A

Date of Inspection 9/27/12

Time of Inspection 8:45 AM PM

Reason for Inspection: Quarterly/ Major rainfall event (2" in 8 hr period) catastrophic event

ITEM	INSPECT FOR	DEFICIENCIES NOTED	REMEDIAL ACTION REQUIRED
Final Soil Cover	- Erosion ✓ - Settlement, Subsidence, or Displacement ✓ - Pooling ✓	NO DEFICIENCIES	
Vegetative Cover	- Dead vegetation, or inadequate growth ✓ - Presence of trees, shrubs, or deep rooted vegetation ✓ - Need to fertilize, irrigate, or cut grass ✓	NO DEFICIENCIES	
PVC Liner (if applicable)	Liner exposed	N/A	
Peripheral Drainage Swales	- Erosion ✓ - Subsidence ✓ - Pooling ✓	NO DEFICIENCIES	
Stormwater Drainage Areas	- Erosion ✓ - Subsidence ✓ - Vegetation growth ✓ - Accumulated sediment ✓	NO DEFICIENCIES	
Security (if applicable)	- Access road in place ✓ - Sign legible and in place ✓ - Fences not breached and no visible damage ✓	NO SIGN IN PLACE	
Monitoring Wells - Outer protective casing - Well caps and locks - Concrete pad - Inner cap and riser	- Casing in good condition ✓ - In place and functioning ✓ - Cracks or settlement ✓ - Intact and functioning ✓	NO DEFICIENCIES	
Benchmarks (2) (if applicable)	- Monuments present and visible - Damage to monument	N/A	

Date and nature of repairs or remedial action: WILL INSTALL SIGN ONCE FINAL APPROVAL OF RCRA PERMIT IS COMPLETE.

Printed Name of Inspector: JONATH ANDERSON

Signature of Inspector: [Signature]

Company: UXB-KEMRON

Date remedial action completed:

Remedial action approved by:



Photo 1 - LTM groundwater sampling at SWMU 40-Quarter 1, 11-2011.



Photo 2 - Initial growth during Quarter 1 along improved drainage swale, 11-2011.



Photo 3 - Initial growth during Quarter 1 on drainage berms, 11-2011.



Photo 4 – View to the East of SWMU 40-Quarter 2, 3-2012.



Photo 5 – Areas of ponding noted during second Quarter of LTM-3-2012.



Photo 6 – Areas of ponding noted during second Quarter of LTM-12-2012.



Photo 7 - SWMU 40 Quarter 3 cap improvement of low areas-6-2012.



Photo 8 - SWMU 40 Quarter 3 low area cap improvement-6-2012.



Photo 9 - SWMU 40 final grade with seed and straw after drainage improvement-Quarter 3, 6-2012.



Photo 10 - SWMU 40 view to the Southeast-Quarter 3, 6-2012.



Photo 11 - SWMU 40 view to the East during Quarter 3, 6-2012.



Photo 12 - SWMU 40 view to the West during Quarter 4, 9-2012.



Photo 13 - SWMU 40 drainage swale view during Quarter 4 inspection, 9-2012.

APPENDIX B
Field Documentation

COC No. A 3287

156 Starlite Drive
Marietta, OH 45750**KENRON**

ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308

Fax: 740-376-2536

Company Name: KENRON		Project Contact: Timothy Lee Rachtowitz		Contact Phone #: 740-373-4308												
Turn Around Requirements: 14-24 hr		Location: LANDFILL, VA														
Project ID: 140669 SUMM 40 RFAP		Signature: <i>[Signature]</i>														
Sampler (print): Donna Anderson																
Sample I.D. No.	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	TLC VOC's	TLC SVOC's	TLC PEST.	THE METALS (Filtered)	PERCHLORATE	Relinquished by: (Signature)	Time	Date	Time	Received by: (Signature)
40MW7GW112011	X	11-20-11	1205	WATER	10		3	2	2	1	1					
40MW8GW112011	X	11-20-11	1525	WATER	10		3	2	2	1	1					
40DUPGW112011	X	11-20-11	1525	WATER	10		3	2	2	1	1					
40MWS MS6W112011	X	11-20-11	1525	WATER	10		3	2	2	1	1					
40MWS MS5GW112011	X	11-20-11	1525	WATER	10		3	2	2	1	1					
40H2011 TB	X	11-20-11	1750	WATER	9		3	2	2	1	1					
40EQR 112011	X	11-20-11	1815	WATER	9		3	2	2	1	1					
40TB 112011	X	11-20-11		WATER	3		3									
40M66GN112111	X	11-21-11	0934	WATER	9		3	2	2	1	1					
40EQR 112111	X	11-21-11	1110	WATER	9		3	2	2	1	1					
40LF 112111	X	11-21-11	1354	WATER	10		3	2	2	1	1					
TOTAL # (LAB USE)																
Program ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other ADDITIONAL REQUIREMENTS PERCHLORATE Q200 SVOC PEST																

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

156 Starlite Drive
Marietta, OH 45750

ENVIRONMENTAL SERVICES

Phone: 740-373-4308
Fax: 740-376-2536

[illegible]

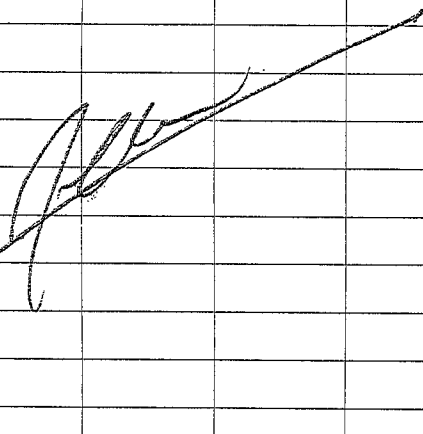
*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Location DUBLIN, VA Date 9-14-11
Project / Client RFAAD SWMU-40
RADFORD, VA

1500 - SUNNY & CLEAN SOA
MET W/ SAM GREGORY
OPPOSITE TO VIEW SOIL
FOR SWMU-40 IMPLEMENTATION.
TOOK SEVERAL PICTURES.

- DID NOT TAKE SAMPLES DE
TO CONVERSATION W/ DON
KING ABOUT BEING ABLE
TO GET SOIL (CLEAN) FROM
ALREADY APPROVED SITE.

OPPOSITE @ 1630



Location RFAMP Date 9-15-11 ⁵
Project / Client RFAMP SWMU-40
RAIDFORDS, VA

ONSITE @ 0930 Jca
CLOUDY & 68°F

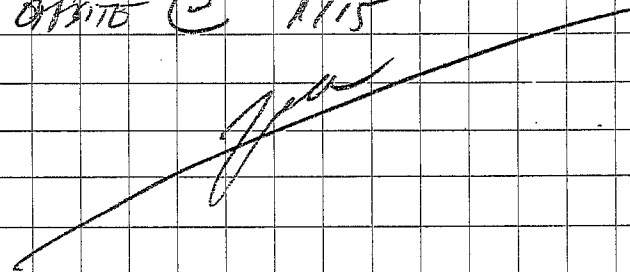
- ONSITE TO MEET w/
MATT ALBERTS ABOUT
PERMITS FOR IM.

- Jerry Plint & Matt Alberts
onsite @ 1000

- COMPLETED HOT WORK
PERMIT & ALOT ENTRY
PERMIT

- Jonathan Anderson &
Jerry visited SWMU-57
ALOT IN GOOD CONDITION,
EXCELLENT GROWTH OF
SEEDS ALOT

OFFSITE @ 1115



Location Radford, VA Date 10/17/11
Project / Client RFAPP
J. Senter

0800 - truck inspection for VA
- get badged etc.

1100 - Reviewing sites w/ Mike & John
SWMU 40 & 57

Matt w/ ATK came by SWMU 40 &
visited a while about safety
etc

1545 - back to motel

J. Senter

work on resume

Location Radford, VA Date 10/18/11 7
Project / Client RFAPP

J. Senter
M. Swartz
J. Hatten

0730 - on site

0745 - to gate 15 w/ Hertz Trencher & backhoe

Anderson & Assoc. surveyor on site / getting
badged

H&S tailgate meeting

~1000 Montgomery Sanitation on site w/ porta
john

1200-1230 lunch

1235 Surveyor back to pick up his
base station & leave site

staked 40SS1 at SWMU 40 repair area
elev. = 1884.73'

staked 40MW7 new proposed monitoring
well

elev. = 1919.96'

- to Lowe's for supplies: silt fence 500

1440 - begin trenching operations for
silt fence

1540 - clearing around 40MW7

1550 - start trenching for silt fence
installation

8.

Location _____ Date 10/18/11

Project / Client _____

1645 - Jeremy Flint / ATK onsite to look at
area w/ Mike S.

1730 - leave site

J. Flint

Location Radford, VA

Date 10/19/11

Project / Client RFAPP

Rain

J. Senter
M. Swartz
J. Hatten

0730 - to Lowe's to get poly. pull trailer to site
get tail light; fuel up eo.
truck & drive to RFAPP

0855 H&S tailgate meeting

0945 Jeremy Kent on way over to go
w/ Mike & John to view & discuss
SMWU 57

1030 1st load clay

1100 2nd load clay

1110 3rd load clay

1135 4th load

1150 5th load

1155 Hertz w/ Bobcat

1215 6th load

1223 7th load

1245 8th load top soil

1309 9th load

1319 10th load

1345 11th load

1420 12th load

1450 13th load

last load; cover soil piles w/ plastic

1535 leave smwu 40 for gate

[Signature]

Radford, VA

10/20/11

RFAAP

J. Senter

M. Senter

J. Hester

M. Bradley

0740 - Mike called - wait at gate

0800 - at SWMU 40

H&S tailgate meeting

- calling landscapers - got bid \$2000⁰⁰

Mike wants bid w/ straw

- start moving clay to make repairs to SWMU 40 slope & top side

- continue hydroseed companies search & contact

1210 - off site for lunch & materials to cut fabric & saw blades

1335 escort Bobcat out to change/fix bucket

- review maps

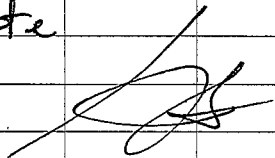
- talk w/ Mike about berm locations

- mark out approx. location of upper berm

- continue work on repairs to SWMU 40

1640 shut down equipment, cover fill piles

1700 leave site



Location Redford, VA Date 10/21/11 11
Project / Client RFAAP

J. Senter
M. Swartz
M. Brantley
J. Hatten

0800 @ SWMU 40
Safety Mtg + Sign in
Called Home Depot + Lowe's for Transit Rental
Neither Have Rental Depts.
0855 - Don King Trucking Escorted to site w/ Load
of Rock. Sent Back → wrong size Rock
1000 - Jim McKenna on site. Dick P. M.
JAY here w/ mat + Grass Seed
1030 JAY off site → Demob
Don King w/ load of Rock
1100 - Brantley off site to change Rooms Pick up
Grade Stakes + Transit - Lunch
1500 Final Load From Don King
Matt Albert (ATK) on site 1000 K. M. H. 10/22
1530 Progress Photos Taken
1630 off site
2 TOPSOIL
2 CLAY
2 6" Rock

Location Radford, VA Date 10/22/11Project / Client REAP - SWMU 40

M. Swartz

M. Brantley

J. HATTON

1030 on site - delayed start due

To Bowhunting in Area

Battery Dead on Backhoe ~~TOO~~

Shot Grade on Berms

HAD TO
JUMP START

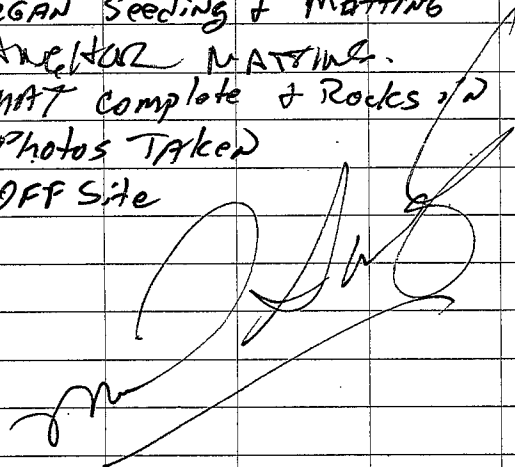
BEGAN Seeding + mATTING

ANCHOR MATTING.

1410 MAT complete + Rocks in

Photos Taken

OFF Site



Location Radford, VA Date 10-24-11 13
Project / Client RFAAP SWMU 40 M. Brantley
M. Swaney
J. Hatten

0745 onsite
Backhoe dead. Hertz notified
Purchased 10 more rolls of mat + shovel
0930 Hertz onsite + Replacing Batteries /
first load of ~~CLAY~~ TOPSOIL
1100 HERTZ completed + left site
not permit secured for SWMU 57
Fuel Purchased - skid Steer Refueled
1505 Jeremy Flint + Jim McKenna on site
Liked Berms + All work so far
LAST load of ~~CLAY~~ clay.
< 6 Loads Clay > To day
4 Loads Topsoil To day
APPROVED work completed
TO DATE.
Completed CLAY + STA
FOR BERMS Jim + John
SAW location + APPROVED.
Started putting TOPSOIL on
TOP of CLAY + PCB Spill.

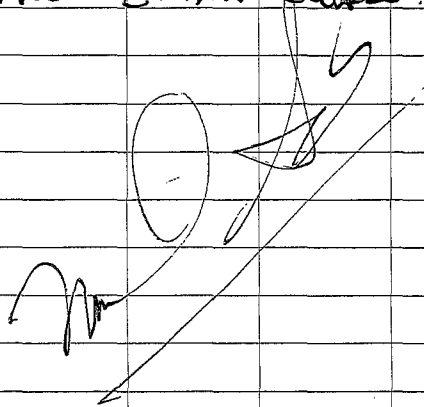
1 14 Location Radford, VA Date 10-25-11
Project / Client RFAP. SWMU 40

0730 onsite, Berms sited to assure drainage
0815 Hertz onsite to install new batteries in B
0920 Hertz off site

Pictures taken Rock swale & new berms
1100 Jim McKenna & Jeremy Flint onsite
for site visit - Happy with what
they saw.

1745 Complete - All grass, mats & rock
in place. Pictures taken

Added rock that Jim & Jeremy
had requested at the top
of the extra swale.



Location Radford, VA

Date 10-26-11

15

Project / Client RFAAP. SWMU 40

SWARTZ
Brantley
HATTEN

0245 on site

0810 Jim McKenna on site

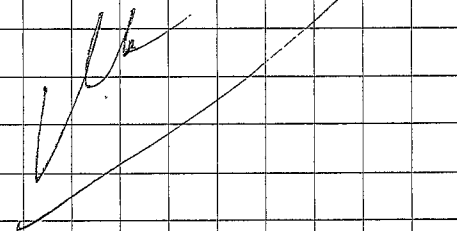
LOOKED AT THE ~~STORM~~ SWALS

WHICH WAS ADDED THE ROCK
TO THE TOP OF THE SWALS.

WAS ALSO LOOKED AT THE WHOLE
SITE ALL OR

1000 Hertz on site & Picked up
Equipment

125 MVR AT 1200 W



Location RAIDERS, VA Date 11-14-11
 Project / Client REAMP SWMU-40

SUNNY & 64°F

0730 ON SITE FOR RABBITING JA/MB
 0900 BEDFORD ON SITE FOR RABBITING
 1100 ON SITE SWMU40 FOR
 DRILLING W/ BEDFORD
 AND MATTHEW TO
 MOD HOT WORK PERMIT
 & MEETING W/ STREET
 COMPLETE @ 1115
 1115 POSITIONED RIG @ APPROXIMATE
 LOCATION OF LOCATED POINT
 1320 (CALIBRATED) PID
 1330 STARTED DRILLING - W/ 10" ROUGH BIT
 UPPER SOIL 0-2' SILTY CLAY
 TAN - PID = 0.0
 2' HIT ROCK - REDDISH STIPED
 LIMESTONE - FRITTLE
 8' SMALL SCAM W/ LIMESTONE
 SILT CLAY
 12' LIMESTONE APPARENT BEDROCK
 GRAY - LIGHT GRAY IN COLOR
 21' - SPALL SOFT ZONE REFSIT
 @ 12-16' SILTY CLAY - weathered (SPALL)
 PID = 0.0
 17' BEDROCK W/ SMALL ROCK FRAGMENTS
 17' BACK TO LIMESTONE

Location RAIDERS, VA Date 11-14-11 17
 Project / Client REAMP SWMU-40

CONT....

17-20' BEDROCK - LIMESTONE
 SETTING OUTER CASING
 0-20'

OFFSITE @ 1445 TO GET
 CONCRETE

ON SITE @ 1530 TO GRANT/CONCRETE
 OUTER CASING ON WELL
 - (COMPLETED) GRANT/CONCRETE
 @ 1630 (WAITING 24 HRS FOR
 CURING).....

NOTE: MB (COMPLETED) H.T.S
 MEETING @ 1130

(CONTINUED) SOIL/ROCK
 WITNESS = 2 TIMES

OFFSITE @ 1730 FR

[Signature]

Location RADFORD, VA Date 11-15-11
 Project / Client RFAMP SUMU 40

ONSITE @ 0930. TB MEET w/
 Jim McKenna, JA & MB
 - RAIN, 59°F

- Jim M. INDICATED MOST OF
 CONCERN

- MB & JA SMOOTHED AREA
 w/ RAKES & SHOVELS

- INSPECTED DRILL AREA
 w/ Jim McKenna (NO COMPLAINTS)
 EVERYTHING LOOKS FINE

OFFSITE @ 1100

Location RADFORD, VA Date 11-16-11
 Project / Client RFAMP SUMU-40

ONSITE @ 0750 SA/MB

RAIN, 57°F

REDFORD DRILLING ONSITE @ 0750
 0830 - COMPLETED HSS MUSTING
 CIRCLED SEAL - CURED!

- CIRCULATED PID

STARTED DRILLING @ 0845

20' - 30' LIMESTONE PID = 0.0

30' - 31' REDDISH SILTY CLAY

CAYOL w/ WEATHERED SHALE

& LIMESTONE FRAGMENTS

SLIGHTLY MOIST PID = 0.0

31' - 38' LIMESTONE PID = 0.0

38' - 40'

weathered ^{limestone} shale & g. lg

clay (reddish) DRY-SUCATION

moist PID = 0.0

40' - 45' LIMESTONE PID = 0.0

55' - 50' ~~SEA~~ SILTY CLAY w/

weathered bedrock fragments

reddish tan color PID = 0.0

50' - 70' LIMESTONE PID = 0.0

w/ small 1" R. l. sh. & sh. l.

Location RADFORD, VA Date 11-16-11
 Project / Client BEAAP SUMM. 40

cont. . . .

70'

* TARGET ZONE BEGINNING
 ELEVATION 1850' MAX

70' - 80' limestone PID = 0.0

80' - 90' limestone PID = 0.0

90' - 100' limestone PID = 0.0

100' - 105' limestone PID = 0.0

105' - 106' weathered stone
 realish / moist PID = 0.0

106' - 110' limestone PID = 0.0

110' - 120' limestone PID = 0.0

120' - 130' limestone PID = 0.0

130' - 140' limestone " "

140' - 148' limestone " "

@ 148' 6" weathered

5.14 rock

149' - ~~140'~~ 140' limestone PID = 0.0

- NO SUBSTANTIAL WATER BEHIND
 ZONE ON HOLD UNTIL
 DECISION MADE ON WHETHER

Location RADFORD, VA Date 11-16-11 21
 Project / Client BEAAP SUMM. 40

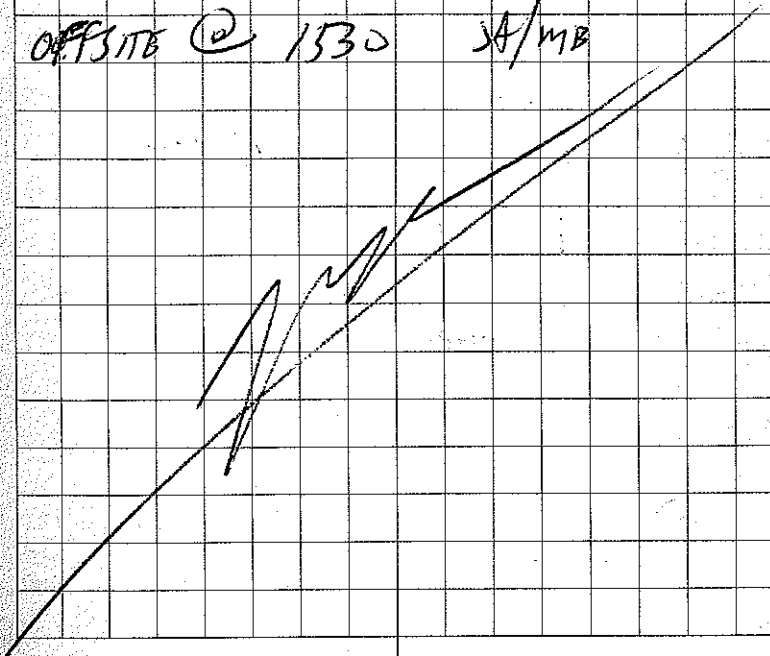
Continue

TO SCREEN

DECISION IS TO SCREEN
 145' - 165'.

- MOVING DRUMS OF SOIL/ROCK
 TO DUM STRUTTS AREA
 (TOTAL 10 DRUMS OF
 SOIL/ROCK CUTTINGS)

OFFSITE @ 1530 JA/MB



Location RAIDFORD, VA Date 11-17-11
 Project / Client REAP, VA
SWMU-40

ONSITE @ 1000 Jit/MB
 w/ BEDFORD DRILLING
 Cold, Snowy 39°F
 - COMPLETED H&S MEETING

1015 - STARTED RIGGING (RED)
 ESTIMATED 47' WATER
 ≈ 143' BGS

MEASURED 156.6' TO WATER BGS
 TOTAL DEPTH 189' ±

WELL CONSTRUCTION:

BETON TO BOTTOM SEAL
 BGS - HIT 1

NOTE: 3 1/4" / day UP TO 167' BGS

SAND TO 164.6' BGS

SCREEN TO 144.4' BGS w/ BOTTOM CAP

SAND TO ~~140.5~~ 140.5 BGS

BENTONITE TO 135' BGS

CEMENT/GRout TO 15' BGS

BENTONITE TO 3' BGS

DEPTH TO WATER 148.8' TOC TO 167.5' TOC

DEVELOPED ≈ 10 gallons & NOTE: 156.3' AFTER
 OFFSITE @ 1930 ~~1930~~ ~~1930~~ AFTER
 PURGE.

Location RAIDFORD, VA Date 11-18-11
 Project / Client REAP, VA SWMU 40

ONSITE @ 0830 Jit/MB
 w/ BEDFORD DRILLING TO
 COMPLETE INSTALLATION OF
 40 MW

- COMPLETED H&S MEETING

- DEPTH TO WATER
 145.4' FROM TOC

- TOTAL DEPTH
 167.5' FROM TOC

- COMPLETING WELL INSTALL
 PER BAULNESS, PROTECTIVE
 CASING

- 1115 Anderson & ASCL

ONSITE TO COMPLETE
 SURVEYING 40 MW

AND LOCATIONS OF BORINGS

- Anderson & ASCL OFFSITE
 @ 1330

- WELL COMPLETED 1430

IN ACCORDANCE w/ SOP 20.1,
 20.2 & THE APPROVED IMPP

- MOVED 1 DUM OF DECON/DEVELOP, WATER
 & 1 DUM OF PLASTIC TO DAM SITE

OFFSITE 1630 Jit/MB

Location RFAAP, RADFORD VA Date 11-20-11
 Project / Client SWMU 40 RFAAP

0800 CALIBRATED YSI & PID

0830 ON-SITE SA, MB

COMPLETED HES NOTING

SUNNY & 41°F

- STARTING GW MONITORING
 ON 40MW7 PID = 0.0 ppm

- WL = 145.14'

- COMPLETED 1205, ~~DECON~~ ^{WT} ~~SAMPLES~~

- STARTING GW MONITORING
 ON 40MW5 @ 1430

PID = 0.0

COMPLETED @ 1525

COLLECTED SAMPLE, MS, MSD, DUP
 & RINSE BLANK, & FIELD
 BLANK

PACKED SAMPLES ON ICE

MOVED DECON WATER TO
 DRAIN STORAGE AREA

OPPOSITE 1900 ~~THE~~

Location RFAAP, RADFORD VA Date 11-21-11
 Project / Client SWMU 40 RFAAP

0730 CALIBRATED YSI & PID

0800 ON-SITE SA, MB

COMPLETED HES NOTING

CLOUDY, 52°F

- STARTING GW MONITORING
 ON 40MW6 PID = 0.0

WL = 106.25'

SAMPLED @ 0934, COLLECTED
 EQR @ 1110

- STARTING GW MONITORING
 ON LF MW1 @ 1150

PID = 0.0 ppm

WL = 84.95'

- TUBING STUCK IN WELL
 REMOVED, LOOKS LIKE POLY
 TUBING W/ DUCT TAPE
 SAMPLED @ 1354

DECON'D PUMP

MOVED IDW TO STORAGE
 AREA

Location KADRON, VA Date 11-21-11
 Project / Client RFAMP Summu 40

cont...

1600 PACKAGED Dioxin/Furan
 SAMPLES FOR SHIPMENT
 & WENT TO FEDEX

1700 BACK ON SITE TO
 COLLECT IDW SAMPLES

10 DRUMS CUTTINGS

2 DRUMS CONTACTED PLASTIC
 WASTE

① 1 DRUM DELON / PURGE (DEVELOP)

② WATER FROM 40 MW7
 2 DRUMS FROM 6W
 SAMPLING PURGE / DELON
 & 80 gallons

① pH = 8.66 (BOD, COD, Metals)
 1755

② pH = 8.24 (BOD, COD) 1800

collected cutting comp..
 @ 1805

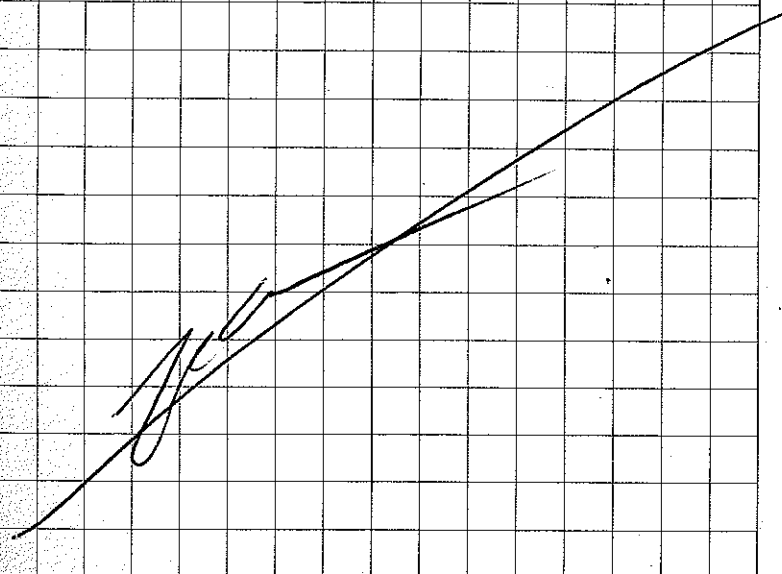
Location KADRON, VA Date 11-21-11 27
 Project / Client RFAMP Summu 40

cont....

COMPLETED ALL WELL
 SAMPLING IN ACCORDANCE
 W/ SOP 30.2 & TIE
 (APPROVED) SUMMU 40 1 MW7

NOTE:

WL	
65.13	40 MW4
95.44	40 MW3
57.32	40 MW2

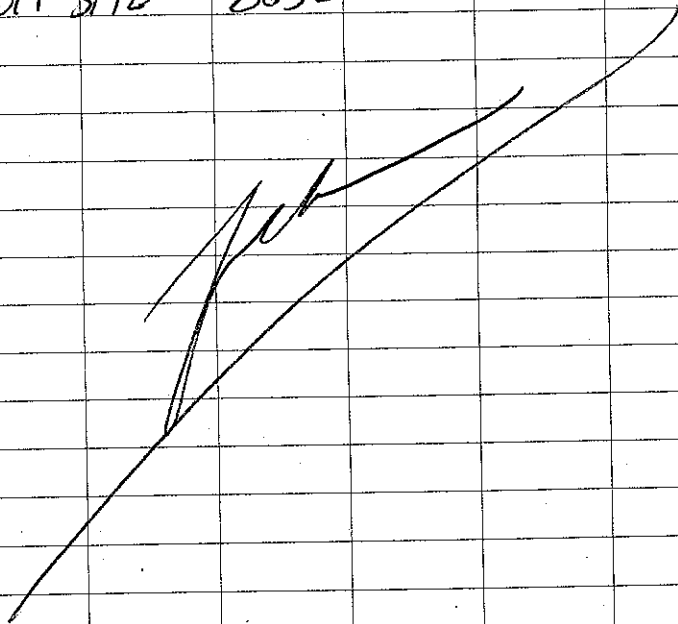


Location RADFORD VA Date 11-22-11
 Project / Client SWMU 40 REFARP

ONSITE @ 0750 JA/MJB
 54°F, RAIN

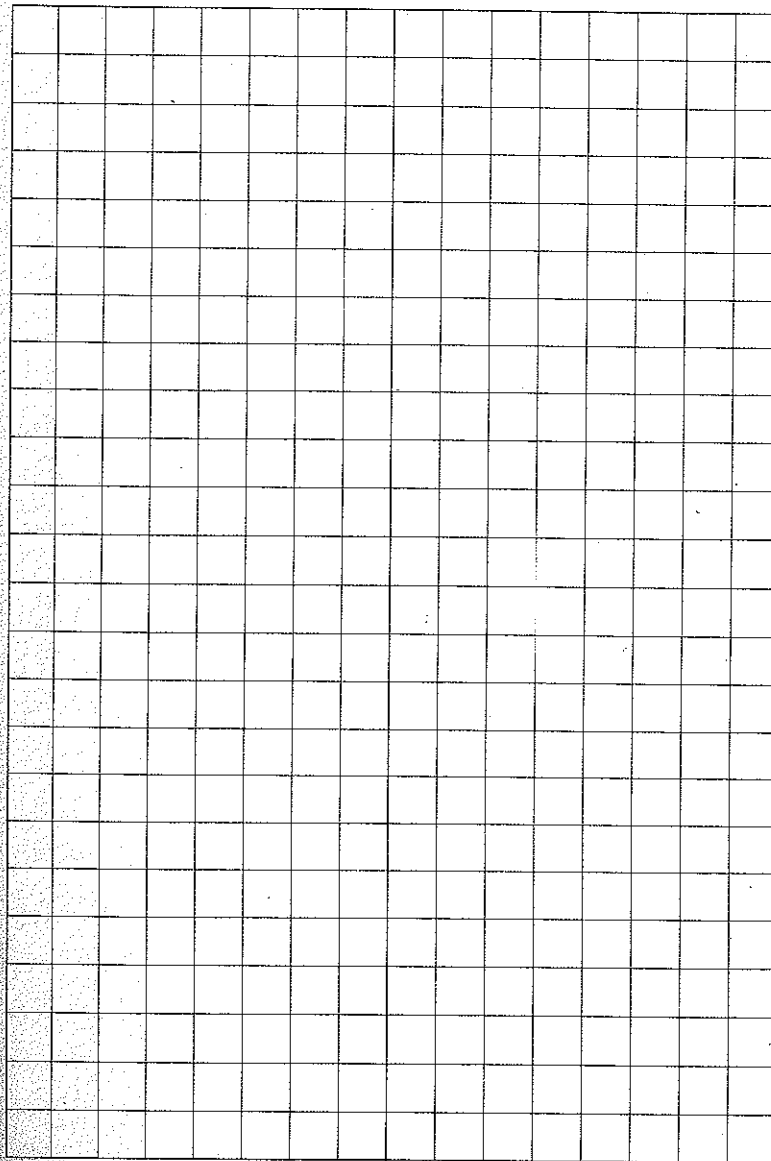
- HANG TO MEET JIM
 MCKOWNA FOR PICTURE
 APPROVAL & SITE WALK
- JIM ONSITE @ 0810
 SAID EVERYTHING LOOKS GOOD

OFFSITE 0850



Location _____ Date _____

Project / Client _____



SOIL BORING AND WELL LOG

PROJECT NUMBER: M20669
 PROJECT: SUMU 40
 LOCATION: REFAAP, RADFORD VA
 DRILLING METHOD: AIR ROTARY
 DRILLER: BED FORD
 DRILLING CONTRACTOR: BED FORD
 NORTHING:

SHEET: 1 of 8
 BORING NUMBER: 40mw7
 GEOLOGIST: SA
 START: 11-14-11
 FINISH: 11-18-11
 TOC ELEVATION:
 EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY			
						6" - 6" - 6" - 6" "N"	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0							Ground Surface	
1			0.0				0-2' TOPSOIL (OH)	
2							CLAY (CL) moist	
3							COLOR DARK REDDISH	
4							BROWN A TO REDDISH	
5							CLAY	
6							7.5 YR 3/3 Δ	
7							7.5 YR 5/6	
8							2-8'	
9							2' HIT COMPETENT	
10							ROCK	
11							BRITTLE REDDISH	
12							STRIPED LIMESTONE	
13							SMALL SEAM OF	
14							CLAY w/ LIMESTONE	
15							PLACEMENTS (REDDISH	
16							BROWN)	
17							7.5 YR 6/6, moist	
18							SAME BUT w/	
19							WEATHERED SHALE	
20							SOFT CLAY ZONE 2.5 YR 5/8	
							moist	
							COMPETENT ROCK	
							LIMESTONE GREY	
							IN COLOR	

★
 NOTE ALL PIDS HITS
 FOR 40mw7 = 0.0 TO COMPLETION

© 20' USED
 6" BIT
 TO COMPLETION

SOIL BORING AND WELL LOG

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

2-8
SHEET: 1 of 2
BORING NUMBER:
GEOLOGIST: JA
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY			
						6" - 6" - 6" - 6" "N"	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0			0.0				Ground Surface	
1							LIMESTONE	
2							COMPETENT	
3							ROCK	
4								
5								
6								
7								
8								
9								
10								
11						30-31'	GUTY CLAY WEATHERS INTO FRAGMENTS	
12								
13							LIMESTONE	
14							COMPETENT	
15						31-38'	ROCK	
16								
17								
18								
19						38'-40'	weathered limestone fragments silty clay (BAY)	
20								

RODISH & TAN
7.5 YR 7/6

SOIL BORING AND WELL LOG

3-8
SHEET: 1 of 3

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
						6" - 6" - 6" - 6" "N"		
40							Ground Surface	
0							Limestone	
1							COMPETENT	
2							Rock	
3						40-55'		
4								
5								
6						55-56'	Silty clay w/ weathered bedrock fragments	
7							7.5 412 7/6	
8								
9						56-70'		
10							Limestone	
11							COMPETENT	
12							Rock	
13								
14								
15								
16								
17								
18								
19								
20								

12.50 ft
CONCRETE/CORRO. SEAL

SOIL BORING AND WELL LOG 4-8

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

SHEET: 1 of 4
BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS 6" - 6" - 6" - 6" "N"	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0							Ground Surface	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

TRUST
ZONE
185' BODI MILE
185' MSL

70-105'

LIMESTONE
COMPACT
ROCK

RISEN
CONCRETE/GRAVEL SEAL



SOIL BORING AND WELL LOG 5-8

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

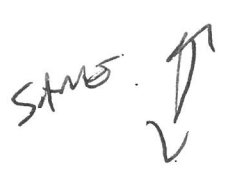
SHEET: ~~1 of 5~~
BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS 6" - 6" - 6" - 6" "N"	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0							Ground Surface	
1							SAME ↓	SAME ID Page 4
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

SOIL BORING AND WELL LOG 6-8

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

SHEET: 1 of 6
BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS 6" - 6" - 6" - 6" "N"	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0							Ground Surface	
1								
2								
3								
4								
5								
6						105-106'	weathered stone redish color moist	Stone AS PAGE 5
7								
8								
9						106-148'	competent rock limestone	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

100

120

SOIL BORING AND WELL LOG 7-8

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

SHEET: 1 of 7
BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS 6" - 6" - 6" - 6" "N"	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0							Ground Surface	
1							SAND	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								135-151
16							CONCRETE/GRAVEL	
17							50/50	
18							1405-135	
19							BENT SOIL	
20							RISK	

120

40

SAND AS
6
135-151
CONCRETE/GRAVEL
50/50
9

1405-135
BENT SOIL
RISK



SOIL BORING AND WELL LOG 8-8

PROJECT NUMBER:
PROJECT:
LOCATION:
DRILLING METHOD:
DRILLER:
DRILLING CONTRACTOR:
NORTHING:

SHEET: 1 of 1
BORING NUMBER:
GEOLOGIST:
START:
FINISH:
TOC ELEVATION:
EASTING:

DEPTH BELOW SURFACE (FT)	SAMPLE					STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	WELL DESCRIPTION
	LITHOLOGIC SYMBOL	INTERVAL	PID	USCS Symbol	RECOVERY		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL COMPLETION DETAILS: WELL TYPE, DEPTH, SCREEN LENGTH, COVER, ETC.
0						6" - 6" - 6" - 6" "N"		
1							Ground Surface	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

140

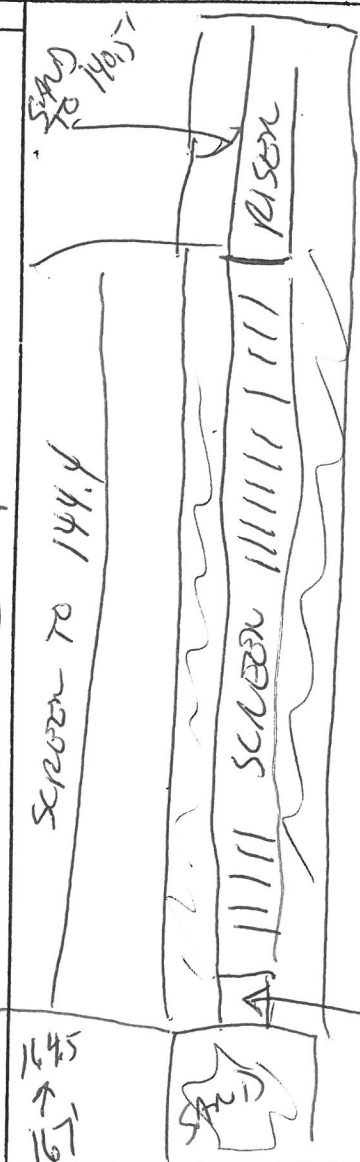
Water level zone
148'

149' ↓
190'

SAND

6"-1' weathered
silty stone
moist (tan color)
10YR 8/4

COMPETENT Rock
Limestone



160

90 ↓

NOTE - BENTONITE BACK TO 167'

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40mw7

Location: Swmu 40

Field Representatives: SA/MB

Sample Matrix: Ground Water

Lab Sample #: 40mw76w112011

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 11-20-11 0910

One-half Well Screen Volume (gal) n/a

Initial Water Level (ft) 145.14

Total Volume Purged (gal) 3

Mid-screen Depth (ft) 157.5

Was well purged to dryness? NO

Well Total Depth (ft) 167.5

Water Level After Purge (ft) 148.10

Casing Diameter, (inches) 2

Date/Time Completed 11-20-11 1205

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1138	147.00	190	13.10	7.34	0.821	1341.1	178.9	8.58
1141	147.05	190	13.23	7.34	0.822	1351.9	177.7	8.58
1144	147.10	200	13.23	7.34	0.822	1352.2	177.4	8.51
1147	147.12	190	13.24	7.36	0.822	1352.4	177.4	8.60
1150	147.20	180	13.33	7.37	0.824	765.3	177.3	8.34
1153	147.25	190	13.41	7.34	0.824	428.6	177.4	8.69
1156	147.31	180	13.58	7.37	0.829	173.1	177.4	8.79
1159	147.35	210	13.74	7.34	0.833	146.3	177.7	8.81
1202	147.90	200	13.87	7.37	0.837	139.9	177.7	8.86
1205	148.10	200	13.88	7.37	0.835	145.6	177.8	8.84

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

SAMPLING INFORMATION:

Sample Point ID: 40mw76w112011 Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 148.10

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1205	148.10	200	13.88					

GENERAL INFORMATION:

Weather conditions at time of sample collection: Sunny, warm

Sample Characteristics: TURBID NO ODR

COMMENTS AND OBSERVATIONS: FIELD FILTER FOR METALS

DATE: 11-20-11

DATE: 11-20-11

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: LEAF

Sample Point ID: LFMW01

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: LFMW01 GW 112111

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 11-21-11 1200

One-half Well Screen Volume (gal) N/A

Initial Water Level (ft) 84.95

Total Volume Purged (gal) 2

Mid-screen Depth (ft) ~~84.95~~

Was well purged to dryness? NO

Well Total Depth (ft) 103

Water Level After Purge (ft) 85.05

Casing Diameter, (inches) 2

Date/Time Completed 11-21-11 1354

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1333	85.10	250	14.78	7.18	0.634	1279.0	165.9	11.70
1336	85.10	240	14.65	7.12	0.632	1347.2	164.0	9.25
1339	85.15	350	14.08	7.09	0.625	1360.4	165.9	8.13
1342	85.08	120	13.74	7.07	0.621	1357.7	166.5	7.47
1345	85.05	110	13.95	7.07	0.624	1359.9	166.3	7.40
1348	85.06	120	14.18	7.07	0.628	1362.3	165.9	7.19
1351	85.04	120	14.25	7.08	0.629	1362.8	165.8	7.19
1354	85.05	130	14.27	7.07	0.629	1330.8	165.9	7.17

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

SAMPLING INFORMATION:

Sample Point ID: LFMW016W 11/21/11 Method of Sampling: Low Flow

Dedicated?: No

Water Level at time of Sample Collection: 85.05

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1354	85.05	130	14.27	7.07	0.429	1330.8	165.9	7.17

GENERAL INFORMATION:

Weather conditions at time of sample collection: CLOUDY w/RAIN

Sample Characteristics: TURBID NO ODOUR

COMMENTS AND OBSERVATIONS: TUBING STUCK IN WELL, REMOVED VERY MURKY, FIELD FILTER FOR METALS

DATE: 11-21-11

DATE: 11-21-11

SAMPLER: JLB

QC Check By: John Bradley

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: LAHAY

Sample Point ID: 40MW6

Location: Sumo 40

Field Representatives: JA/MB

Sample Matrix: Ground Water

Lab Sample #: 40MW6 GW 11/2/11

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or (N)

Date/Time Initiated 11-21-11 0830

One-half Well Screen Volume (gal) N/A

Initial Water Level (ft) 106.25'

Total Volume Purged (gal) 2

Mid-screen Depth (ft) 127.0

Was well purged to dryness? NO

Well Total Depth (ft) 137.0'

Water Level After Purge (ft) 106.59

Casing Diameter, (inches) 2

Date/Time Completed 11-21-11

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
0913	106.61	90	12.55	6.95	0.502	9.8	137.7	8.93
0916	106.66	130	12.52	6.94	0.554	7.9	141.1	7.74
0919	106.66	180	12.50	6.94	0.576	7.3	141.9	7.48
0922	106.60	190	12.39	6.94	0.597	8.6	143.4	7.29
0925	106.59	190	12.38	6.95	0.610	7.9	145.7	7.15
0928	106.59	180	12.44	6.95	0.616	8.1	146.1	7.11
0931	106.60	190	12.38	6.95	0.617	8.4	146.2	7.08
0934	106.59	190	12.41	6.96	0.618	8.2	145.9	7.09

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

SAMPLING INFORMATION:

Sample Point ID: 40 MW6

Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 106.59

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
0934	106.59	190	12.41	6.96	0.618	8.2	145.9	7.09

GENERAL INFORMATION:

Weather conditions at time of sample collection: cloudy

Sample Characteristics: clear no odor

COMMENTS AND OBSERVATIONS: _____

DATE: 11-21-11

DATE: 11-21-11

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: REAAP

Sample Point ID: 40MWS

Location: RAFPD, VA

Field Representatives: JA/MB

Sample Matrix: Ground Water

Lab Sample #: 40MWS GW 11/20/11

PURGE INFORMATION:

Method of Well Purge: low flow

Dedicated: Y or (N)

Date/Time Initiated 11-20-11 1430

One-half Well Screen Volume (gal) ~1

Initial Water Level (ft) 110.70

Total Volume Purged (gal) 1.5

Mid-screen Depth (ft) 168

Was well purged to dryness? no

Well Total Depth (ft) 158.60

Water Level After Purge (ft) 111.53

Casing Diameter, (inches) 2

Date/Time Completed 11-20-11 1525

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1510	112.93	120	12.65	7.10	0.591	124.6	114.9	6.76
1513	111.89	110	12.91	7.06	0.602	108.1	114.8	6.84
1516	114.78	120	12.90	7.06	0.607	108.4	118.0	6.82
1519	111.64	130	12.92	7.05	0.611	93.3	119.9	6.94
1522	111.58	120	12.91	7.04	0.613	87.6	121.5	6.91
1525	111.53	120	12.93	7.04	0.614	83.5	123.2	7.03

*ms/msd, DUP on this well

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

SAMPLING INFORMATION:

Sample Point ID: 40 MWS GW 11/20/11 Method of Sampling: LOW FLOW

Dedicated?: NO

Water Level at time of Sample Collection: 111.53

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1525	111.53	120	12.93	7.04	0.614	83.5	123.2	7.03

GENERAL INFORMATION:

Weather conditions at time of sample collection: Sunny, warm

Sample Characteristics: SLIGHTLY TURBID NO ODOUR

COMMENTS AND OBSERVATIONS: _____

DATE: 11-20-11

DATE: 11-20-11

SAMPLER: [Signature]

QC Check By: [Signature]

COC No. A 3655

156 Starlite Drive
Marietta, OH 45750

Kemron

ENVIRONMENTAL SERVICES
CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308

Fax: 740-376-2536

Company Name: KEMRON						Program ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____ ADDITIONAL REQUIREMENTS																							
Project Contact: MARY LEE ROLHOFTE			Contact Phone #: 740-373-4308																										
Turn Around Requirements: 14-DAY			Location: KADFOUS, VA																										
Project ID: 19K0669 SWMU 40 REAPP (LTM GIL 2)																													
Sampler (print): JONAH ANDERSON			Signature: <i>[Signature]</i>			TOTAL # (LAB USE)																							
Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS		Hold	TCL	VOC	TCL SVOC + SIM	TCL PEST	TAL METALS	PERCHLORATE															
40 MW 76W 030612		X	3-6-12	1204	W	9			3	2	2	1	1			PERL ★ QAPP ★ SWMU 40 REAPP													
40 TB 030612			3-6-12		W	2			2																				
40 LFM 1016W 030612		X	3-6-12	1606	W	9			3	2	2	1	1																
40 LFM 101 MS 6W 030612		X	3-6-12	1606	W	9			3	2	2	1	1																
40 LFM 101 MS 6W 030612		X	3-6-12	1604	W	9			3	2	2	1	1																
40 DUP 6W 030612		X	3-6-12	1606	W	9			3	2	2	1	1																
40 FB 030612		X	3-6-12	1700	W	9			3	2	2	1	1																
40 EQ 030612		X	3-6-12	1730	W	9			3	2	2	1	1																
40 MWS 6W 030712		X	3-7-12	0942	W	9			3	2	2	1	1																
40 EQ 030712		X	3-7-12	1030	W	9			3	2	2	1	1																
40 MW 6W 030712		X	3-7-12	1223	W	9			3	2	2	1	1																
Relinquished by: <i>[Signature]</i>						Date: 3-8-12		Time: 1237		Received by: <i>[Signature]</i>				Relinquished by: <i>[Signature]</i>				Date:		Time:		Received by: <i>[Signature]</i>							
Relinquished by: <i>[Signature]</i>						Date:		Time:		Received for Laboratory by: <i>[Signature]</i>				Date: 3-8-12		Time: 1237		Remarks:											

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES
CHAIN-OF-CUSTODY RECORD

Fax: 740-376-2536

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Location Radford VA

Date Feb 8, 2012

Project / Client SMU 40 RFAAP

Pic

worn

App'l

Then

Also

the

Pic

Brrr

soon

had manifest signed by ATK personnel.

Job completed approx 1120 hr.

Safety

Parrels,

els

out

11

16

Location RADFORD, VA

Date 3-5-12 31

Project / Client SMU 40 RFAAP

ONSITE @ 1230 38°F Sunny
 MEETING w/ Jim McKinnon
 BAE - 303 WINDS ROAD &
 ATK SAFETY FOR MEET
 SUNNY PERMIT & HOT
 WORK PERMIT

COMPLETED @ 1315

* JIM MCKINNON STATED
 HE IS POINT OF CONTACT
 FOR FIELD ACTIVITIES UNTIL
 BAE HAS A PERSON IN PLACE

OFFSITE 1330 JLA

Location RADFORD, VA

Date 3-6-12

Project / Client RTAAP SUMM 40

0700 JA CALIBRATED YSE & PID
 0800 ONSITE FOR ZINC/DETA
 OF TRACON
 0930 ONSITE @ SUMM 40
 FOR GW SAMPLING JA, MB, JC

1015 COMPLETED H/S MEETING

1030 SETTING UP ON 40MW7
 PID = 0.0, WL = 131.60
 - SAMPLED @ 1204 40MW7GW030612
 - DECONNED & MOVED $\approx$ 25 gallons
 TO IDM STORAGE AREA

1430 SETTING UP ON LFMW1
 PID = 0.0, WL = 62.90'
 - SAMPLED @ 1606 40LFMW01GW030612
 ALSO COLLECTED DUP MS, MID, & FB
 - DECONNED & COLLECTED EQR #1
 MOVED $\approx$ 25 gallons to IDM AREA

* PACKAGED ALL LOGS ON 100
 OFFSITE JA, MB, JC @ 1845

Location RADFORD, VA

Date 3-7-12

Project / Client RTAAP SUMM 40

0700 JA CALIBRATED YSE & PID
 0800 ONSITE FOR GW SAMPLING
 JA, MB, JC
 0840 COMPLETED H/S MEETING
 Sunny & 36°F

0850 SETTING UP ON 40MW5
 PID = 0.0, WL = 96.42'
 - SAMPLED @ 0942 40MW5GW030712
 ALSO COLLECTED EQR #2
 & DECONNED AND MOVED $\approx$ 25
 gallons to IDM AREA
 1100 Jim McKenna STOPPED
 AND APPROVED PICTURES
 AND SAID EVERYTHING LOOKS
 GOOD.

1145 SETTING UP ON 40MW6
 PID = 0.0, WL = 84.15'
 - SAMPLED @ 1223 40MW6GW030712
 - DECONNED AND MOVED $\approx$ 12 gal
 to IDM STORAGE AREA

40MW3 - WL = 91.96'
 40MW7 - WL = 131.08'
 LFMW01 - WL = 62.54'

Location RANDOLPH, VA Date 3-7-12
 Project / Client SMWU 40 REAP

cont. ...

1400 - COMPLETED LANDFILL
 CAP/QTY INSPECTION, NOTED
 ANY DISCREPANCIES ON
 INSPECTION SHEET *see*

1500 - COLLECTED COMPOSITE
 SAMPLE FROM 2-DUMPS
 OF IDM (WATER BELOW/PURGE)
 FROM GW SAMPLING
 $\text{pH} = 7.75$
 ≈ 87 gallons of water

1515 - OFFSITE JA/MB/JC

Location _____ Date _____

Project / Client _____

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: REAAP

Sample Point ID: 40MW5

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: 40MW5 GW 030712

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or (N)

Date/Time Initiated 3-7-12 850

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 96.42

Total Volume Purged (gal) 3

Mid-screen Depth (ft) 148

Was well purged to dryness? No

Well Total Depth (ft) 158

Water Level After Purge (ft) 97.50

Casing Diameter, (inches) 2

Date/Time Completed 3-7-12 0942

Sand Pack Diameter, (inches) —

PURGE DATA:

± 0.1 $\pm 3\%$ $\pm 10\%$ ± 10 $\pm 10\%$

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
909	98.35	800	10.08	7.67	0.378	35.6	188.6	12.51
912	97.22	80	10.08	7.59	0.378	34.7	188.9	12.44
915	97.22	300	9.92	7.36	0.457	44.4	194.0	11.12
918	97.31	100	10.38	6.95	0.553	42.3	200.3	9.17
921	99.03	330	10.89	6.88	0.580	44.7	199.0	8.12
924	98.61	120	11.43	6.92	0.500	36.0	195.2	8.45
927	98.05	180	11.42	6.91	0.504	16.5	195.3	8.54
930	97.85	180	11.16	6.90	0.537	12.3	195.5	7.87
933	97.67	190	11.00	6.87	0.612	10.7	195.5	7.41
936	97.60	170	11.02	6.86	0.619	8.5	194.1	7.37
939	97.53	180	11.08	6.86	0.621	6.9	192.8	7.35

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]**SAMPLING INFORMATION:**

Sample Point ID: 40mws

Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 97.50

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
0942	97.50	180	11.11	6.87	0.623	6.0	191.2	7.16

GENERAL INFORMATION:

Weather conditions at time of sample collection: Sunny & cool

Sample Characteristics: cloudy no odor

COMMENTS AND OBSERVATIONS: _____

DATE: 3-7-12

DATE: 3-8-12

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40 MW6

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: 40 MW6 6W030712

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 3-7-12 1145

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 86.15

Total Volume Purged (gal) 2.5

Mid-screen Depth (ft) 127

Was well purged to dryness? NO

Well Total Depth (ft) 137

Water Level After Purge (ft) 86.74

Casing Diameter, (inches) 2

Date/Time Completed 3-7-12 1223

Sand Pack Diameter, (inches) —

PURGE DATA:

±0.1 ±3% ±10% ±10 ±10%

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1202	87.41	230	15.21	7.87	0.450	8.1	100.3	13.64
1205	86.91	210	15.10	7.65	0.469	10.9	108.6	11.92
1208	86.78	160	14.77	6.98	0.600	7.9	128.5	10.95
1211	86.74	180	14.73	6.84	0.640	6.0	137.3	9.57
1214	86.75	190	14.70	6.78	0.666	5.1	141.9	8.73
1217	86.75	190	14.70	6.76	0.678	5.2	144.1	8.23
1220	86.74	190	14.66	6.75	0.682	5.0	145.4	7.98
1223	86.74	190	14.66	6.74	0.684	4.9	146.2	7.89

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: 40MWC

Method of Sampling: Low-Flow

Dedicated?: NO

Water Level at time of Sample Collection: 86.74

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1223	86.74	190	14.66	6.74	0.684	4.9	146.2	7.89

GENERAL INFORMATION:

Weather conditions at time of sample collection: Sunny & warm

Sample Characteristics: no odor CLEAN

COMMENTS AND OBSERVATIONS: n/a

DATE: 3-7-12

DATE: 3-8-12

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: LFMW01

Location: Sumu 40

Field Representatives: JA/MB/SC

Sample Matrix: Ground Water

Lab Sample #: LFMW01 GW 030612

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or (N)

Date/Time Initiated 3-6-12 1430

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 62.90

Total Volume Purged (gal) 3

Mid-screen Depth (ft) ± 98-93'

Was well purged to dryness? NO

Well Total Depth (ft) 103

Water Level After Purge (ft) 62.71

Casing Diameter, (inches) 2

Date/Time Completed 3-6-12 1606

Sand Pack Diameter, (inches) —

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1527	62.72	180	16.18	7.35	0.510	87.9	128.0	10.48
1530	62.71	190	16.06	7.30	0.521	62.4	132.8	9.66
1533	62.72	180	15.85	7.26	0.530	56.1	136.3	8.92
1536	62.72	170	15.67	7.23	0.536	58.4	139.7	8.38
1539	62.71	170	15.46	7.21	0.542	51.0	142.3	7.73
1542	62.71	170	15.31	7.20	0.545	39.2	143.7	7.37
1545	62.72	170	15.21	7.20	0.546	33.2	143.1	7.21
1548	62.72	180	15.14	7.19	0.546	27.3	142.0	7.04
1551	62.72	180	15.12	7.19	0.547	20.7	141.3	6.98
1554	62.71	180	15.01	7.18	0.547	14.8	139.0	6.90
1557	62.71	190	14.82	7.18	0.548	10.5	137.2	6.85

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: LFMw01

Method of Sampling: Low Flow

Dedicated?: NO

Water Level at time of Sample Collection: 62.71'

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1606	62.71	180	14.67	7.18	0.547	5.6	136.3	6.81

GENERAL INFORMATION:

Weather conditions at time of sample collection: Cloudy & Warm

Sample Characteristics: Clear & No odor

COMMENTS AND OBSERVATIONS: _____

DATE: 3-6-12

DATE: 3-8-12

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40 MW 7

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: 40 MW 7 GW 03 06 12

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or (N)

Date/Time Initiated 3-6-12

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 131.60

Total Volume Purged (gal) 4.0 gal

Mid-screen Depth (ft) 157.5

Was well purged to dryness? NO

Well Total Depth (ft) 167.5

Water Level After Purge (ft) 136.83

Casing Diameter, (inches) 2

Date/Time Completed 3-6-12 1204

Sand Pack Diameter, (inches) N/A

F 210

PURGE DATA:

± 0.1 $\pm 8\%$ $\pm 10\%$ ± 10 $\pm 10\%$

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1135	132.48	180	9.61	8.12	0.682	133.5	144.6	17.84
1138	132.68	110	9.24	7.91	0.662	179.3	142.8	17.22
1141	133.44	190	10.43	7.84	0.659	44.4	156.8	9.70
1143	133.60	190	10.51	7.23	0.637	36.2	157.6	9.27
1146	134.61	180	10.85	7.23	0.636	25.7	157.6	9.06
1149	134.83	200	11.54	7.22	0.637	16.3	157.2	8.72
1152	134.91	200	11.52	7.23	0.637	12.4	156.9	8.50
1155	135.74	200	11.70	7.22	0.636	9.4	156.7	8.49
1158	136.23	210	11.89	7.22	0.636	5.3	156.4	8.15
1201	136.42	200	11.83	7.22	0.635	6.1	156.3	8.23
1204	136.83	200	11.83	7.22	0.635	5.8	156.2	8.29

2



SAMPLING INFORMATION:

Sample Point ID: 40mm7

Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 136.83

PARAMETERS: Annual () Semi-Annual () Quarterly ~~(X)~~ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1204	136.83	200	11.83	7.22	2635	5.8	156.2	8.29

GENERAL INFORMATION:

Weather conditions at time of sample collection: cloudy & cool

Sample Characteristics: no odor & clear

COMMENTS AND OBSERVATIONS: _____

DATE: 3-6-12

DATE: 3-8-12

SAMPLER: [Signature]

QC Check By: [Signature]

Daily Safety Meeting

Project Name: SWMV 40

Date: 3-7-17

Location: RFOAP

Presented by: Michael Brantly

Check the Topics/Information Reviewed:

- | | |
|--|---|
| <ul style="list-style-type: none"> ☒ Daily work scope reviewed ☐ safety is everyone=s responsibility ☐ site health and safety plan reviewed ☐ safety glasses, hard hat, safety boots ☐ employee Right-To- Know/MSDS location ☐ vehicle safety and driving/road conditions ☐ hazard analysis for all tasks or new technology ☐ chemical hazards ☒ first aid, safety, and PPE location ☐ sharp object, rebar, and scrap metal hazards ☐ latex gloves inner/nitrile gloves outer ☐ open pits, excavations, and trenching hazards ☐ excavation/trenching inspections/documentation ☐ full face respirators with proper cartridges ☐ upgrade to Level C at: ☐ work stoppage at: ☐ portable tool safety and awareness ☐ slips, trips, and falls ☐ strains and sprains ☐ anticipated visitors ☐ electrical ground fault ☐ public safety and fences ☐ excavator swing and loading ☐ orderly site and housekeeping ☒ smoking in designated areas | <ul style="list-style-type: none"> ☒ leather gloves for protection ☐ effects of the night before? Rain or snow? ☐ vibration related injuries ☐ noise hazards ☐ confined space entry ☐ hot work permits ☐ overhead utility locations cleared? ☐ all underground utilities cleared? ☐ equipment and machinery familiarization ☒ fire extinguisher locations ☐ eye wash station locations ☐ directions to hospital ☐ heat and cold stress ☐ decontamination steps ☐ review emergency protocol ☐ parking and laydown area ☐ vehicle backing up hazards ☐ accidents can be costly ☐ no horse play ☐ dust and vapor control ☐ refueling procedures ☐ flying debris hazards ☐ poison ivy/oak/sumac |
|--|---|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)	NAME (SIGNATURE)	COMPANY
<u>Jonathan Anderson</u>	<u>[Signature]</u>	<u>UXB - Kemron</u>
<u>James Cole</u>	<u>[Signature]</u>	<u>UXB - Kemron</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

Instructions:

- # Conduct a daily safety meeting prior to beginning each day=s site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

Daily Safety Meeting

Project Name: SWMU 40

Date: 2-6-2012

Location: RFIAP

Presented by: Michael Brantley

Check the Topics/Information Reviewed:

- | | |
|---|---|
| <ul style="list-style-type: none">☒ Daily work scope reviewed☒ safety is everyone's responsibility☒ site health and safety plan reviewed☐ safety glasses, hard hat, safety boots☐ employee Right-To- Know/MSDS location☐ vehicle safety and driving/road conditions☐ hazard analysis for all tasks or new technology☐ chemical hazards☐ first aid, safety, and PPE location☐ sharp object, rebar, and scrap metal hazards☐ latex gloves inner/nitrile gloves outer☐ open pits, excavations, and trenching hazards☐ excavation/trenching inspections/documentation☐ full face respirators with proper cartridges☐ upgrade to Level C at:☐ work stoppage at:☐ portable tool safety and awareness☐ slips, trips, and falls☐ strains and sprains☐ anticipated visitors☐ electrical ground fault☐ public safety and fences☐ excavator swing and loading☐ orderly site and housekeeping☒ smoking in designated areas | <ul style="list-style-type: none">☒ leather gloves for protection☐ effects of the night before? Rain or snow?☐ vibration related injuries☐ noise hazards☐ confined space entry☐ hot work permits☐ overhead utility locations cleared?☐ all underground utilities cleared?☐ equipment and machinery familiarization☐ fire extinguisher locations☐ eye wash station locations☐ directions to hospital☒ heat and cold stress☐ decontamination steps☐ review emergency protocol☐ parking and laydown area☐ vehicle backing up hazards☐ accidents can be costly☐ no horse play☐ dust and vapor control☐ refueling procedures☐ flying debris hazards☐ poison ivy/oak/sumac |
|---|---|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)	NAME (SIGNATURE)	COMPANY
<u>James Cole</u>	<u>[Signature]</u>	<u>Kemper UXB Int'l</u>
<u>Jonat Anderson</u>	<u>[Signature]</u>	<u>UXB KEMRON</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Instructions:

- # Conduct a daily safety meeting prior to beginning each day's site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

FIELD CALIBRATION FORM

INITIAL CALIBRATION		FINAL CALIBRATION	
DATE:	3-7-12	DATE:	3-7-12
TIME:	0700	TIME:	0745

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0	7.04	6.99	6.99
10.0	9.98	10.01	10.01
4.0	4.01	4.02	4.02

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
1.413 ms/cm	1.209	1.413	1.413

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
TMP	8.34	8.45 mg/L	8.45 mg/L

FIELD CALIBRATION FORM

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
100 ntu	103.	100.2	100.2
0 (BZ)	1.3	0	0

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
229	231	229.1	229.1

PID CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID: _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
150 BAYLONE	—	99.8	99.8
100 ppm			

COMMENTS

3-7-12

SIGNATURE

[Signature]

FIELD CALIBRATION FORM

INITIAL CALIBRATION	FINAL CALIBRATION
DATE: 3-6-12	DATE: 3-6-12
TIME: 0700	TIME: 0740

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: N/A

METER ID: —

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0	7.12	7.01	7.01
10.0	10.01	9.99	9.99
4.0	3.98	4.02	4.02

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: N/A

METER ID: —

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
1.413 $\mu S/cm$	1.384	1.413	1.413

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: —

METER ID: —

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
TMP	8.63	8.45 mg/L	8.45 mg/L

FIELD CALIBRATION FORM

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
100 <i>ntu</i>	111.4	100.1	100.1
0 (<i>DI</i>)	-3.4	0	0

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
229	218.4	229.2	229.2

PID CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
150 <i>B. 7100C</i>	<u> </u>	99.9	99.9
100 <i>ppm</i>			

COMMENTS

3-6-12

SIGNATURE

[Signature]

Location RADFORD, VA Date 6-11-12
 Project / Client SWMU 40 REAP

ONSITE @ 1330 SA
 COOL, CLOUDY, 63°F, RAIN

CONTACTED JIM MCKENNA
 TO LET HIM KNOW WE
 WERE ONSITE & DROPPED
 TRAILER AT SITE.

OFFSITE @ 1400



Location RADFORD, VA Date 6-12-12
 Project / Client SWMU 40 REAP

ONSITE @ 0830 JA, MB, JC
 LOUL, 64°F, CLOUDY
 845 COMPLETED A/S W/SETUP
 0900 STARTED SETUP FOR
 GW MONITORING ON 40MW7
 PID = 0.0 ppm WL = 130.31'

NOTE > CALIBRATED YSI : P.D
 @ 0730

SAMPLED 40MW7 GW 061212 @ 1025
 DECEASED, MOVED TO LFMW6

1200 STARTED SETUP FOR
 GW MONITORING ON LFMW6
 PID = 0.0 ppm WL = 43.88'
 SAMPLED LFMW6 GW 061212 @ 1259
 DECEASED, MOVED TO 40MW6

1420 STARTED SETUP FOR
 GW MONITORING ON 40MW6
 PID = 0.0 ppm WL = 93.57'
 SAMPLED 40MW6 GW 061212 @ 1502
 COLLECTED DUP, MS, MSD AT THIS WELL

Location RADFORD, VA Date 6-12-12
 Project / Client SWMU 4D RPAAP

Cont....

DECONNED PUMP COULD RINSE
 BLANK & FIELD BLANK
 MOVED TO 40 MWS

1700 STARTED SET UP FOR GW
 MONITORING ON 40 MWS

PID = 0.0 ppm ~~that~~ WL = 101.29
 SAMPLED 40 MWS GW 06/12/12
 @ 1751

1835 40 MWS = 94.01'

1855 TRANSPORTED 2 75 gallons
 of purge/Bacon water
 TO RPAAP BIOPANT. SIGNED
 IN AND DISPOSED OF AT
 LIFT STATION. PER APPROVAL
 ON MARCH 20, 2012. pH = 7.89

1930 DEFSITE

JA

Location RADFORD, VA Date 6-13-12
 Project / Client SWMU 4D RPAAP

ONSITE @ 1000 JA/MB/JC

1015 COMPLETED HIS MEETING

1200 GREGORY GENERAL CONTRACTING
 ONSITE, DELIVERED:

1 LOAD OF CLAY
 1 LOAD OF TOP SOIL

1330 GREGORY GENERAL CONTRACTING
 ONSITE DELIVERED:
 1 LOAD OF CLAY
 1 LOAD OF TOP SOIL

1345 CONTACTED JIM MCKONT
 FOR APPROX MEETING
 ON 6-14-12 @ 0830

GRADED & REPAIRED LOW AREAS
 ON CAP. SEEDED & STRAWED

JAY COLE OFFSITE @ 1730
 OFFSITE @ 1700 JA/MB

Location RANDOLPH, VA Date 6-14-12Project / Client SWMU 40 RPAAP

ONSITE @ 0815 JT, TO MEET
w/ Jim MCKENNA
Sunny, 59°F

- Jim M. ONSITE @ 820 -
SAID HE WAS FINE WITH THE
COMPLETED CAP REPAIR AND
GAVE HIS APPROVAL ON REPAIR
AND PHOTOS
- COMPLETED QUINCY LTM
INSPECTION 7:44
- 0915 OFFSITE

Location _____ Date _____

Project / Client _____

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40 MW6

Location: SWMU 40

Field Representatives: SA/MB/SC

Sample Matrix: Ground Water

Lab Sample #: 40MW6GW061212

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or (N)

Date/Time Initiated 6-12-12 1420

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 93.57'

Total Volume Purged (gal) 2

Mid-screen Depth (ft) 127.0

Was well purged to dryness? NO

Well Total Depth (ft) 137.0

Water Level After Purge (ft) 93.95

Casing Diameter, (inches) 2

Date/Time Completed 6-12-12 1502

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1438	94.25	120	25.06	8.10	0.422	4.4	245.4	8.90
1441	94.32	210	21.05	7.44	0.508	8.3	297.8	8.54
1444	94.11	170	19.90	7.15	0.555	12.3	310.2	8.69
1447	94.01	170	19.01	6.98	0.596	11.4	314.4	8.91
1450	93.98	170	19.12	6.94	0.609	10.8	313.6	8.11
1453	93.98	170	18.97	6.91	0.615	8.3	312.7	7.56
1456	93.98	170	18.85	6.91	0.619	7.4	311.0	7.20
1459	93.99	180	18.78	6.88	0.618	7.4	309.8	6.90
1502	93.95	170	18.94	6.89	0.618	5.5	308.3	6.73

[illegible]

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1502	93.95	170	18.94	6.89	0.618	5.5	308.3	6.73

GENERAL INFORMATION:

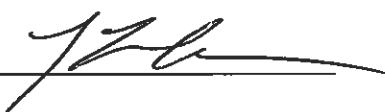
Weather conditions at time of sample collection: 79°F, SUNNY

Sample Characteristics: CLEAR, NO ODOUR

COMMENTS AND OBSERVATIONS: COLLECTED; DUP MS/MSD
PB = EQR

DATE: 6-12-12

DATE: 6/12/12

SAMPLER: 

QC Check By: 

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40MWS

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: 40MWSGW061212

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 6-12-12 1700

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 101.29

Total Volume Purged (gal) 1.5

Mid-screen Depth (ft) 158

Was well purged to dryness? NO

Well Total Depth (ft) 168

Water Level After Purge (ft) 102.56

Casing Diameter, (inches) 2

Date/Time Completed 6-12-12 1751

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1730	103.92	280	14.55	7.05	0.630	168.7	341.2	7.01
1733	103.25	150	14.87	6.97	0.630	158.5	350.7	6.86
1736	102.92	210	15.50	6.94	0.631	148.1	341.3	6.75
1739	102.76	210	15.37	6.93	0.632	118.6	437.0	6.83
1742	102.70	220	15.35	6.92	0.631	89.6	652.0	6.85
1745	102.70	220	15.28	6.90	0.631	64.5	659.3	6.86
1748	102.65	200	15.20	6.89	0.631	61.3	689.6	6.84
1751	102.56	200	15.25	6.89	0.631	62.1	683.4	6.81

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: 40mws

Method of Sampling: Low - Flow

Dedicated?: NO

Water Level at time of Sample Collection: 102.56

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1751	102.56	200	15.25	6.89	0.631	62.1	683.4	6.81

GENERAL INFORMATION:

Weather conditions at time of sample collection: 80°F, SUNNY

Sample Characteristics: SULFIDY TURBID, NO ODOUR

COMMENTS AND OBSERVATIONS: _____

DATE: 6-12-12

DATE: 6-12-12

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: LFMW01

Location: Sumu 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: LFMW01GW061212

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 6-12-12

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 63.88'

Total Volume Purged (gal) 1.5

Mid-screen Depth (ft) ≈ 93'

Was well purged to dryness? NO

Well Total Depth (ft) 103'

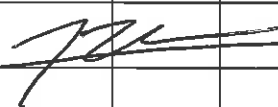
Water Level After Purge (ft) 63.92

Casing Diameter, (inches) 2

Date/Time Completed 6-12-12 1259

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1235	63.93	70	17.24	7.17	0.562	12.5	314.7	7.18
1238	63.93	200	18.30	7.06	0.573	11.4	328.5	6.88
1241	63.92	130	19.15	7.01	0.586	12.3	335.7	6.73
1244	63.94	150	19.65	6.99	0.595	11.1	341.0	6.57
1247	63.92	140	20.11	6.98	0.605	12.8	345.1	6.51
1250	63.91	150	20.31	6.98	0.610	12.9	346.1	6.45
1253	63.91	150	20.45	6.97	0.614	13.4	346.3	6.43
1256	63.92	160	20.70	6.97	0.618	13.5	345.5	6.43
1259	63.92	150	20.92	6.97	0.617	13.6	357.5	6.41
								

[illegible]**SAMPLING INFORMATION:**

Sample Point ID: LFMW01

Method of Sampling: Low-Flow

Dedicated?: no

Water Level at time of Sample Collection: 63.92

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1259	63.92	150	20.92	6.97	0.617	13.4	357.5	6.41

GENERAL INFORMATION:Weather conditions at time of sample collection: 75°F sunnySample Characteristics: clear, no odor

COMMENTS AND OBSERVATIONS: _____

DATE: 6-12-12SAMPLER: [Signature]DATE: 6-12-12QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40MN7

Location: SWMU 40

Field Representatives: JA/MB/JC

Sample Matrix: Ground Water

Lab Sample #: 40MW7G-W061212

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 6-12-12 0900

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 130.31'

Total Volume Purged (gal) 3.5

Mid-screen Depth (ft) 157.5'

Was well purged to dryness? NO

Well Total Depth (ft) 167.5'

Water Level After Purge (ft) 132.69

Casing Diameter, (inches) 2"

Date/Time Completed 6-12-12 1025

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
940	133.31	500	15.80	7.80	0.499	136.1	645.2	10.37
943	132.86	120	15.55	7.26	0.539	37.1	680.7	10.14
946	133.08	140	15.78	7.17	0.586	20.5	647.5	9.43
949	133.07	150	15.98	7.14	0.584	20.3	691.3	8.21
952	133.08	150	16.01	7.13	0.585	20.0	693.7	7.72
955	132.88	160	16.30	7.12	0.584	19.1	707.3	7.59
958	132.75	160	16.72	7.09	0.585	17.1	765.3	7.49
1001	132.70	170	17.04	7.09	0.586	16.8	751.6	7.45
1004	132.70	170	17.10	7.09	0.587	16.3	724.3	7.43
1007	132.68	180	17.06	7.09	0.588	14.1	738.3	7.40
1010	132.64	160	17.01	7.09	0.588	13.8	744.9	7.38

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]**SAMPLING INFORMATION:**

Sample Point ID: 40MW7

Method of Sampling: Low-Flow

Dedicated?: 100

Water Level at time of Sample Collection: 132.69

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1025	132.49	150	17.13	7.08	0.589	9.1	765.8	7.27

GENERAL INFORMATION:

Weather conditions at time of sample collection: CLOUDY 64°F

Sample Characteristics: CLEAR, NO ODOM

COMMENTS AND OBSERVATIONS: _____

DATE: 6-12-12

DATE: 6-12-12

SAMPLER: JZ

QC Check By: Martin B. Kelly

FIELD CALIBRATION FORM

INITIAL CALIBRATION	FINAL CALIBRATION
DATE: 6-12-12	DATE: 6-12-12
TIME: 0730	TIME: 0800

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0	7.04	7.00	7.00
10.0	9.98	10.01	10.01
4.0	3.93	4.03	4.03

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
1.413 ms/cm	1.384	1.413	1.413

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
TAP WATER	98.7 %	98.7 %	98.7 %

FIELD CALIBRATION FORM

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
100 ntu	107.6 ntu	100.1 ntu	100.1 ntu

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
254.1	265	254	254

PID CALIBRATION

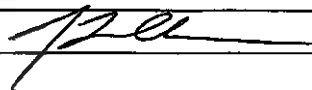
CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
150 BUTYLENE	—	99.9	99.9 ppm
100 ppm			

COMMENTS _____

SIGNATURE _____



Daily Safety Meeting

Project Name: Radford AAP

Date: 6-13-12

Location: SWMU 40

Presented by: Michael Brantley

Check the Topics/Information Reviewed:

- | | |
|--|--|
| <ul style="list-style-type: none"> ☒ Daily work scope reviewed ☐ safety is everyone's responsibility ☐ site health and safety plan reviewed ☒ safety glasses, hard hat, safety boots ☐ employee Right-To- Know/MSDS location ☐ vehicle safety and driving/road conditions ☐ hazard analysis for all tasks or new technology ☐ chemical hazards ☐ first aid, safety, and PPE location ☐ sharp object, rebar, and scrap metal hazards ☐ latex gloves inner/nitrile gloves outer ☐ open pits, excavations, and trenching hazards ☐ excavation/trenching inspections/documentation ☐ full face respirators with proper cartridges ☐ upgrade to Level C at: ☐ work stoppage at: ☐ portable tool safety and awareness ☒ slips, trips, and falls ☐ strains and sprains ☐ anticipated visitors ☐ electrical ground fault ☐ public safety and fences ☐ excavator swing and loading ☐ orderly site and housekeeping ☐ smoking in designated areas | <ul style="list-style-type: none"> ☐ leather gloves for protection ☐ effects of the night before? Rain or snow? ☐ vibration related injuries ☐ noise hazards ☐ confined space entry ☐ hot work permits ☐ overhead utility locations cleared? ☐ all underground utilities cleared? ☒ equipment and machinery familiarization ☐ fire extinguisher locations ☐ eye wash station locations ☐ directions to hospital ☒ heat and cold stress ☐ decontamination steps ☐ review emergency protocol ☐ parking and laydown area ☐ vehicle backing up hazards ☐ accidents can be costly ☐ no horse play ☐ dust and vapor control ☐ refueling procedures ☐ flying debris hazards ☐ poison ivy/oak/sumac <i>Dump trucks</i> <i>skid steer</i> |
|--|--|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)
Michael Brantley
Jonah Anderson
James Cole
Jr.

NAME (SIGNATURE)
Michael Brantley
[Signature]
JACole

COMPANY
UXB-KEMRON
UXB-KEMRON
UXB-KEMRON

Instructions:

- # Conduct a daily safety meeting prior to beginning each day's site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

Daily Safety Meeting

Project Name: Rodford AHP

Date: 6-12-12

Location: SWMU 40

Presented by: Michael Brantley

Check the Topics/Information Reviewed:

- | | |
|---|--|
| <ul style="list-style-type: none">☒ Daily work scope reviewed☐ safety is everyone's responsibility☐ site health and safety plan reviewed☐ safety glasses, hard hat, safety boots☐ employee Right-To- Know/MSDS location☐ vehicle safety and driving/road conditions☐ hazard analysis for all tasks or new technology☐ chemical hazards☐ first aid, safety, and PPE location☐ sharp object, rebar, and scrap metal hazards☐ latex gloves inner/nitrile gloves outer☐ open pits, excavations, and trenching hazards☐ excavation/trenching inspections/documentation☐ full face respirators with proper cartridges☐ upgrade to Level C at:☐ work stoppage at:☐ portable tool safety and awareness☒ slips, trips, and falls☐ strains and sprains☐ anticipated visitors☐ electrical ground fault☐ public safety and fences☐ excavator swing and loading☐ orderly site and housekeeping☐ smoking in designated areas | <ul style="list-style-type: none">☐ leather gloves for protection☐ effects of the night before? Rain or snow?☐ vibration related injuries☐ noise hazards☐ confined space entry☐ hot work permits☐ overhead utility locations cleared?☐ all underground utilities cleared?☐ equipment and machinery familiarization☐ fire extinguisher locations☐ eye wash station locations☐ directions to hospital☐ heat and cold stress☐ decontamination steps☐ review emergency protocol☐ parking and laydown area☐ vehicle backing up hazards☐ accidents can be costly☐ no horse play☐ dust and vapor control☐ refueling procedures☐ flying debris hazards☒ poison ivy/oak/sumac☒ Tree Checks |
|---|--|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)

Michael Brantley
Jay Cole
[Signature]

NAME (SIGNATURE)

[Signature]
Jay Cole
Jonathan Anderson

COMPANY

Kemron
UXB Int'l
UXB Kemron

Instructions:

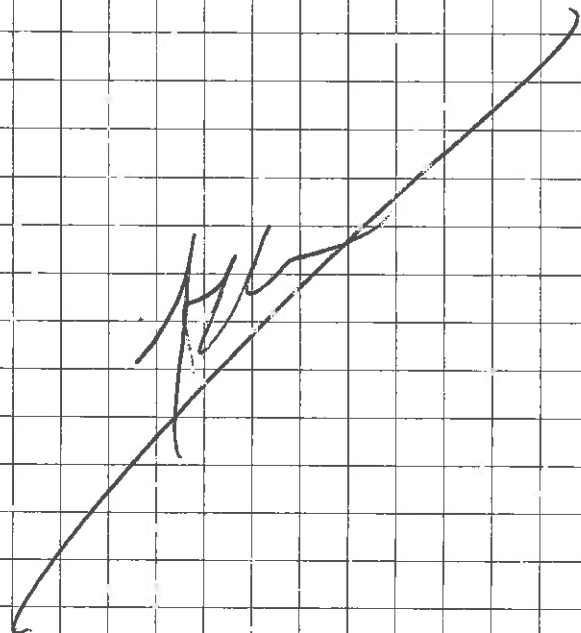
- # Conduct a daily safety meeting prior to beginning each day's site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

Location RAIDFORD, VADate 9-24-11 41Project / Client ~~SLIPSTREAM~~ SUMU 40 KFBAP

ON SITE @ 1230 SA, JC TO
REVIEW BADGES & VEHICLE
PASSES

1500 DROPPED TRAIL LOC @
SUMU 40

OFF SITE @ 1530 SA = JC



Location RANDOLPH, VADate 9-25-12Project / Client SWMU 40 RFAAP

0700 CALIBRATED YSI & PID
CLOUDY & 39°F.

0800 DUSTY SA/JC TO
MEET MATT ALBERTS AND
SAFETY FOR PERMITS

0830 REVIEWED HOT WORK &
ALSA ENTRY PERMIT

COMPLETED HIS MEETING

SETTING UP ON 40MW7 @ 0900

WL ON 40MW7 = 145.65'

PID = 0.0 PPM

SAMPLED @ 1113 40MW7GW 92512

DECONNED PUMP, COLLECTED

QR RINSE @ 1430

40EQR92512

40MW3 = 96.30' for WL

PID = 0.0 PPM

SETTING UP ON 40MW6 @ 1945

~~WL~~ WL ON 40MW6 = 107.95'

Location RANDOLPH, VADate 9-25-12Project / Client SWMU 40 RFAAP

CONT....

PID = 0.0 PPM

SAMPLED 40MW6 @ 1545

40MW6GW 92512

DECONNED PUMP

SETTING UP ON 40MW5

WL ON 40MW5 = 112.44'

SAMPLED 40MW5 @ 1816

40MW5GW 92512

COLLECTED DUP @ THIS WELL

40DUPGW 92512

COLLECTED MS/MSD @ 1900

40MW5MS GW 92512

40MW5MSD GW 92512

PID = 0.0 PPM

PACKED SAMPLES ON KE

OFF SITE @ 2200 SA/JC

[Signature]

Location RAIDFORD, VA Date 9-26-12
 Project / Client SWMU 40 RFAAP

0730 CALIBRATED YSI : PID
 52°F : SUNNY

0815 ONSITE SA
 CONTACTED TOM MAYNOR
 FOR ENTRY TO LFMW01
 AREA # (540)-605-0308

JC ONSITE @ 0830 COMPLETED
 H's MEETING

COLLECTED FIELD BLANK @ 0900
 40FB92612

DECONED PUMP & COLLECTED
 EQ RINSE @ 0945
 40EQR92612

SET UP ON LFMW01 @ 1010
 WL = 84.60' PID = 0.0 RPM
 SAMPLED @ 1054
 LFMW01G-W92612

DECONED PUMP

Location RAIDFORD, VA Date 9-26-12
 Project / Client SWMU 40 RFAAP

Cont.

Continued page 4, decan
 water ~ 80 gallons

TRANSPORTED TO RFAAP
 BIOPANT

SIGNED IN WITH BIOPANT
 OPERATOR & DISCHARGED
 ~ 80 gallons @ LIFT STATION.

PACKED SAMPLES ON ICE

SA & JC OFFSITE @ 1430

[Handwritten signature/initials]

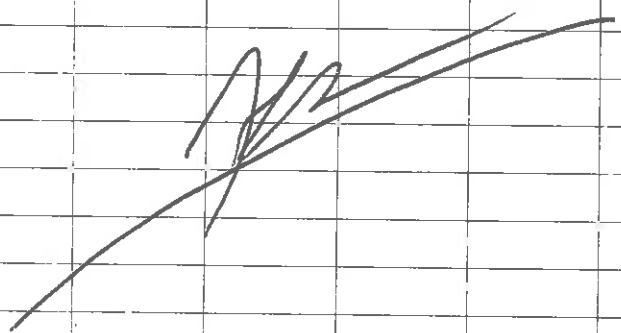
Location RADFORD, VADate 9-27-12Project / Client SWMU 40, RPAAP

ONSITE @ 0830 SA
MEETING W/ MATT ALBERTS
FOR CAMERA PASS

0845 COMPLETED LANDFILL
(SWMU 40) INSPECTION. TOOK
PHOTOS, WAITING FOR JIM
MCKENNA TO APPROVE
PICTURES

JIM MCKENNA ONSITE @ 0900
APPROVED PICTURES ; WALKED
SITE. NO COMMENTS PICTURES
APPROVED.

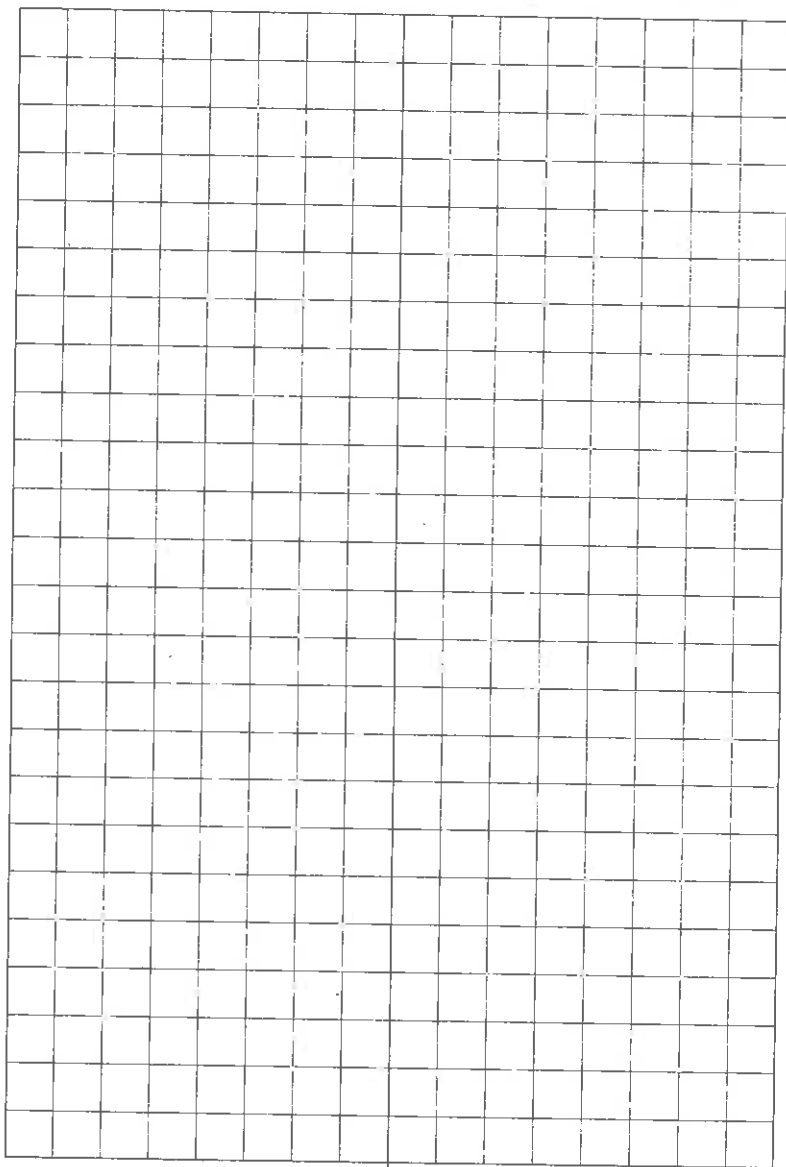
OFFSITE @ 0930 SA



Location _____

Date _____

Project / Client _____



GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Location: SWMU 40

Sample Matrix: Ground Water

Sample Point ID: LFMW01

Field Representatives: JA/JC

Lab Sample #: LFMW01GW92612

PURGE INFORMATION:

Method of Well Purge: Low Flow

Date/Time Initiated 9-24-12 1010

Initial Water Level (ft) 86.40

Mid-screen Depth (ft) 1148 298-93

Well Total Depth (ft) 1158 103

Casing Diameter, (inches) 2

Sand Pack Diameter, (inches) N/A

Dedicated: Y or N

Well Volume of Standing Water (gal) N/A

Total Volume Purged (gal) 2.5

Was well purged to dryness? NO

Water Level After Purge (ft) 86.63

Date/Time Completed 9-24-12 1054

PURGE DATA:

0.1 37 109 109 07

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1034	86.62	180	15.27	7.69	0.921	200.5	631.8	1.52
1039	86.63	180	15.02	7.53	0.969	292.4	658.1	1.44
1042	86.62	180	15.20	7.39	1.009	427.4	671.3	1.57
1045	86.41	180	15.24	7.31	1.003	496.8	671.1	1.61
1048	86.62	190	15.28	7.24	1.039	524.4	491.3	1.81
1051	86.62	180	15.27	7.23	1.041	519.7	501.4	1.79
1054	86.63	180	15.28	7.20	1.042	523.4	515.4	1.83

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: LFmw01

Method of Sampling: Low Prow

Dedicated?: no

Water Level at time of Sample Collection: 86.63

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1054	84.43	180	15.28	7.20	1.042	523.4	515.4	1.83

GENERAL INFORMATION:

Weather conditions at time of sample collection: 60°F Sunny

Sample Characteristics: Turbid, no odor

COMMENTS AND OBSERVATIONS: _____

DATE: 9-26-12

SAMPLER: J. Cole

DATE: 9-26-12

QC Check By: J. Cole

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40mw5

Location: Sumu 40

Field Representatives: JA/JC

Sample Matrix: Ground Water

Lab Sample #: 40mw5GW925-12

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 9-25-12 1730

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 112.44

Total Volume Purged (gal) 3

Mid-screen Depth (ft) 148

Was well purged to dryness? NO

Well Total Depth (ft) 158

Water Level After Purge (ft) 113.60

Casing Diameter, (inches) 2

Date/Time Completed 9-25-12 1816

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1752 <u>1755</u>	<u>113.71</u>	<u>300</u>	<u>13.98</u>	<u>7.81</u>	<u>0.705</u>	<u>51.8</u>	<u>644.9</u>	<u>2.82</u>
<u>1755</u>	<u>113.81</u>	<u>300</u>	<u>13.81</u>	<u>7.60</u>	<u>0.862</u>	<u>115.9</u>	<u>677.9</u>	<u>3.80</u>
<u>1758</u>	<u>113.61</u>	<u>310</u>	<u>13.64</u>	<u>7.34</u>	<u>0.991</u>	<u>123.2</u>	<u>686.9</u>	<u>3.29</u>
<u>1801</u>	<u>113.60</u>	<u>300</u>	<u>13.62</u>	<u>7.28</u>	<u>1.010</u>	<u>115.4</u>	<u>692.6</u>	<u>3.08</u>
<u>1804</u>	<u>113.62</u>	<u>300</u>	<u>13.34</u>	<u>7.18</u>	<u>1.035</u>	<u>73.8</u>	<u>697.2</u>	<u>3.61</u>
<u>1807</u>	<u>113.41</u>	<u>300</u>	<u>13.35</u>	<u>7.14</u>	<u>1.034</u>	<u>68.0</u>	<u>699.3</u>	<u>3.64</u>
<u>1810</u>	<u>113.62</u>	<u>310</u>	<u>13.34</u>	<u>7.13</u>	<u>1.041</u>	<u>48.6</u>	<u>698.4</u>	<u>3.61</u>
<u>1813</u>	<u>113.41</u>	<u>300</u>	<u>13.34</u>	<u>7.12</u>	<u>1.041</u>	<u>49.7</u>	<u>692.5</u>	<u>3.60</u>
<u>1816</u>	<u>113.60</u>	<u>300</u>	<u>13.35</u>	<u>7.13</u>	<u>1.042</u>	<u>51.2</u>	<u>693.4</u>	<u>3.62</u>

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)

SAMPLING INFORMATION:

Sample Point ID: 40mw5

Method of Sampling: Low Flow

Dedicated?: Mo

Water Level at time of Sample Collection: 113.60

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1816	113.60	300	13.35	7.13	1,042	51.2	693.4	3.62

GENERAL INFORMATION:

Weather conditions at time of sample collection: 60°F, RAINY

Sample Characteristics: TURBID, NO odor

COMMENTS AND OBSERVATIONS: _____

DATE: 9-25-12

DATE: 9-25-12

SAMPLER: J. Ale

QC Check By: JSa

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Location: SWMU 40

Sample Matrix: Ground Water

Sample Point ID: 40 MW 6

Field Representatives: JA/JC

Lab Sample #: 40 MW 6 GW 92512

PURGE INFORMATION:

Method of Well Purge: Low Flow

Date/Time Initiated 9-25-12 1445

Initial Water Level (ft) 107.95

Mid-screen Depth (ft) 127

Well Total Depth (ft) 137

Casing Diameter, (inches) 2

Sand Pack Diameter, (inches) N/A

Dedicated: Y or N

Well Volume of Standing Water (gal) N/A

Total Volume Purged (gal) 3.5

Was well purged to dryness? NO

Water Level After Purge (ft) 108.48

Date/Time Completed 9-25-12 1545

PURGE DATA:

0.1 3% 10% 10% 10%

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1527	109.11	480	14.32	7.35	0.941	23.4	270.8	4.18
1530	108.57	300	14.29	7.25	0.979	20.5	255.3	4.30
1533	108.63	300	14.21	7.12	1.049	20.8	470.9	4.31
1536	108.62	300	14.23	7.08	1.056	20.1	585.6	4.12
1539	108.51	300	14.56	6.96	1.066	21.4	455.4	3.93
1542	108.49	310	14.57	6.96	1.070	21.2	675.4	3.98
1545	108.48	300	14.41	6.96	1.071	22.4	677.3	3.91

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: 40mw6

Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 108.48

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1545	108.48	300	14.41	6.96	1.071	22.4	677.3	3.91

GENERAL INFORMATION:

Weather conditions at time of sample collection: RAINY, 60°F

Sample Characteristics: NO odor, clear

COMMENTS AND OBSERVATIONS: _____

DATE: 9-25-12

DATE: 9-25-12

SAMPLER: [Signature]

QC Check By: [Signature]

GROUNDWATER SAMPLING FIELD DATA SHEET

Facility: RFAAP

Sample Point ID: 40mw7

Location: Swmu 40

Field Representatives: JA/JC

Sample Matrix: Ground Water

Lab Sample #: 40mw7 FW 92512

PURGE INFORMATION:

Method of Well Purge: Low Flow

Dedicated: Y or N

Date/Time Initiated 9-25-12 900

Well Volume of Standing Water (gal) N/A

Initial Water Level (ft) 145.65

Total Volume Purged (gal) 3

Mid-screen Depth (ft) 157.5

Was well purged to dryness? NO

Well Total Depth (ft) 147.5

Water Level After Purge (ft) 147.42

Casing Diameter, (inches) 2

Date/Time Completed 9-25-12 1113

Sand Pack Diameter, (inches) N/A

PURGE DATA:

Time	Depth to Water	Flow Rate (mL/min)	Temp (°C)	pH (su)	Specific Cond. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1043	146.55	400	13.98	7.31	0.976	53.6	345.1	4.91
1046	146.92	330	13.53	7.24	0.998	73.9	248.9	5.38
1049	147.44	150	13.50	7.18	1.009	80.5	342.1	4.53
1052	147.25	160	13.43	7.15	1.014	80.8	347.5	3.71
1055	147.26	170	13.38	7.14	1.018	82.3	342.8	3.89
1058	147.28	160	13.37	7.13	1.018	81.1	354.9	3.09
1101	147.31	160	13.28	7.13	1.018	74.3	356.2	3.13
1104	147.39	160	13.29	7.12	1.019	59.9	359.2	3.19
1107	147.46	170	13.80	7.11	1.018	47.6	210.6	3.71
1110	147.45	170	13.86	7.11	1.017	50.4	205.8	3.78
1113	147.42	160	13.92	7.11	1.017	53.6	201.8	3.72

(Signature)

GROUNDWATER SAMPLING FIELD DATA SHEET (continued)

[illegible]

SAMPLING INFORMATION:

Sample Point ID: 40 Mw7

Method of Sampling: Low Flow

Dedicated?: no

Water Level at time of Sample Collection: 147.42

PARAMETERS: Annual () Semi-Annual () Quarterly ☒ Monthly () Other ()

SAMPLING DATA:

Sample Time	Depth to Water (ft)	Sample Rate (ml/min)	Temp. (°C)	pH (su)	Specific Conduct. (mS/cm)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
1113	147.42	160	13.92	7.11	1.017	53.6	201.8	3.72

GENERAL INFORMATION:Weather conditions at time of sample collection: Sunny, 65°FSample Characteristics: NO ODA, SLIGHTLY TURBID

COMMENTS AND OBSERVATIONS: _____

DATE: 9-25-12SAMPLER: J. J. [Signature]DATE: 9-25-12QC Check By: [Signature]

FIELD CALIBRATION FORM

INITIAL CALIBRATION		FINAL CALIBRATION	
DATE:	9-25-12	DATE:	9-25-12
TIME:	0700	TIME:	0730

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: —

METER ID —

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0	7.02	7.01	7.01
10.0	10.01	10.00	10.00
4.0	3.98	4.01	4.01

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: —

METER ID —

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
1.413 $\mu S/cm$	1.314	1.413	1.413

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: —

METER ID —

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
TAP	99.01 %	98.89 %	98.89 %

FIELD CALIBRATION FORM

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
126 (WU)	10.3	126.3	126.3
0 (BF)	4.6	0.1	0.1

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO.

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
229	242	229.1	229.1

PID CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
100 ppm	—	99.9	99.9
150 BUTYLONE			

COMMENTS

9-25-12

SIGNATURE

72h

FIELD CALIBRATION FORM

INITIAL CALIBRATION	FINAL CALIBRATION
DATE: 9-26-12	DATE: 9-26-12
TIME: 0730	TIME: 0800

pH METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

pH STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
7.0	6.99	7.01	7.01
10.0	10.01	10.00	10.00
4.0	4.01	4.01	4.01

CONDUCTIVITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

COND. STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
1.413 $\mu S/cm$	1.387	1.413	1.413

DISSOLVED OXYGEN METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO: _____

METER ID _____

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
THP	97.89 %	99.01 %	99.01 %

FIELD CALIBRATION FORM

TURBIDITY METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
124 (NTU)	121	124.1	124.1
0 (DI)	1.3	0.3	0.3

ORD METER CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
229	227	229	229

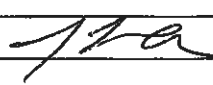
PID CALIBRATION

CALIBRATION STANDARD REFERENCE NO:

METER ID

STANDARD	INITIAL READING	RECALIB. READING	FINAL READING
100 ppm	—	100.1	100.1
1503-TMONG			

COMMENTS 9-26-12

SIGNATURE 

Daily Safety Meeting

Project Name: RFAP Sumu 40

Date: 9-25-12

Location: RAEFORD, VA RFAP

Presented by: Jonath Anderson

Check the Topics/Information Reviewed:

- | | |
|--|--|
| <ul style="list-style-type: none"> ☒ Daily work scope reviewed ☒ safety is everyone=s responsibility ☒ site health and safety plan reviewed ☒ safety glasses, hard hat, safety boots ☒ employee Right-To- Know/MSDS location ☒ vehicle safety and driving/road conditions ☒ hazard analysis for all tasks or new technology ☒ chemical hazards ☒ first aid, safety, and PPE location ☒ sharp object, rebar, and scrap metal hazards ☒ latex gloves inner/nitrile gloves outer ☒ open pits, excavations, and trenching hazards ☒ excavation/trenching inspections/documentation ☒ full face respirators with proper cartridges ☒ upgrade to Level C at: ☒ work stoppage at: ☒ portable tool safety and awareness ☒ slips, trips, and falls ☒ strains and sprains ☒ anticipated visitors ☒ electrical ground fault ☒ public safety and fences ☒ excavator swing and loading ☒ orderly site and housekeeping ☒ smoking in designated areas | <ul style="list-style-type: none"> ☒ leather gloves for protection ☒ effects of the night before? Rain or snow? ☒ vibration related injuries ☒ noise hazards ☒ confined space entry ☒ hot work permits ☒ overhead utility locations cleared? ☒ all underground utilities cleared? ☒ equipment and machinery familiarization ☒ fire extinguisher locations ☒ eye-wash station locations ☒ directions to hospital ☒ heat and cold stress ☒ decontamination steps ☒ review emergency protocol ☒ parking and laydown area ☒ vehicle backing up hazards ☒ accidents can be costly ☒ no horse play ☒ dust and vapor control ☒ refueling procedures ☒ flying debris hazards ☒ poison ivy/oak/sumac |
|--|--|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)	NAME (SIGNATURE)	COMPANY
<u>Jonath Anderson</u>	<u>[Signature]</u>	<u>UXB - KEMRON</u>
<u>JAMES COLE</u>	<u>[Signature]</u>	<u>UXB - KEMRON</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

Instructions:

- # Conduct a daily safety meeting prior to beginning each day=s site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

Daily Safety Meeting

Project Name: RFAAP SWMU 40

Date: 9-26-12

Location: RAINFORD, VA RFAAP

Presented by: Jonat Anderson

Check the Topics/Information Reviewed:

- | | |
|---|--|
| <ul style="list-style-type: none"> ☒ Daily work scope reviewed ☒ safety is everyone=s responsibility ☒ site health and safety plan reviewed ☒ safety glasses, hard hat, safety boots ☐ employee Right-To- Know/MSDS location ☐ vehicle safety and driving/road conditions ☐ hazard analysis for all tasks or new technology ☐ chemical hazards ☒ first aid, safety, and PPE location ☐ sharp object, rebar, and scrap metal hazards ☐ latex gloves inner/nitrile gloves outer ☐ open pits, excavations, and trenching hazards ☐ excavation/trenching inspections/documentation ☐ full face respirators with proper cartridges ☐ upgrade to Level C at: ☐ work stoppage at: ☐ portable tool safety and awareness ☒ slips, trips, and falls ☒ strains and sprains ☒ anticipated visitors ☐ electrical ground fault ☐ public safety and fences ☐ excavator swing and loading ☐ orderly site and housekeeping ☐ smoking in designated areas | <ul style="list-style-type: none"> ☐ leather gloves for protection ☐ effects of the night before? Rain or snow? ☐ vibration related injuries ☐ noise hazards ☐ confined space entry ☐ hot work permits ☐ overhead utility locations cleared? ☐ all underground utilities cleared? ☐ equipment and machinery familiarization ☒ fire extinguisher locations ☒ eye wash station locations ☐ directions to hospital ☐ heat and cold stress ☒ decontamination steps ☐ review emergency protocol ☐ parking and laydown area ☐ vehicle backing up hazards ☐ accidents can be costly ☐ no horse play ☐ dust and vapor control ☐ refueling procedures ☐ flying debris hazards ☐ poison ivy/oak/sumac |
|---|--|

Other Discussion Items/Comments/Follow-up Actions:

NAME (PRINT)
Jonat Anderson
JAMES COLE

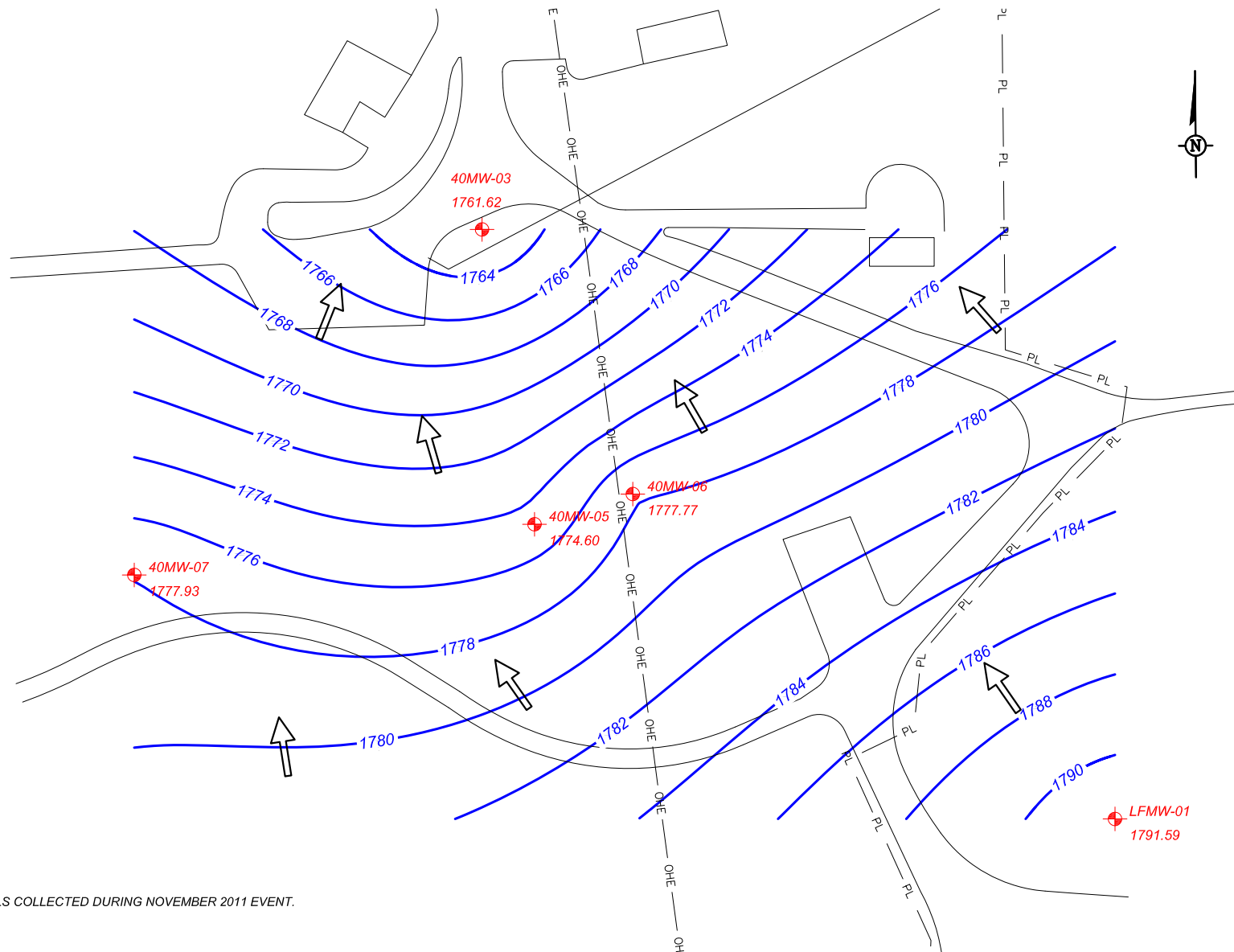
NAME (SIGNATURE)
[Signature]
[Signature]

COMPANY
UXB - Komron
UXB - Komron

Instructions:

- # Conduct a daily safety meeting prior to beginning each day=s site activities.
- # Complete form, obtain signatures, and file with the Daily Summary.
- # Follow-up on any noted items and document resolution of any action items.

APPENDIX C
Potentiometric Maps

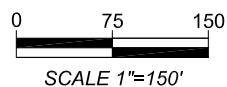


NOTE:

1. WATER LEVELS COLLECTED DURING NOVEMBER 2011 EVENT.

LEGEND

	GROUNDWATER ELEVATION CONTOUR
	DIRECTION OF GROUNDWATER FLOW
	MONITORING WELL
	OHE OVERHEAD POWER LINE
	PL ABOVE GROUND PIPING

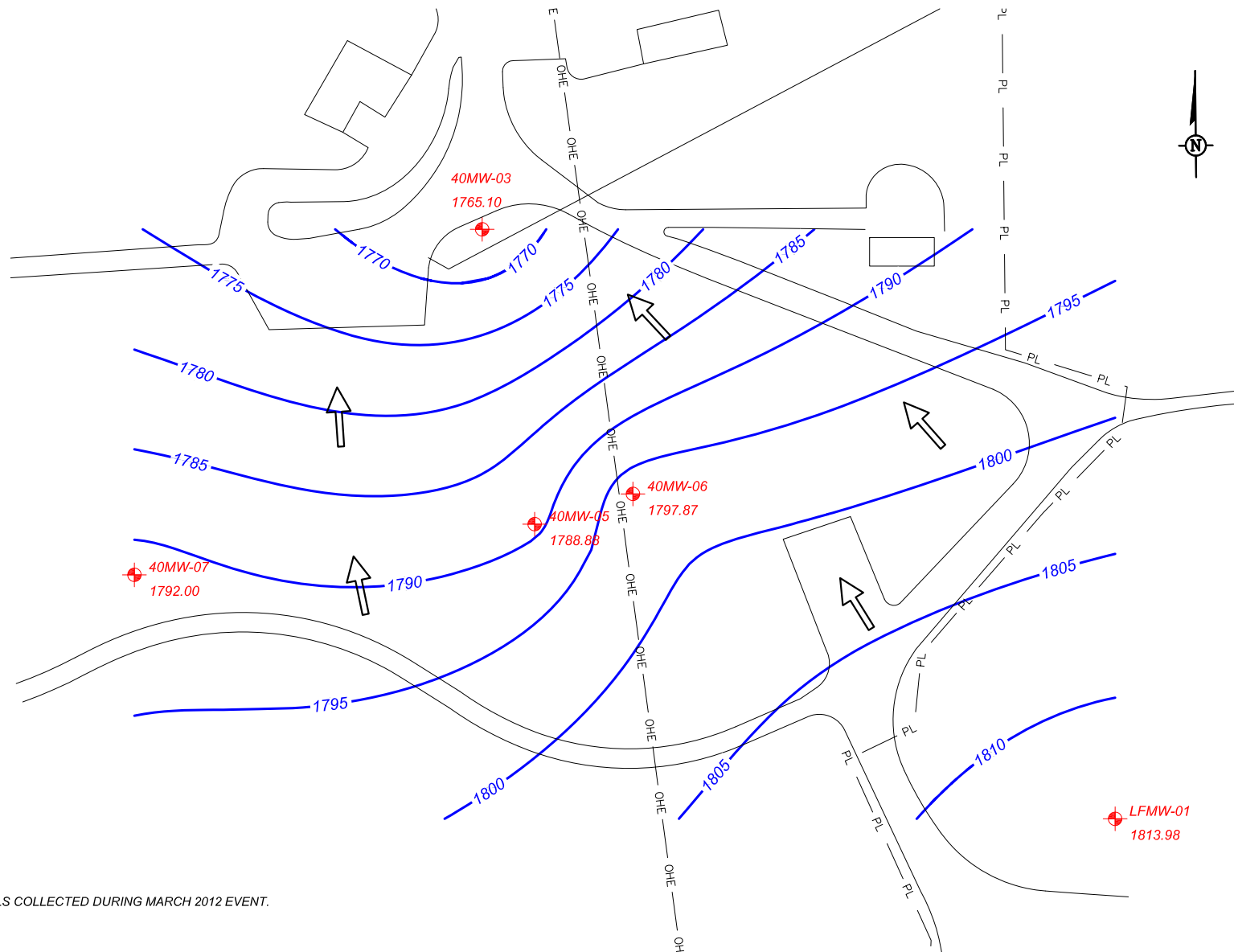


DRAWN BY:		DATE	
JM		19 JANUARY 2012	
REVIEWED:		PROJECT NO.	
JA		MR0669-300-001	
APPROVED:		DWG. FILE NO.	
JA		DWG-NAME	

FIGURE-3-0

SWMU 40 LTM
POTENTIOMETRIC MAP

RADFORD ARMY AMMUNITION PLANT
SWMU 40, RAAP-009
RADFORD, VIRGINIA

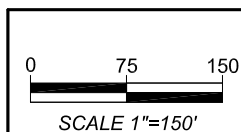


NOTE:

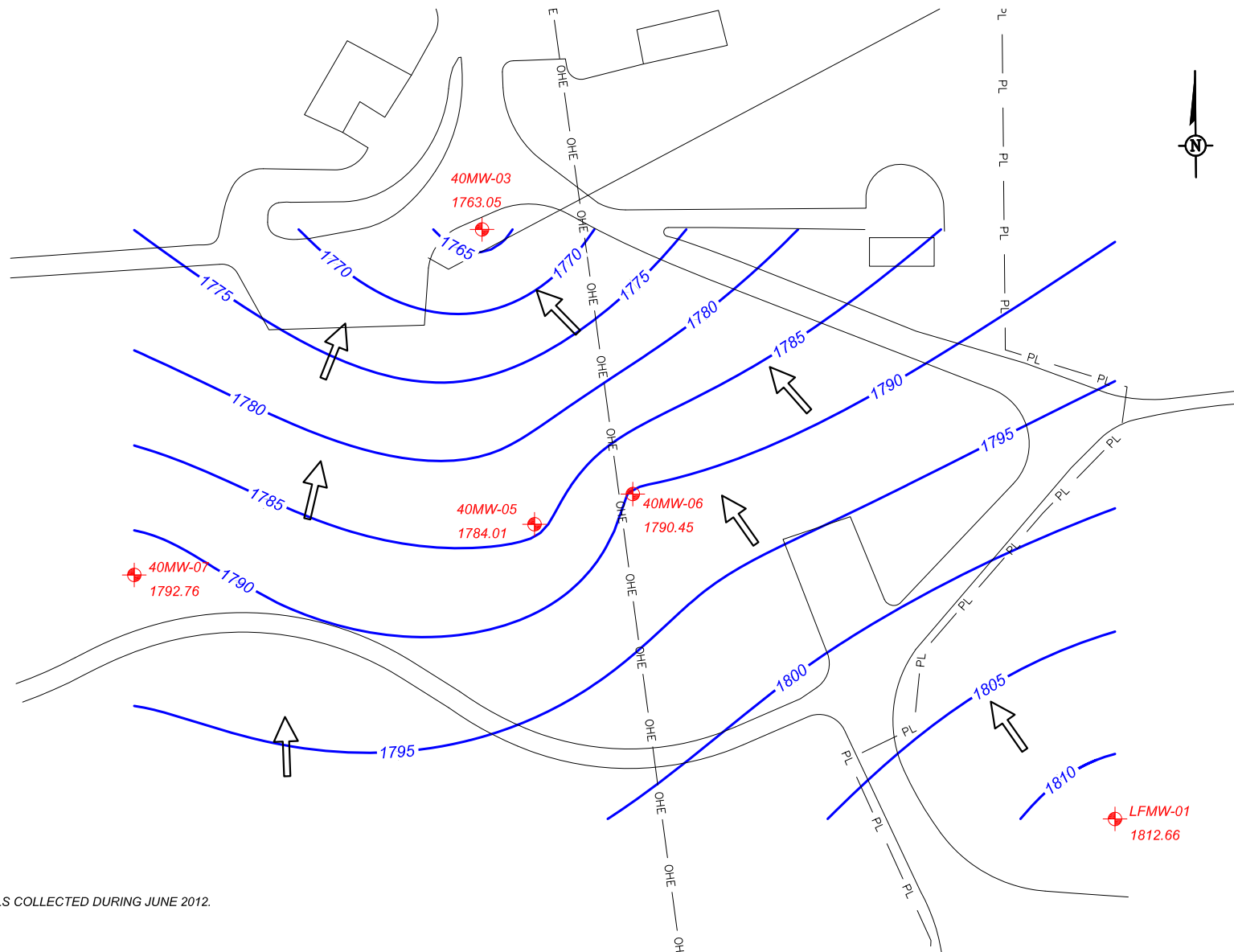
1. WATER LEVELS COLLECTED DURING MARCH 2012 EVENT.

LEGEND

	GROUNDWATER ELEVATION CONTOUR
	DIRECTION OF GROUNDWATER FLOW
	MONITORING WELL
	OHE OVERHEAD POWER LINE
	PL ABOVE GROUND PIPING



DRAWN BY: JM	DATE 19 MARCH 2012	FIGURE-3-1	SWMU 40 LTM POTENTIOMETRIC MAP RADFORD ARMY AMMUNITION PLANT SWMU 40, RAAP-009 RADFORD, VIRGINIA
REVIEWED: JA	R 3		
APPROVED: JA	PROJECT NO. MR0669-300-001		
	DWG. FILE NO. DWG-NAME		

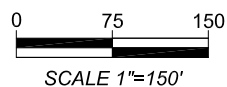


NOTE:

1. WATER LEVELS COLLECTED DURING JUNE 2012.

LEGEND

	GROUNDWATER ELEVATION CONTOUR
	DIRECTION OF GROUNDWATER FLOW
	MONITORING WELL
	OVERHEAD POWER LINE
	ABOVE GROUND PIPING



DRAWN BY:

JM

DATE

19 JUNE 2012

REVIEWED:

JA

R

3

PROJECT NO.

MR0669-300-001

APPROVED:

JA

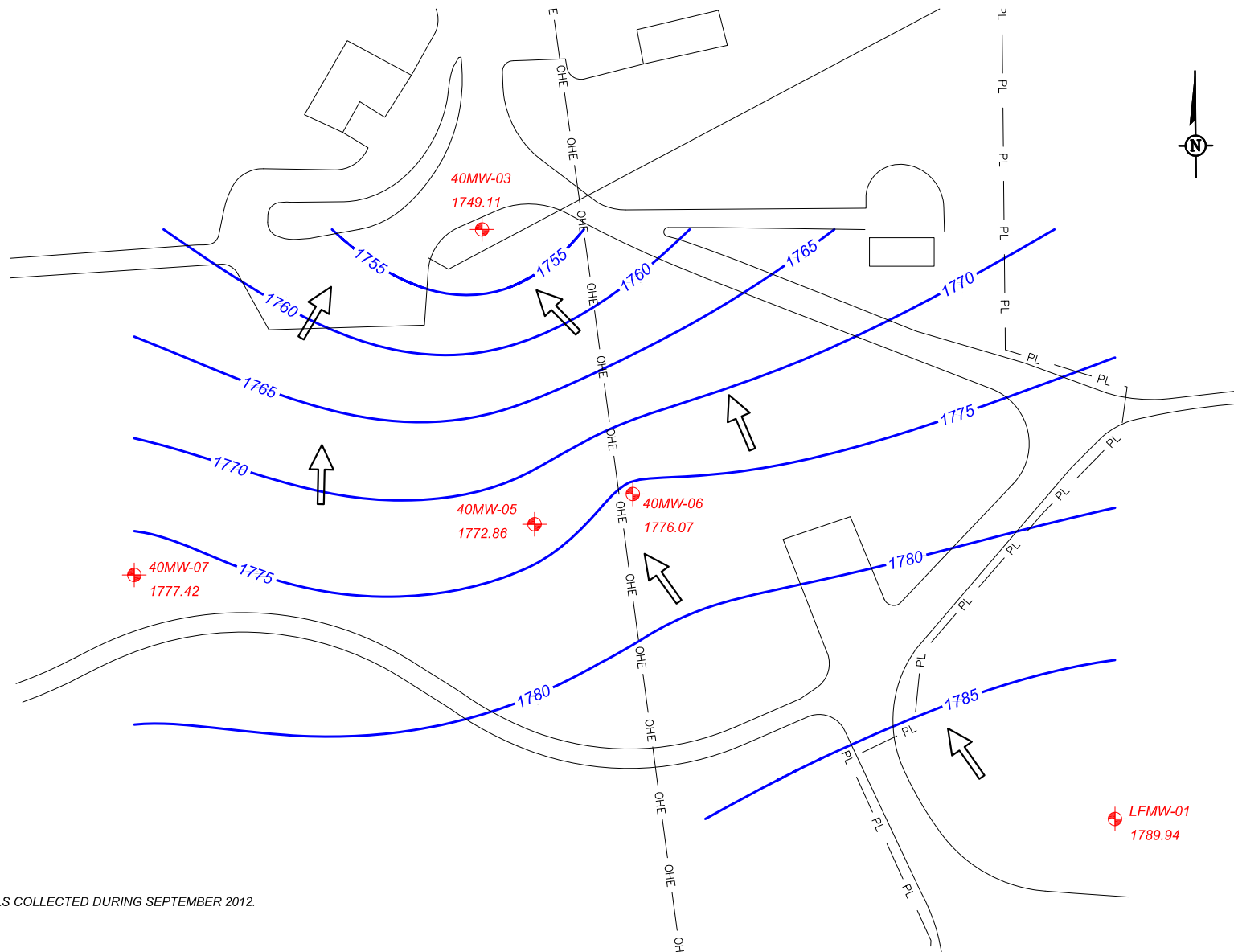
DWG. FILE NO.

FIG-2.3_6-12.DWG

FIGURE-3-2

SWMU 40 LTM
POTENTIOMETRIC MAP

RADFORD ARMY AMMUNITION PLANT
SWMU 40, RAAP-009
RADFORD, VIRGINIA

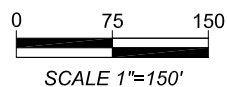


NOTE:

1. WATER LEVELS COLLECTED DURING SEPTEMBER 2012.

LEGEND

	GROUNDWATER ELEVATION CONTOUR
	DIRECTION OF GROUNDWATER FLOW
	MONITORING WELL
	OVERHEAD POWER LINE
	ABOVE GROUND PIPING



DRAWN BY:

JM

DATE

9 OCT. 2012

REVIEWED:

JA

R

4

PROJECT NO.

MR0669-300-001

APPROVED:

JA

DWG. FILE NO.

FIG-2.3_6-12.DWG

FIGURE-3-3

SWMU 40 LTM
POTENTIOMETRIC MAP

RADFORD ARMY AMMUNITION PLANT
SWMU 40, RAAP-009
RADFORD, VIRGINIA

APPENDIX D
Laboratory Reports and Data Validation Reports
(CD-ROM)

APPENDIX E
Analytical Data Tables

Table 1
November 2011 Screening Levels for Groundwater SVOC Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40LFMW01 40LFMW01GW112111 11/21/2011 N						40LFMW01 40DUPGW030612 3/6/2012 FD						40LFMW01 40LFMW01GW030612 3/6/2012 N						40LFMW01 LFMW01GW061212 6/12/2012 N						40LFMW01 LFMW01GW92612 9/26/2012 N						40MW5 40DUPGW112011 11/20/2011 FD						40MW5 40MW5GW112011 11/20/2011 N						40MW5 40MW5GW030712 3/7/2012 N						40MW5 40MW5GW061212 6/12/2012 N						40MW5 40DUPGW92512 9/25/2012 FD					
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit														
SW8270C	120-82-1	1,2,4-Trichlorobenzene	0.99	0.39		70 ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	95-50-1	1,2-Dichlorobenzene		28	600	ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	541-73-1	1,3-Dichlorobenzene				ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	106-46-7	1,4-Dichlorobenzene		0.42	47	75 ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	95-95-4	2,4,5-Trichlorophenol		89		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	88-06-2	2,4,6-Trichlorophenol		3.5	0.9	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	120-83-2	2,4-Dichlorophenol		3.5		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	105-67-9	2,4-Dimethylphenol		27		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	51-28-5	2,4-Dinitrophenol		3		ug/L	< 13.4	U	13.4	26.9	ug/L	< 13.2	U	13.2	26.3	ug/L	< 13.4	U	13.4	26.9	ug/L	< 12.5	U	12.5	25	ug/L	< 13.4	U	13.4	26.9	ug/L	< 14.9	U	14.9	29.8	ug/L	< 12.5	U	12.5	25	ug/L	< 12.8	U	12.8	25.5	ug/L	< 12.5	U	12.5	25	ug/L	< 12.5	U	12.5	25	ug/L									
SW8270C	121-14-2	2,4-Dinitrotoluene		0.2	3	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	606-20-2	2,6-Dinitrotoluene		1.5		ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	91-58-7	2-Chloronaphthalene		55		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	95-57-8	2-Chlorophenol		7.1		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	91-57-6	2-Methylnaphthalene		2.7		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	95-48-7	2-Methylphenol		72		ug/L	2.69	U	2.69	5.38	ug/L	2.63	U	2.63	5.26	ug/L	2.69	U	2.69	5.38	ug/L	2.5	U	2.5	5	ug/L	2.69	U	2.69	5.38	ug/L	2.98	U	2.98	5.95	ug/L	2.5	U	2.5	5	ug/L	2.55	U	2.55	5.1	ug/L	2.55	U	2.55	5.1	ug/L	2.5	U	2.5	5	ug/L									
SW8270C	88-74-4	2-Nitroaniline		15		ug/L	13.4	U	13.4	26.9	ug/L	13.2	U	13.2	26.3	ug/L	13.4	U	13.4	26.9	ug/L	12.5	U	12.5	25	ug/L	13.4	U	13.4	26.9	ug/L	14.9	U	14.9	29.8	ug/L	12.5	U	12.5	25	ug/L	12.8	U	12.8	25.5	ug/L	12.5	U	12.5	25	ug/L	12.5	U	12.5	25	ug/L									
SW8270C	88-75-5	2-Nitrophenol				ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.5	U	2.5	5	ug/L	< 2.69	U	2.69	5.38	ug/L	< 2.98	U	2.98	5.95	ug/L	< 2.5	U	2.5	5	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.55	U	2.55	5.1	ug/L	< 2.5	U	2.5	5	ug/L									
SW8270C	91-94-1	3,3'-Dichlorobenzidine		0.11		ug/L	< 2.69	U	2.69	10.8	ug/L	< 2.63	U	2.63	10.5	ug/L	< 2.69	U	2.69	10.8	ug/L	< 2.5	U	2.5	10	ug/L	< 2.69	U	2.69	10.8	ug/L	< 2.98	U	2.98	11.9	ug/L	< 2.5	U	2.5	10	ug/L	< 2.55	U	2.55	10.2	ug/L	< 2.55	U	2.55	10.2	ug/L	< 2.5	U	2.5	10	ug/L									
SW8270C	106-44-5	3,4-Nitroaniline				ug/L	< 13.4	U	13.4	26.9	ug/L	< 13.2	U	13.2	26.3	ug/L	< 13.4	U	13.4	26.9	ug/L	< 12.5	U	12.5	25	ug/L	< 13.4	U	13.4	26.9	ug/L	< 14.9	U	14.9	29.8	ug/L	< 12.5	U																											

Table 1
November 2011 Screening Levels for Groundwater SVOC Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type					40MW5 40MW5GW92512 9/25/2012 N					40MW6 40MW6GW112111 11/21/2011 N					40MW6 40MW6GW030712 3/7/2012 N					40MW6 40DUPGW061212 6/12/2012 FD					40MW6 40MW6GW061212 6/12/2012 N					40MW6 40MW6GW92512 9/25/2012 N					40MW7 40MW7GW112011 11/20/2011 N					40MW7 40MW7GW030612 3/6/2012 N					40MW7 40MW7GW601212 6/12/2012 N					40MW7 40MW7GW92512 9/25/2012 N						
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit										
SW8270C	120-82-1	1,2,4-Trichlorobenzene	0.99	0.39		70 ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	95-50-1	1,2-Dichlorobenzene		28	600	ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	541-73-1	1,3-Dichlorobenzene				ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	106-46-7	1,4-Dichlorobenzene		0.42	47	75 ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	95-95-4	2,4,5-Trichlorophenol		89		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	88-06-2	2,4,6-Trichlorophenol		3.5	0.9	ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	120-83-2	2,4-Dichlorophenol		3.5		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	105-67-9	2,4-Dimethylphenol		27		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	51-28-5	2,4-Dinitrophenol		3		ug/L	< 13.2	U	13.2	26.5	ug/L	< 13.6	U	13.6	27.2	ug/L	< 13.3	U	13.3	26.6	ug/L	< 13	U	13	26	ug/L	< 12.5	U	12.5	25	ug/L	< 13.2	U	13.2	26.3	ug/L	< 13.3	U	13.3	26.6	ug/L	< 13.6	U	13.6	27.2	ug/L	< 12.5	U	12.5	25	ug/L	< 14.2	U	14.2	28.4	ug/L
SW8270C	121-14-2	2,4-Dinitrotoluene		0.2	3	ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	606-20-2	2,6-Dinitrotoluene		1.5		ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	91-58-7	2-Chloronaphthalene		55		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	95-57-8	2-Chlorophenol		7.1		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	91-57-6	2-Methylnaphthalene		2.7		ug/L	2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	95-48-7	2-Methylphenol		72		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L	2.63	U	2.63	5.26	ug/L	2.66	U	2.66	5.32	ug/L	2.72	U	2.72	5.43	ug/L	2.5	U	2.5	5	ug/L	2.84	U	2.84	5.68	ug/L
SW8270C	88-74-4	2-Nitroaniline		15		ug/L	13.2	U	13.2	26.5	ug/L	13.6	U	13.6	27.2	ug/L	13.3	U	13.3	26.6	ug/L	13	U	13	26	ug/L	12.5	U	12.5	25	ug/L	13.2	U	13.2	26.3	ug/L	13.3	U	13.3	26.6	ug/L	13.6	U	13.6	27.2	ug/L	12.5	U	12.5	25	ug/L	14.2	U	14.2	28.4	ug/L
SW8270C	88-75-5	2-Nitrophenol				ug/L	< 2.65	U	2.65	5.29	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.6	U	2.6	5.21	ug/L	< 2.5	U	2.5	5	ug/L	< 2.63	U	2.63	5.26	ug/L	< 2.66	U	2.66	5.32	ug/L	< 2.72	U	2.72	5.43	ug/L	< 2.5	U	2.5	5	ug/L	< 2.84	U	2.84	5.68	ug/L
SW8270C	91-94-1	3,3'-Dichlorobenzidine		0.11		ug/L	< 2.65	U	2.65	10.6	ug/L	< 2.72	U	2.72	10.9	ug/L	< 2.66	U	2.66	10.6	ug/L	< 2.6	U	2.6	10.4	ug/L	< 2.5	U	2.5	10	ug/L	< 2.63	U	2.63	10.5	ug/L	< 2.66	U	2.66	10.6	ug/L	< 2.72	U	2.72	10.9	ug/L	< 2.5	U	2.5	10	ug/L	< 2.84	U	2.84	11.4	ug/L
SW8270C	106-44-5	3,4-Methylphenol		7.2		ug/L	2.65	U	2.65	5.29	ug/L	2.72	U	2.72	5.43	ug/L	2.66	U	2.66	5.32	ug/L	2.6	U	2.6	5.21	ug/L	2.5	U	2.5	5	ug/L																									

Table 2
November 2011 Screening Levels for Groundwater SVOC PAH Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40LFMW01 40LFMW01GW112111 11/21/2011 N					40LFMW01 40DUPGW030612 3/6/2012 FD					40LFMW01 40LFMW01GW030612 3/6/2012 N					40LFMW01 LFMW01GW061212 6/12/2012 N					40LFMW01 LFMW01GW92612 9/26/2012 N				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8270C PAHL	90-12-0	1-Methylnaphthalene	0.97	46		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	91-57-6	2-Methylnaphthalene		2.7		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	83-32-9	Acenaphthene		40		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	208-96-8	Acenaphthylene				ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.026	U	0.026	0.0521	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	120-12-7	Anthracene		130		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	56-55-3	Benzo(a)anthracene	0.029			ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	50-32-8	Benzo(a)pyrene	0.0029		0.20	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.026	U	0.026	0.0521	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	205-99-2	Benzo(b)fluoranthene	0.029			ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	191-24-2	Benzo(g,h,i)Perylene				ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.026	U	0.026	0.0521	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	207-08-9	Benzo(k)fluoranthene	0.29			ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	218-01-9	Chrysene	2.9			ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0308	J	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	53-70-3	Dibenzo(a,h)Anthracene	0.0029			ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.026	U	0.026	0.0521	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	206-44-0	Fluoranthene		63		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	86-73-7	Fluorene		22		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	193-39-5	Indeno(1,2,3-cd)pyrene	0.029			ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	91-20-3	Naphthalene	0.14	0.61		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	85-01-8	Phenanthrene				ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.026	U	0.026	0.0521	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0281	U	0.0281	0.0562	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	129-00-0	Pyrene		8.7		ug/L	0.0281	U	0.0281	0.0562	ug/L	0.026	U	0.026	0.0521	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0281	U	0.0281	0.0562	ug/L	0.0255	U	0.026	0.051	ug/L

Notes:

CAS = Chemical Abstracts Service

ug/L = Microgram Per Liter

T = Total

D = Dissolved

CSL = Carcinogenic Screening Level

T-NCSL = Adjusted Noncarcinogenic Screening Level

MCL = Maximum Contaminant Level

= Lowest Value For Screening

Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level

VQ = Validation Qualifier

LOD = Limit of Detection

LOQ = Limit of Quantitation

DL = Detection Limit

N = Normal

FD = Field Duplicate

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample.

J = Analyte present. Reported value may or may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Table 2
November 2011 Screening Levels for Groundwater SVOC PAH Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW5 40DUPGW112011 11/20/2011 FD					40MW5 40MW5GW112011 11/20/2011 N					40MW5 40MW5GW030712 3/7/2012 N					40MW5 40MW5GW061212 6/12/2012 N					40MW5 40DUPGW92512 9/25/2012 FD				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8270C PAHL	90-12-0	1-Methylnaphthalene	0.97	46		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	91-57-6	2-Methylnaphthalene		2.7		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	83-32-9	Acenaphthene		40		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	208-96-8	Acenaphthylene				ug/L	< 0.0263	U	0.0263	0.0526	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.026	UJ	0.026	0.0521	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	120-12-7	Anthracene		130		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	56-55-3	Benzo(a)anthracene	0.029			ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	50-32-8	Benzo(a)pyrene	0.0029		0.20	ug/L	< 0.0263	U	0.0263	0.0526	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.026	UJ	0.026	0.0521	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	205-99-2	Benzo(b)fluoranthene	0.029			ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	191-24-2	Benzo(g,h,i)Perylene				ug/L	< 0.0263	U	0.0263	0.0526	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.026	UJ	0.026	0.0521	ug/L	< 0.0255	UJ	0.026	0.051	ug/L
SW8270C PAHL	207-08-9	Benzo(k)fluoranthene	0.29			ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	218-01-9	Chrysene	2.9			ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	53-70-3	Dibenzo(a,h)Anthracene	0.0029			ug/L	< 0.0263	U	0.0263	0.0526	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.026	UJ	0.026	0.0521	ug/L	< 0.0255	UJ	0.026	0.051	ug/L
SW8270C PAHL	206-44-0	Fluoranthene		63		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	86-73-7	Fluorene		22		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	193-39-5	Indeno(1,2,3-cd)pyrene	0.029			ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	UJ	0.026	0.051	ug/L
SW8270C PAHL	91-20-3	Naphthalene	0.14	0.61		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	85-01-8	Phenanthrene				ug/L	< 0.0263	U	0.0263	0.0526	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.026	UJ	0.026	0.0521	ug/L	< 0.0255	U	0.026	0.051	ug/L
SW8270C PAHL	129-00-0	Pyrene		8.7		ug/L	0.0263	U	0.0263	0.0526	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.026	UJ	0.026	0.0521	ug/L	0.0255	U	0.026	0.051	ug/L

Notes:

CAS = Chemical Abstracts Service

ug/L = Microgram Per Liter

T = Total

D = Dissolved

CSL = Carcinogenic Screening Level

T-NCSL = Adjusted Noncarcinogenic Screening Level

MCL = Maximum Contaminant Level

= Lowest Value For Screening

Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level

VQ = Validation Qualifier

LOD = Limit of Detection

LOQ = Limit of Quantitation

DL = Detection Limit

N = Normal

FD = Field Duplicate

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample.

J = Analyte present. Reported value may or may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Table 2
November 2011 Screening Levels for Groundwater SVOC PAH Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW5 40MW5GW92512 9/25/2012 N					40MW6 40MW6GW112111 11/21/2011 N					40MW6 40MW6GW030712 3/7/2012 N					40MW6 40DUPGW061212 6/12/2012 FD					40MW6 40MW6GW061212 6/12/2012 N				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8270C PAHL	90-12-0	1-Methylnaphthalene	0.97	46		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	91-57-6	2-Methylnaphthalene		2.7		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	83-32-9	Acenaphthene		40		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	208-96-8	Acenaphthylene				ug/L	< 0.0338	U	0.034	0.068	ug/L	<0.0287	U	0.0287	0.0575	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	120-12-7	Anthracene		130		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	56-55-3	Benzo(a)anthracene	0.029			ug/L	< 0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255		0.0255	0.051	ug/L	0.211	J	0.0281	0.0562	ug/L
SW8270C PAHL	50-32-8	Benzo(a)pyrene	0.0029		0.20	ug/L	< 0.0338	U	0.034	0.068	ug/L	< 0.0287	U	0.0287	0.0575	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255		0.0255	0.051	ug/L	0.0793	J	0.0281	0.0562	ug/L
SW8270C PAHL	205-99-2	Benzo(b)fluoranthene	0.029			ug/L	< 0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255		0.0255	0.051	ug/L	0.261	J	0.0281	0.0562	ug/L
SW8270C PAHL	191-24-2	Benzo(g,h,i)Perylene				ug/L	< 0.0338	UJ	0.034	0.068	ug/L	<0.0287	U	0.0287	0.0575	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255		0.0255	0.051	ug/L	0.0475	J	0.0281	0.0562	ug/L
SW8270C PAHL	207-08-9	Benzo(k)fluoranthene	0.29			ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255		0.0255	0.051	ug/L	0.17	J	0.0281	0.0562	ug/L
SW8270C PAHL	218-01-9	Chrysene	2.9			ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0301		0.0255	0.051	ug/L	0.89	J	0.0281	0.0562	ug/L
SW8270C PAHL	53-70-3	Dibenzo(a,h)Anthracene	0.0029			ug/L	< 0.0338	UJ	0.034	0.068	ug/L	< 0.0287	U	0.0287	0.0575	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	206-44-0	Fluoranthene		63		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0265		0.0255	0.051	ug/L	0.606	J	0.0281	0.0562	ug/L
SW8270C PAHL	86-73-7	Fluorene		22		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	< 0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	193-39-5	Indeno(1,2,3-cd)pyrene	0.029			ug/L	< 0.0338	UJ	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255		0.0255	0.051	ug/L	0.0391	J	0.0281	0.0562	ug/L
SW8270C PAHL	91-20-3	Naphthalene	0.14	0.61		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0281	U	0.0281	0.0562	ug/L
SW8270C PAHL	85-01-8	Phenanthrene				ug/L	< 0.0338	U	0.034	0.068	ug/L	<0.0287	U	0.0287	0.0575	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0255		0.0255	0.051	ug/L	0.236	J	0.0281	0.0562	ug/L
SW8270C PAHL	129-00-0	Pyrene		8.7		ug/L	0.0338	U	0.034	0.068	ug/L	0.0287	U	0.0287	0.0575	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0255		0.0255	0.051	ug/L	0.476	J	0.0281	0.0562	ug/L

Notes:

CAS = Chemical Abstracts Service
ug/L = Microgram Per Liter
T = Total
D = Dissolved
CSL = Carcinogenic Screening Level
T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate
Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Table 2
November 2011 Screening Levels for Groundwater SVOC PAH Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW6 40MW6GW92512 9/25/2012 N					40MW7 40MW7GW112011 11/20/2011 N					40MW7 40MW7GW030612 3/6/2012 N					40MW7 40MW7GW601212 6/12/2012 N					40MW7 40MW7GW92512 9/25/2012 N				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8270C PAHL	90-12-0	1-Methylnaphthalene	0.97	46		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	91-57-6	2-Methylnaphthalene		2.7		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	83-32-9	Acenaphthene		40		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	208-96-8	Acenaphthylene				ug/L	< 0.0281	U	0.028	0.056	ug/L	<0.0255	U	0.0255	0.051	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0284	U	0.0284	0.0568	ug/L	< 0.025	U	0.025	0.05	ug/L
SW8270C PAHL	120-12-7	Anthracene		130		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	56-55-3	Benzo(a)anthracene	0.029			ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	50-32-8	Benzo(a)pyrene	0.0029		0.20	ug/L	< 0.0281	U	0.028	0.056	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0284	U	0.0284	0.0568	ug/L	< 0.025	U	0.025	0.05	ug/L
SW8270C PAHL	205-99-2	Benzo(b)fluoranthene	0.029			ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	191-24-2	Benzo(g,h,i)Perylene				ug/L	< 0.0281	U	0.028	0.056	ug/L	<0.0255	U	0.0255	0.051	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0284	U	0.0284	0.0568	ug/L	< 0.025	U	0.025	0.05	ug/L
SW8270C PAHL	207-08-9	Benzo(k)fluoranthene	0.29			ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	218-01-9	Chrysene	2.9			ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0832	J	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	53-70-3	Dibenzo(a,h)Anthracene	0.0029			ug/L	< 0.0281	U	0.028	0.056	ug/L	< 0.0255	U	0.0255	0.051	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0284	U	0.0284	0.0568	ug/L	< 0.025	U	0.025	0.05	ug/L
SW8270C PAHL	206-44-0	Fluoranthene		63		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0327	B	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	86-73-7	Fluorene		22		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	193-39-5	Indeno(1,2,3-cd)pyrene	0.029			ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	91-20-3	Naphthalene	0.14	0.61		ug/L	0.0281	U	0.028	0.056	ug/L	0.0299	J	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L
SW8270C PAHL	85-01-8	Phenanthrene				ug/L	< 0.0281	U	0.028	0.056	ug/L	<0.0255	U	0.0255	0.051	ug/L	< 0.0269	U	0.0269	0.0538	ug/L	< 0.0284	U	0.0284	0.0568	ug/L	< 0.025	U	0.025	0.05	ug/L
SW8270C PAHL	129-00-0	Pyrene		8.7		ug/L	0.0281	U	0.028	0.056	ug/L	0.0255	U	0.0255	0.051	ug/L	0.0269	U	0.0269	0.0538	ug/L	0.0284	U	0.0284	0.0568	ug/L	0.025	U	0.025	0.05	ug/L

Notes:
CAS = Chemical Abstracts Service
ug/L = Microgram Per Liter
T = Total
D = Dissolved
CSL = Carcinogenic Screening Level
T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate
Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

Table 3
November 2011 Screening Levels for Groundwater VOC Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type			40LFMW01 40LFMW01GW112111 11/21/2011 N	40LFMW01 40DUPGW030612 3/6/2012 FD	40LFMW01 40LFMW01GW030612 3/6/2012 N	40LFMW01 LFMW01GW061212 6/12/2012 N	40LFMW01 LFMW01GW92612 9/26/2012 N	40MW5 40DUPGW112011 11/20/2011 FD	40MW5 40MW5GW112011 11/20/2011 N	40MW5 40MW5GW030712 3/7/2012 N	40MW5 40MW5GW61212 6/12/2012 N	40MW5 40DUPGW92512 9/25/2012 FD	40MW5 40MW5GW92512 9/25/2012 N																												
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW82608	630-20-6	1,1,1,2-Tetrachloroethane	0.5	37		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L
SW82608	71-55-6	1,1,1-Trichloroethane		750	200	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L
SW82608	79-34-5	1,1,2,2-Tetrachloroethane	0.066	28		ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L
SW82608	79-00-5	1,1,2-Trichloroethane	0.24	0.041		ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	75-34-3	1,1-Dichloroethane	2.4	290		ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L
SW82608	75-34-4	1,1-Dichloroethene		26	7	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L
SW82608	563-59-6	1,1-Dichloropropene				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	87-61-6	1,2,3-Trichlorobenzene	0.52			ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L
SW82608	96-18-4	1,2,3-Trichloropropane	0.00065	0.062		ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L
SW82608	120-82-1	1,2,4-Trichlorobenzene	0.99	0.39		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L
SW82608	95-63-6	1,2,4-Trimethylbenzene		1.5		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L
SW82608	96-12-8	1,2-Dibromo-3-chloropropane	0.00032	0.036		ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L
SW82608	106-93-4	1,2-Dibromoethane	0.0065	1.6	0.05	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	95-50-1	1,2-Dichlorobenzene		28	600	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L
SW82608	107-06-2	1,2-Dichloroethane	0.15	1.3		ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	78-87-5	1,2-Dichloropropane	0.38	0.83		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L
SW82608	108-67-8	1,3,5-Trimethylbenzene		8.7		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L
SW82608	541-73-1	1,3-Dichlorobenzene				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	142-28-9	1,3-Dichloropropane		29		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L
SW82608	106-46-7	1,4-Dichlorobenzene	0.42	47	75	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L
SW82608	594-20-7	2,2-Dichloropropane				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L
SW82608	78-93-3	2-Butanone		490		ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L
SW82608	110-75-8	2-Chloroethyl vinyl ether				ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L
SW82608	95-49-8	2-Chlorotoluene		18		ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L
SW82608	591-78-6	2-Hexanone		3.4		ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L
SW82608	106-43-4	4-Chlorotoluene		19		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L
SW82608	108-10-1	4-Methyl-2-pentanone		100		ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5									

Table 3
November 2011 Screening Levels for Groundwater VOC Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

				Location ID Sample ID Sample Date Sample Type	40MW6 40MW6GW112111 11/21/2011 N										40MW6 40MDUPGW030712 3/7/2012 N										40MW6 40DUPGW061212 6/12/2012 FD										40MW6 40MW6GW061212 6/12/2012 N										40MW6 40MW6GW92512 9/25/2012 N										40MW7 40MW7GW112011 11/20/2011 N										40MW7 40MW7GW030612 3/6/2012 N										40MW7 40MW7GW601212 6/12/2012 N										40MW7 40MW7GW92512 9/25/2012 N									
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit																																											
SW82608	630-20-6	1,1,1,2-Tetrachloroethane	0.5	37		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L																																											
SW82608	71-55-6	1,1,1-Trichloroethane		750	200	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L																																											
SW82608	79-34-5	1,1,2,2-Tetrachloroethane	0.066	28		ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L	< 0.2	U	0.2	1	ug/L																																											
SW82608	79-00-5	1,1,2-Trichloroethane	0.24	0.041		ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	75-34-3	1,1-Dichloroethane	2.4	290		ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L																																											
SW82608	75-35-4	1,1-Dichloroethene		26	7	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L																																											
SW82608	563-59-6	1,1-Dichloropropene				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	87-61-6	1,2,3-Trichlorobenzene		0.52		ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L	0.15	U	0.15	1	ug/L																																											
SW82608	96-18-4	1,2,3-Trichloropropane	0.00065	0.062		ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L																																											
SW82608	120-82-1	1,2,4-Trichlorobenzene	0.99	0.39		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L																																											
SW82608	95-63-6	1,2,4-Trimethylbenzene		1.5		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L																																											
SW82608	96-12-8	1,2-Dibromo-3-chloropropane	0.00032	0.036		ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L	< 1	U	1	5	ug/L																																											
SW82608	106-93-4	1,2-Dibromoethane	0.0065	1.6	0.05	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	95-50-1	1,2-Dichlorobenzene		28	600	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L																																											
SW82608	107-06-2	1,2-Dichloroethane	0.15	1.3		ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	78-87-5	1,2-Dichloropropane	0.38	0.83		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L																																											
SW82608	108-67-8	1,3,5-Trimethylbenzene		8.7		ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L	0.25	U	0.25	1	ug/L																																											
SW82608	541-73-1	1,3-Dichlorobenzene				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	142-28-9	1,3-Dichloropropane		29		ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L	0.2	U	0.2	1	ug/L																																											
SW82608	106-46-7	1,4-Dichlorobenzene	0.42	47	75	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L	0.125	U	0.125	1	ug/L																																											
SW82608	594-20-7	2,2-Dichloropropane				ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L	< 0.25	U	0.25	1	ug/L																																											
SW82608	76-93-3	2-Butanone		490		ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L	2.5	U	2.5	10	ug/L																																											
SW82608	78-83-3	2-Chloroethyl vinyl ether				ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2	R	2	10	ug/L	< 2																																																																			

Table 4
November 2011 Screening Levels for Groundwater Metals Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type								40LFMW01 40LFMW01GW112111 11/21/2011 N					40LFMW01 40DUPGW030612 3/6/2012 FD					40LFMW01 40LFMW01GW030612 3/6/2012 N					40LFMW01 LFMW01GW061212 6/12/2012 N					40LFMW01 LFMW01GW92612 9/26/2012 N					40MW5 40DUPGW112011 11/20/2011 FD					40MW5 40MW5GW112011 11/20/2011 N					40MW5 40MW5GW030712 3/7/2012 N				
Method	CAS	Chemical	fraction	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit					
SW60108	7429-90-5	Aluminum	T		1600		ug/L	17900		50	100	ug/L	112		50	100	ug/L	123		50	100	ug/L	74.8	J	50	100	ug/L	9150		50	100	ug/L	1540		50	100	ug/L	1890		50	100	ug/L	221		50	100	ug/L
SW60108	7429-90-5	Aluminum	D		1600		ug/L	50	U	50	100	ug/L	NS		50	100	ug/L	NS		50	100	ug/L	50	U	50	100	ug/L	92.9	J	50	100	ug/L	50	U	50	100	ug/L	50	U	50	100	ug/L	NS		50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	T		1100		ug/L	21800	L	50	100	ug/L	87.5	J	50	100	ug/L	93	J	50	100	ug/L	120		50	100	ug/L	8950		50	100	ug/L	1580	L	50	100	ug/L	2040	L	50	100	ug/L	156		50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	D		1100		ug/L	102		50	100	ug/L	NS		50	100	ug/L	NS		50	100	ug/L	50	U	50	100	ug/L	74.1	J	50	100	ug/L	82	J	50	100	ug/L	74.1	J	50	100	ug/L	NS		50	100	ug/L
SW60108	7439-95-4	Magnesium	T				ug/L	74800		250	500	ug/L	27800		250	500	ug/L	28100		250	500	ug/L	33800		2500	5000	ug/L	51100		250	500	ug/L	31300		250	500	ug/L	32500		250	500	ug/L	33500		250	500	ug/L
SW60108	7439-95-4	Magnesium	D				ug/L	33100		250	500	ug/L	NS		2500	5000	ug/L	NS		2500	5000	ug/L	32700		2500	5000	ug/L	35400		250	500	ug/L	29600		250	500	ug/L	29800		250	500	ug/L	NS		250	500	ug/L
SW60108	7440-09-7	Potassium	T				ug/L	5920		500	1000	ug/L	943	J	500	1000	ug/L	885	J	500	1000	ug/L	1740		500	1000	ug/L	3700		500	1000	ug/L	1370		500	1000	ug/L	1370		500	1000	ug/L	1160		500	1000	ug/L
SW60108	7440-09-7	Potassium	D				ug/L	1620		500	1000	ug/L	NS		500	1000	ug/L	NS		500	1000	ug/L	1630		500	1000	ug/L	1690		500	1000	ug/L	1060		500	1000	ug/L	1080		500	1000	ug/L	NS		500	1000	ug/L
SW60108	7440-23-5	Sodium	T				ug/L	8230		250	500	ug/L	7860		250	500	ug/L	7690		250	500	ug/L	8450		250	500	ug/L	6640		250	500	ug/L	5480		250	500	ug/L	5220		250	500	ug/L	4790		250	500	ug/L
SW60108	7440-23-5	Sodium	D				ug/L	8480		250	500	ug/L	NS		250	500	ug/L	NS		250	500	ug/L	8120		250	500	ug/L	7100		250	500	ug/L	5330		250	500	ug/L	5350		250	500	ug/L	NS		250	500	ug/L
SW60108	7440-41-7	Beryllium	T		1.6	4.0	ug/L	1.37	J	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L
SW60108	7440-41-7	Beryllium	D		1.6	4.0	ug/L	1	U	1	2	ug/L	NS		1	2	ug/L	NS		1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	NS		1	2	ug/L
SW60108	7440-62-2	Vanadium	T		7.8		ug/L	32.5		5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	18.1		5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L
SW60108	7440-62-2	Vanadium	D		7.8		ug/L	5	U	5	10	ug/L	NS		5	10	ug/L	NS		5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	NS		5	10	ug/L
SW60108	7440-66-6	Zinc	T		470		ug/L	126	B	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	52.6		10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L
SW60108	7440-66-6	Zinc	D		470		ug/L	10	U	10	20	ug/L	NS		10	20	ug/L	NS		10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	NS		10	20	ug/L
SW60108	7440-70-2	Calcium	T				ug/L	142000		100	200	ug/L	71300	J	100	200	ug/L	71400	J	100	200	ug/L	82800		1000	2000	ug/L	105000		100	200	ug/L	84800		100	200	ug/L	87200		100	200	ug/L	93400	J	100	200	ug/L
SW60108	7440-70-2	Calcium	D				ug/L	81500		100	200	ug/L	NS		1000	2000	ug/L	NS		1000	2000	ug/L	82000		1000	2000	ug/L	85700		100	200	ug/L	81700		100	200	ug/L	82800		100	200	ug/L	NS		100	200	ug/L
SW6020	7439-92-1	Lead	T			15	ug/L	11		1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	UL	0.5	1	ug/L	5.46		0.5	1	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L
SW6020	7439-92-1	Lead	D			15	ug/L	< 1	U	1	2	ug/L	NS		0.5	U	0.5	1	ug/L	NS		0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1.0	ug/L	NS		0.5	1.0	ug/L	
SW6020	7439-96-5	Manganese	T		32		ug/L	125		2	4	ug/L	1.25	J	1	2	ug/L	1.52	J	1	2	ug/L	2.18	L	1	2	ug/L	52.6		1	2	ug/L	7.67	B	2	4	ug/L	15.2	B	2	4	ug/L	1.11	J	1	2	ug/L
SW6020	7439-96-5	Manganese	D		32		ug/L	3.95	B	2	4	ug/L	NS		1	2	ug/L	NS		1	2	ug/L	1	UL	1	2	ug/L	1	U	1	2	ug/L	2	U	2	4	ug/L	1	U	1	2	ug/L	NS		1	2	ug/L
SW6020	7440-02-0	Nickel	T		30		ug/L	19.5		4	8	ug/L	4.21	K	2	4	ug/L	3.22	K	2	4	ug/L	4.95		2	4	ug/L	17.7		2	4	ug/L	4	U	4	8	ug/L	4.53	J	4	8	ug/L	4.7	K	2	4	ug/L
SW6020	7440-02-0	Nickel	D		30		ug/L	4	U	4	8	ug/L	NS		2	4	ug/L	NS		2	4	ug/L	4.81		2	4	ug/L	8.44		2	4	ug/L	4	U	4	8	ug/L	3.83	J	2	4	ug/L	NS		2	4	ug/L
SW6020	7440-22-4	Silver	T		7.1		ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L
SW6020	7440-22-4	Silver	D		7.1		ug/L	1	U	1	2	ug/L	NS		0.5	U	0.5	1	ug/L	NS		0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1.0	ug/L	
SW6020	7440-28-0	Thallium	T		0.016	2.0	ug/L	< 0.2	UL	0.2	0.4	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	0.123	J	0.1	0.2	ug/L	< 0.2	UL	0.2	0.4	ug/L	< 0.2	UL	0.2	0.4	ug/L	< 0.1	U	0.1	0.2	ug/L
SW6020	7440-28-0	Thallium	D		0.016	2.0	ug/L	< 0.2	UL	0.2	0.4	ug/L	NS		0.1	0.2	ug/L	NS		0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.2	UL	0.2	0.4	ug/L	< 0.1	U	0.1	0.2	ug/L	NS		0.1	0.2	ug/L
SW6020	7440-36-0	Antimony	T		0.60	6.0	ug/L	< 1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	< 1	U	1												

Table 4
November 2011 Screening Levels for Groundwater Metals Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type								40MW5 40MW5GW061212 6/12/2012 N					40MW5 40DUPGW92512 9/25/2012 FD					40MW5 40MW5GW92512 9/25/2012 N					40MW6 40MW6GW112111 11/21/2011 N					40MW6 40MW6GW030712 3/7/2012 N					40MW6 40DUPGW061212 6/12/2012 FD					40MW6 40MW6GW061212 6/12/2012 N					40MW6 40MW6GW92512 9/25/2012 N				
Method	CAS	Chemical	fraction	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW60108	7429-90-5	Aluminum	T		1600		ug/L	911		50	100	ug/L	140	J	50	100	ug/L	266	J	50	100	ug/L	242		50	100	ug/L	210		50	100	ug/L	209		50	100	ug/L	230		50	100	ug/L	467		50	100	ug/L
SW60108	7429-90-5	Aluminum	D		1600		ug/L	50	U	50	100	ug/L	50	U	50	100	ug/L	50	U	50	100	ug/L	NS					NS					NS					NS					50	U	50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	T		1100		ug/L	950		50	100	ug/L	123		50	100	ug/L	217		50	100	ug/L	323	L	50	100	ug/L	155		50	100	ug/L	238		50	100	ug/L	296		50	100	ug/L	393		50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	D		1100		ug/L	50	U	50	100	ug/L	50	U	50	100	ug/L	50	U	50	100	ug/L	NS					NS					NS					NS					50	U	50	100	ug/L
SW60108	7439-95-4	Magnesium	T				ug/L	34700		2500	5000	ug/L	32500		250	500	ug/L	32000		250	500	ug/L	32000		250	500	ug/L	36100		250	500	ug/L	33100		2500	5000	ug/L	34000		2500	5000	ug/L	33700		250	500	ug/L
SW60108	7439-95-4	Magnesium	D				ug/L	34600		2500	5000	ug/L	32100		250	500	ug/L	32300		250	500	ug/L	NS					NS					NS					NS					250	500	ug/L		
SW60108	7440-09-7	Potassium	T				ug/L	1270		500	1000	ug/L	1260		500	1000	ug/L	1300		500	1000	ug/L	1000		500	1000	ug/L	1020		500	1000	ug/L	1050		500	1000	ug/L	1140		500	1000	ug/L	1220		500	1000	ug/L
SW60108	7440-09-7	Potassium	D				ug/L	1240		500	1000	ug/L	1230		500	1000	ug/L	1230		500	1000	ug/L	NS					NS					NS					NS					1140		500	1000	ug/L
SW60108	7440-23-5	Sodium	T				ug/L	5280		250	500	ug/L	5270		250	500	ug/L	5730		250	500	ug/L	5100		250	500	ug/L	4400		250	500	ug/L	4960		250	500	ug/L	5180		250	500	ug/L	5240		250	500	ug/L
SW60108	7440-23-5	Sodium	D				ug/L	5170		250	500	ug/L	5420		250	500	ug/L	5430		250	500	ug/L	NS					NS					NS					NS					5180		250	500	ug/L
SW60108	7440-41-7	Beryllium	T		1.6	4.0	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	UJ	1	2	ug/L	1	UJ	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L
SW60108	7440-41-7	Beryllium	D		1.6	4.0	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	NS					NS					NS					NS					1	U	1	2	ug/L
SW60108	7440-62-2	Vanadium	T		7.8		ug/L	8.74	J	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	6.42	J	5	10	ug/L	8.09	J	5	10	ug/L	5	U	5	10	ug/L
SW60108	7440-62-2	Vanadium	D		7.8		ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	NS					NS					NS					NS					5	U	5	10	ug/L
SW60108	7440-66-6	Zinc	T		470		ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L
SW60108	7440-66-6	Zinc	D		470		ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	NS					NS					NS					NS					10	U	10	20	ug/L
SW60108	7440-70-2	Calcium	T				ug/L	89900		1000	2000	ug/L	84900		100	200	ug/L	86900		100	200	ug/L	84500		100	200	ug/L	85000		100	200	ug/L	85000		1000	2000	ug/L	85300		1000	2000	ug/L	88200		100	200	ug/L
SW60108	7440-70-2	Calcium	D				ug/L	88400		1000	2000	ug/L	86100		100	200	ug/L	89200		100	200	ug/L	NS					NS					NS					NS					89400		100	200	ug/L
SW6020	7439-92-1	Lead	T			15	ug/L	0.5	UL	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	UL	0.5	1	ug/L	0.525	L	0.5	1	ug/L	0.733	J	0.5	1	ug/L
SW6020	7439-92-1	Lead	D			15	ug/L	0.5	UL	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	NS					NS					NS					NS					0.5	U	0.5	1	ug/L
SW6020	7439-96-5	Manganese	T		32		ug/L	4.84	L	1	2	ug/L	4	B	1	2	ug/L	2.13	B	1	2	ug/L	2	U	2	4	ug/L	1.09	J	1	2	ug/L	1.82	J	1	2	ug/L	2.93	J	1	2	ug/L	2.41	B	1	2	ug/L
SW6020	7439-96-5	Manganese	D		32		ug/L	1	UL	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	NS					NS					NS					NS					1.07	B	1	2	ug/L
SW6020	7440-02-0	Nickel	T		30		ug/L	5.52		2	4	ug/L	8.39		2	4	ug/L	7.3		2	4	ug/L	4	U	4	8	ug/L	2.92	K	2	4	ug/L	4.94		2	4	ug/L	4.89		2	4	ug/L	7.88		2	4	ug/L
SW6020	7440-02-0	Nickel	D		30		ug/L	4.89		2	4	ug/L	7.96		2	4	ug/L	8.21		2	4	ug/L	NS					NS					NS					NS					8.14		2	4	ug/L
SW6020	7440-22-4	Silver	T		7.1		ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L
SW6020	7440-22-4	Silver	D		7.1		ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	NS					NS					NS					NS					0.5	U	0.5	1	ug/L
SW6020	7440-28-0	Thallium	T		0.016	2.0	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	UL	0.2	0.4	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L
SW6020	7440-28-0	Thallium	D		0.016	2.0	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	NS					NS					NS					NS					< 0.1	U	0.1	0.2	ug/L
SW6020	7440-36-0	Antimony	T		0.60	6.0	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L
SW6020	7440-36-0	Antimony	D		0.60	6.0	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	NS					NS					NS					NS					0.5	U	0.5	1	ug/L
SW6020	7440-38-2	Arsenic	T	0.045	0.47	10	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0																											

Table 4
November 2011 Screening Levels for Groundwater Metals Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW7 40MW7GW112011 11/20/2011 N					40MW7 40MW7GW030612 3/6/2012 N					40MW7 40MW7GW601212 6/12/2012 N					40MW7 40MW7GW92512 9/25/2012 N					
Method	CAS	Chemical	fraction	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW60108	7429-90-5	Aluminum	T		1600		ug/L	8290		50	100	ug/L	344		50	100	ug/L	70.3	J	50	100	ug/L	1730		50	100	ug/L
SW60108	7429-90-5	Aluminum	D		1600		ug/L	50	U	50	100	ug/L	NS					NS					50	U	50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	T		1100		ug/L	7950	L	50	100	ug/L	263		50	100	ug/L	149		50	100	ug/L	1620		50	100	ug/L
SW60108	7439-89-6	Iron, Ferrous	D		1100		ug/L	73.1	J	50	100	ug/L	NS					NS					50	U	50	100	ug/L
SW60108	7439-95-4	Magnesium	T				ug/L	61900		250	500	ug/L	36100		250	500	ug/L	36400		2500	5000	ug/L	41100		250	500	ug/L
SW60108	7439-95-4	Magnesium	D				ug/L	32500		250	500	ug/L	NS					NS					36100		250	500	ug/L
SW60108	7440-09-7	Potassium	T				ug/L	4250		500	1000	ug/L	1720		500	1000	ug/L	1670		500	1000	ug/L	2130		500	1000	ug/L
SW60108	7440-09-7	Potassium	D				ug/L	2300		500	1000	ug/L	NS					NS					1770		500	1000	ug/L
SW60108	7440-23-5	Sodium	T				ug/L	66700		250	500	ug/L	8540		250	500	ug/L	4030		250	500	ug/L	3510		250	500	ug/L
SW60108	7440-23-5	Sodium	D				ug/L	78300		250	500	ug/L	NS					NS					3360		250	500	ug/L
SW60108	7440-41-7	Beryllium	T		1.6	4.0	ug/L	1	UJ	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L	1	U	1	2	ug/L
SW60108	7440-41-7	Beryllium	D		1.6	4.0	ug/L	1	UJ	1	2	ug/L	NS					NS					1	U	1	2	ug/L
SW60108	7440-62-2	Vanadium	T		7.8		ug/L	9.26	J	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L	5	U	5	10	ug/L
SW60108	7440-62-2	Vanadium	D		7.8		ug/L	5	U	5	10	ug/L	NS					NS					5	U	5	10	ug/L
SW60108	7440-66-6	Zinc	T		470		ug/L	68.5		10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L	10	U	10	20	ug/L
SW60108	7440-66-6	Zinc	D		470		ug/L	10	U	10	20	ug/L	NS					NS					10	U	10	20	ug/L
SW60108	7440-70-2	Calcium	T				ug/L	190000		100	200	ug/L	80600	J	100	200	ug/L	77800		1000	2000	ug/L	101000		100	200	ug/L
SW60108	7440-70-2	Calcium	D				ug/L	70600		100	200	ug/L	NS					NS					77700		100	200	ug/L
SW6020	7439-92-1	Lead	T			15	ug/L	9.37		1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	UL	0.5	1	ug/L	1.61		0.5	1	ug/L
SW6020	7439-92-1	Lead	D			15	ug/L	1	U	1	2	ug/L	NS					NS					0.5	U	0.5	1	ug/L
SW6020	7439-96-5	Manganese	T		32		ug/L	181		2	4	ug/L	10.8		1	2	ug/L	6.47	L	1	2	ug/L	26.5		1	2	ug/L
SW6020	7439-96-5	Manganese	D		32		ug/L	23.9	B	2	4	ug/L	NS					NS					3.77	B	1	2	ug/L
SW6020	7440-02-0	Nickel	T		30		ug/L	13.8		4	8	ug/L	5.54	K	2	4	ug/L	4.82		2	4	ug/L	10.4		2	4	ug/L
SW6020	7440-02-0	Nickel	D		30		ug/L	4	U	4	8	ug/L	NS					NS					7.06		2	4	ug/L
SW6020	7440-22-4	Silver	T		7.1		ug/L	1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L
SW6020	7440-22-4	Silver	D		7.1		ug/L	1	U	1	2	ug/L	NS					NS					0.5	U	0.5	1	ug/L
SW6020	7440-28-0	Thallium	T		0.016	2.0	ug/L	< 0.2	UL	0.2	0.4	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L
SW6020	7440-28-0	Thallium	D		0.016	2.0	ug/L	< 0.2	UL	0.2	0.4	ug/L	NS					NS					< 0.1	U	0.1	0.2	ug/L
SW6020	7440-36-0	Antimony	T		0.60	6.0	ug/L	< 1	U	1	2	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L	0.5	U	0.5	1	ug/L
SW6020	7440-36-0	Antimony	D		0.60	6.0	ug/L	< 1	U	1	2	ug/L	NS					NS					0.5	U	0.5	1	ug/L
SW6020	7440-38-2	Arsenic	T	0.045	0.47	10	ug/L	2	K	1	2	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	0.615	J	0.5	1	ug/L
SW6020	7440-38-2	Arsenic	D	0.045	0.47	10	ug/L	< 1	U	1	2	ug/L	NS					NS					< 0.5	U	0.5	1	ug/L
SW6020	7440-39-3	Barium	T		290	2000	ug/L	252		3	6	ug/L	145		1.5	3	ug/L	146	L	1.5	3	ug/L	172		1.5	3	ug/L
SW6020	7440-39-3	Barium	D		290	2000	ug/L	75.8		3	6	ug/L	NS					NS					170		1.5	3	ug/L
SW6020	7440-43-9	Cadmium	T		0.69	5.0	ug/L	0.6	UL	0.6	1.2	ug/L	0.3	U	0.3	0.6	ug/L	0.3	U	0.3	0.6	ug/L	0.3	U	0.3	0.6	ug/L
SW6020	7440-43-9	Cadmium	D		0.69	5.0	ug/L	0.6	UL	0.6	1.2	ug/L	NS					NS					0.3	U	0.3	0.6	ug/L
SW6020	7440-47-3	Chromium	T			100	ug/L	10.2		2	4	ug/L	9.15		1	2	ug/L	2.13	L	1	2	ug/L	4.42		1	2	ug/L
SW6020	7440-47-3	Chromium	D			100	ug/L	4.04		2	4	ug/L	NS					NS					2.73		1	2	ug/L
SW6020	7440-48-4	Cobalt	T		0.47		ug/L	3.04		1	2	ug/L	< 0.5	U	0.5	1	ug/L	< 0.5	U	0.5	1	ug/L	1.02		0.5	1	ug/L
SW6020	7440-48-4	Cobalt	D		0.47		ug/L	< 1	U	1	2	ug/L	NS					NS					0.825	J	0.5	1	ug/L
SW6020	7440-50-8	Copper	T		62	1300	ug/L	5.01		2	4	ug/L	1.44	J	1	2	ug/L	1	U	1	2	ug/L	2.32		1	2	ug/L
SW6020	7440-50-8	Copper	D		62	1300	ug/L	2	U	2	4	ug/L	NS					NS					1	U	1	2	ug/L
SW6020	7782-49-2	Selenium	T		7.8	50	ug/L	1.86	K	1	2	ug/L	0.5	UL	0.5	1	ug/L	0.652	K	0.5	1	ug/L	0.848	J	0.5	1	ug/L
SW6020	7782-49-2	Selenium	D		7.8	50	ug/L	1.81	K	1	2	ug/L	NS					NS					0.913	J	0.5	1	ug/L
SW7470A	7439-97-6	Mercury	T		0.063	2.0	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	U	0.1	0.2	ug/L	< 0.1	UL	0.1	0.2	ug/L
SW7470A	7439-97-6	Mercury	D		0.063	2.0	ug/L	< 0.1	U	0.1	0.2	ug/L	NS					NS					< 0.1	UL	0.1	0.2	ug/L

Notes:
CAS = Chemical Abstracts Service
ug/L = Microgram Per Liter
T = Total
D = Dissolved
CSL = Carcinogenic Screening Level
T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VO = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.
NS=Not Sampled because Turbidity was stable at less than or equal to 10 NTUs
Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

Table 5
November 2011 Screening Levels for Groundwater Perchlorate Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40LFMW01 40LFMW01GW112111 11/21/2011 N					40LFMW01 40DUPGW030612 3/6/2012 FD					40LFMW01 40LFMW01GW030612 3/6/2012 N					40LFMW01 LFMW01GW061212 6/12/2012 N					40LFMW01 LFMW01GW92612 9/26/2012 N				
Method	CAS	Chemical	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW6850	14797-73-0	PERCHLORATE	1.1	15	ug/L	9.67	J	0.1	0.2	ug/L	8.93		0.1	0.2	ug/L	8.88		0.1	0.2	ug/L	4.81		0.1	0.2	ug/L	8.75		0.1	0.2	ug/L

Notes:
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D = Dissolved
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T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.



Table 5
November 2011 Screening Levels for Groundwater Perchlorate Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40MW5 40DUPGW112011 11/20/2011 FD					40MW5 40MW5GW112011 11/20/2011 N					40MW5 40MW5GW030712 3/7/2012 N					40MW5 40MW5GW061212 6/12/2012 N					40MW5 40DUPGW92512 9/25/2012 FD				
Method	CAS	Chemical	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW6850	14797-73-0	PERCHLORATE	1.1	15	ug/L	1.55	J	0.1	0.2	ug/L	1.55	J	0.1	0.2	ug/L	0.931		0.1	0.2	ug/L	0.986		0.1	0.2	ug/L	1.81		0.1	0.2	ug/L

Notes:
CAS = Chemical Abstracts Service
ug/L = Microgram Per Liter
T = Total
D = Dissolved
CSL = Carcinogenic Screening Level
T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

Table 5
November 2011 Screening Levels for Groundwater Perchlorate Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40MW5 40MW5GW92512 9/25/2012 N					40MW6 40MW6GW112111 11/21/2011 N					40MW6 40MW6GW030712 3/7/2012 N					40MW6 40DUPGW061212 6/12/2012 FD					40MW6 40MW6GW061212 6/12/2012 N				
Method	CAS	Chemical	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW6850	14797-73-0	PERCHLORATE	1.1	15	ug/L	1.71		0.1	0.2	ug/L	0.885	J	0.1	0.2	ug/L	0.526		0.1	0.2	ug/L	0.635		0.1	0.2	ug/L	0.647		0.1	0.2	ug/L

Notes:
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T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

Table 5
November 2011 Screening Levels for Groundwater Perchlorate Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40MW6 40MW6GW92512 9/25/2012 N					40MW7 40MW7GW112011 11/20/2011 N					40MW7 40MW7GW030612 3/6/2012 N					40MW7 40MW7GW601212 6/12/2012 N					40MW7 40MW7GW92512 9/25/2012 N				
Method	CAS	Chemical	T-NCSL	MCL	Units	Result	Int Qual	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW6850	14797-73-0	PERCHLORATE	1.1	15	ug/L	1.25		0.1	0.2	ug/L	4.5	J	0.1	0.2	ug/L	4.18		0.1	0.2	ug/L	3.69		0.1	0.2	ug/L	3.66		0.1	0.2	ug/L

Notes:
CAS = Chemical Abstracts Service
ug/L = Microgram Per Liter
T = Total
D = Dissolved
CSL = Carcinogenic Screening Level
T-NCSL = Adjusted Noncarcinogenic Screening Level
MCL = Maximum Contaminant Level
= Lowest Value For Screening
Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

U = Not Detected. The associated number indicates the approximate sample concentration
B = Not detected substantially above the level reported in laboratory or field blanks.
R = Unusable result. Analyte may or may not be present in the sample.
J = Analyte present. Reported value may or may not be accurate or precise.
K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher
UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.



Table 6
November 2011 Screening Levels for Groundwater Pesticides Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40LFMW01 40LFMW01GW112111 11/21/2011 N					40LFMW01 40DUPGW030612 3/6/2012 FD					40LFMW01 40LFMW01GW030612 3/6/2012 N					40LFMW01 LFMW01GW061212 6/12/2012 N					40LFMW01 LFMW01GW92612 9/26/2012 N					
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8081A	72-54-8	4,4'-DDD	0.28			ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0253	J	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-55-9	4,4'-DDE	0.2			ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	50-29-3	4,4'-DDT	0.2	0.78		ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	309-00-2	Aldrin	0.00021	0.0024		ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	5103-71-9	alpha Chlordane				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-84-6	alpha-BHC	0.0062	7.3		ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-85-7	beta-BHC	0.022			ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-86-8	delta-BHC				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	60-57-1	Dieldrin	0.0015	0.028		ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	959-98-8	Endosulfan I				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	33213-65-9	Endosulfan II				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	1031-07-8	Endosulfan sulfate				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-20-8	Endrin		0.17	2	ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	7421-93-4	Endrin aldehyde				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	53494-70-5	Endrin ketone				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	5103-74-2	gamma Chlordane				ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	58-89-9	gamma-BHC (Lindane)	0.036	0.27	0.2	ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	76-44-8	Heptachlor	0.0018	0.092	0.4	ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	1024-57-3	Heptachlor epoxide	0.0033	0.0092	0.2	ug/L	< 0.0119	UL	0.0119	0.0595	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-43-5	Methoxychlor		2.7	40	ug/L	0.0119	UL	0.0119	0.0595	ug/L	0.01	U	0.01	0.05	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	8001-35-2	Toxaphene	0.013		3	ug/L	< 0.357	UL	0.357	1.19	ug/L	< 0.3	U	0.3	1	ug/L	< 0.326	U	0.326	1.09	ug/L	< 0.33	UL	0.33	1.1	ug/L	< 0.316	UL	0.316	1.05	ug/L

Notes:

CAS = Chemical Abstracts Service

ug/L = Microgram Per Liter

T = Total

D = Dissolved

CSL = Carcinogenic Screening Level

T-NCSL = Adjusted Noncarcinogenic Screening Level

MCL = Maximum Contaminant Level

= Lowest Value For Screening

Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level

VQ = Validation Qualifier

LOD = Limit of Detection

LOQ = Limit of Quantitation

DL = Detection Limit

N = Normal

FD = Field Duplicate

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample.

J = Analyte present. Reported value may or may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Table 6
November 2011 Screening Levels for Groundwater Pesticides Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type						40MW5 40DUPGW112011 11/20/2011 FD					40MW5 40MW5GW112011 11/20/2011 N					40MW5 40MW5GW030712 3/7/2012 N					40MW5 40MW5GW061212 6/12/2012 N					40MW5 40DUPGW92512 9/25/2012 FD					
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8081A	72-54-8	4,4'-DDD	0.28			ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	72-55-9	4,4'-DDE	0.2			ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	50-29-3	4,4'-DDT	0.2	0.78		ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	309-00-2	Aldrin	0.00021	0.0024		ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	UJ	0.0102	0.051	ug/L
SW8081A	5103-71-9	alpha Chlordane				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	319-84-6	alpha-BHC	0.0062	7.3		ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	319-85-7	beta-BHC	0.022			ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	319-86-8	delta-BHC				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	60-57-1	Dieldrin	0.0015	0.028		ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	959-98-8	Endosulfan I				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	33213-65-9	Endosulfan II				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	1031-07-8	Endosulfan sulfate				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	72-20-8	Endrin		0.17	2	ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	7421-93-4	Endrin aldehyde				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	53494-70-5	Endrin ketone				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	5103-74-2	gamma Chlordane				ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	58-89-9	gamma-BHC (Lindane)	0.036	0.27	0.2	ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	UJ	0.0102	0.051	ug/L
SW8081A	76-44-8	Heptachlor	0.0018	0.092	0.4	ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	UJ	0.0102	0.051	ug/L
SW8081A	1024-57-3	Heptachlor epoxide	0.0033	0.0092	0.2	ug/L	< 0.0118	U	0.0118	0.0588	ug/L	< 0.0109	U	0.0109	0.0543	ug/L	< 0.0103	U	0.0103	0.0515	ug/L	< 0.011	UL	0.011	0.0549	ug/L	< 0.0102	U	0.0102	0.051	ug/L
SW8081A	72-43-5	Methoxychlor		2.7	40	ug/L	0.0118	U	0.0118	0.0588	ug/L	0.0109	U	0.0109	0.0543	ug/L	0.0103	U	0.0103	0.0515	ug/L	0.011	UL	0.011	0.0549	ug/L	0.0102	U	0.0102	0.051	ug/L
SW8081A	8001-35-2	Toxaphene	0.013		3	ug/L	< 0.353	U	0.353	1.18	ug/L	< 0.326	U	0.326	1.09	ug/L	< 0.309	U	0.309	1.03	ug/L	< 0.33	UL	0.33	1.1	ug/L	< 0.306	U	0.306	1.02	ug/L

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Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

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Table 6
November 2011 Screening Levels for Groundwater Pesticides Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW5 40MW5GW92512 9/25/2012 N					40MW6 40MW6GW112111 11/21/2011 N					40MW6 40MW6GW030712 3/7/2012 N					40MW6 40DUPGW061212 6/12/2012 FD					40MW6 40MW6GW061212 6/12/2012 N				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8081A	72-54-8	4,4'-DDD	0.28			ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	72-55-9	4,4'-DDE	0.2			ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	50-29-3	4,4'-DDT	0.2	0.78		ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	309-00-2	Aldrin	0.00021	0.0024		ug/L	< 0.0108	UJ	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	5103-71-9	alpha Chlordane				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	319-84-6	alpha-BHC	0.0062	7.3		ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	319-85-7	beta-BHC	0.022			ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	319-86-8	delta-BHC				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	60-57-1	Dieldrin	0.0015	0.028		ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	959-98-8	Endosulfan I				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	33213-65-9	Endosulfan II				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	1031-07-8	Endosulfan sulfate				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	72-20-8	Endrin		0.17	2	ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	7421-93-4	Endrin aldehyde				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	53494-70-5	Endrin ketone				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	5103-74-2	gamma Chlordane				ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	58-89-9	gamma-BHC (Lindane)	0.036	0.27	0.2	ug/L	0.0108	UJ	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	76-44-8	Heptachlor	0.0018	0.092	0.4	ug/L	< 0.0108	UJ	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	1024-57-3	Heptachlor epoxide	0.0033	0.0092	0.2	ug/L	< 0.0108	U	0.0108	0.0538	ug/L	< 0.01	U	0.01	0.05	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.0115	UL	0.0115	0.0575	ug/L	< 0.0108	UL	0.0108	0.0538	ug/L
SW8081A	72-43-5	Methoxychlor		2.7	40	ug/L	0.0108	U	0.0108	0.0538	ug/L	0.01	U	0.01	0.05	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.0115	UL	0.0115	0.0575	ug/L	0.0108	UL	0.0108	0.0538	ug/L
SW8081A	8001-35-2	Toxaphene	0.013		3	ug/L	< 0.323	U	0.323	1.08	ug/L	< 0.3	U	0.3	1	ug/L	< 0.313	U	0.313	1.04	ug/L	< 0.345	UL	0.345	1.15	ug/L	< 0.323	UL	0.323	1.08	ug/L

Notes:

CAS = Chemical Abstracts Service

ug/L = Microgram Per Liter

T = Total

D = Dissolved

CSL = Carcinogenic Screening Level

T-NCSL = Adjusted Noncarcinogenic Screening Level

MCL = Maximum Contaminant Level

= Lowest Value For Screening

Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level

VQ = Validation Qualifier

LOD = Limit of Detection

LOQ = Limit of Quantitation

DL = Detection Limit

N = Normal

FD = Field Duplicate

Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample.

J = Analyte present. Reported value may or may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher

UJ = Not detected. Quantitation limit may be inaccurate or imprecise.

UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Table 6
November 2011 Screening Levels for Groundwater Pesticides Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40MW6 40MW6GW92512 9/25/2012 N					40MW7 40MW7GW112011 11/20/2011 N					40MW7 40MW7GW030612 3/6/2012 N					40MW7 40MW7GW601212 6/12/2012 N					40MW7 40MW7GW92512 9/25/2012 N				
Method	CAS	Chemical	CSL	T-NCSL	MCL	Units	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit	Result	VQ	LOD	LOQ	DL Unit
SW8081A	72-54-8	4,4'-DDD	0.28			ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-55-9	4,4'-DDE	0.2			ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	50-29-3	4,4'-DDT	0.2	0.78		ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	309-00-2	Aldrin	0.00021	0.0024		ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	5103-71-9	alpha Chlordane				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-84-6	alpha-BHC	0.0062	7.3		ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-85-7	beta-BHC	0.022			ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	319-86-8	delta-BHC				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	60-57-1	Dieldrin	0.0015	0.028		ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	959-98-8	Endosulfan I				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	33213-65-9	Endosulfan II				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	1031-07-8	Endosulfan sulfate				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-20-8	Endrin		0.17	2	ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	7421-93-4	Endrin aldehyde				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	53494-70-5	Endrin ketone				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	5103-74-2	gamma Chlordane				ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	58-89-9	gamma-BHC (Lindane)	0.036	0.27	0.2	ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	76-44-8	Heptachlor	0.0018	0.092	0.4	ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	1024-57-3	Heptachlor epoxide	0.0033	0.0092	0.2	ug/L	< 0.0103	UL	0.0103	0.0515	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L	< 0.0104	U	0.0104	0.0521	ug/L	< 0.01	UL	0.01	0.05	ug/L	< 0.0105	UL	0.0105	0.0526	ug/L
SW8081A	72-43-5	Methoxychlor		2.7	40	ug/L	0.0103	UL	0.0103	0.0515	ug/L	0.0105	UL	0.0105	0.0526	ug/L	0.0104	U	0.0104	0.0521	ug/L	0.01	UL	0.01	0.05	ug/L	0.0105	UL	0.0105	0.0526	ug/L
SW8081A	8001-35-2	Toxaphene	0.013		3	ug/L	< 0.309	UL	0.309	1.03	ug/L	< 0.316	UL	0.316	1.05	ug/L	< 0.313	U	0.313	1.04	ug/L	< 0.3	UL	0.3	1	ug/L	< 0.316	UL	0.316	1.05	ug/L

Notes:

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MCL = Maximum Contaminant Level

= Lowest Value For Screening

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VQ = Validation Qualifier

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Screening Levels are based on USEPA Region III Risk-Based Concentration values from the November, 2011 RBC Table.

U = Not Detected. The associated number indicates the approximate sample concentration

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Table 7
November 2011 Screening Levels for Groundwater Dioxin/Furan Data - Residential Tapwater Pathway
SWMU 40 (RAAP-009)
Radford Army Ammunition Plant
Longterm Monitoring Data Year 1

Location ID Sample ID Sample Date Sample Type							40LMW01 40LMW01GW112111 11/20/2011 N							40MW5 40DUPGW112011 11/20/2011 FD							40MW5 40MW5GW112011 11/20/2011 N							40MW6 40MW6GW112111 11/21/2011 N							40MW7 40MW7GW112011 11/20/2011 N						
Method	CAS	Chemical	CSL	T-NCSL	MCL	TEF	Units	Result	TEF Adjusted Value	VQ	LOD	LOQ	DL Unit	Result	TEF Adjusted Value	VQ	LOD	LOQ	DL Unit	Result	TEF Adjusted Value	VQ	LOD	LOQ	DL Unit	Result	TEF Adjusted Value	VQ	LOD	LOQ	DL Unit	Result	TEF Adjusted Value	VQ	LOD	LOQ	DL Unit				
SW8290	1746-01-6	2378-TCDD	0.52	1.6	30	1	pg/l	< 2.73	1.365	U	2.73	12.50	pg/l	< 1.66	0.830	U	1.66	10.60	pg/l	< 7.84	3.92	U	7.84	10.90	pg/l	< 2.08	1.04	U	2.08	11.10	pg/l	< 2.28	1.14	U	2.28	11.40	pg/l				
SW8290	40321-76-4	12378-PeCDD				1	pg/l	< 2.41	1.205	U	2.41	31.30	pg/l	< 2.25	1.125	U	2.25	26.60	pg/l	< 9.85	4.925	U	9.85	27.20	pg/l	< 2.21	1.105	U	2.21	27.80	pg/l	< 1.61	0.805	U	1.61	28.40	pg/l				
SW8290	39227-28-6	123478-HxCDD				0.1	pg/l	< 2.10	0.12	U	2.10	31.30	pg/l	< 1.31	0.066	U	1.31	26.60	pg/l	< 3.86	0.2195	U	3.86	27.20	pg/l	< 2.70	0.1535	U	2.70	27.80	pg/l	< 1.89	0.0945	U	1.89	28.40	pg/l				
SW8290	57653-85-7	123678-HxCDD				0.1	pg/l	< 2.40	0.105	U	2.40	31.30	pg/l	< 1.49	0.075	U	1.49	26.60	pg/l	< 4.39	0.193	U	4.39	27.20	pg/l	< 3.07	0.135	U	3.07	27.80	pg/l	< 1.89	0.0945	U	1.89	28.40	pg/l				
SW8290	19408-74-3	123789-HxCDD				0.1	pg/l	< 2.14	0.107	U	2.14	31.30	pg/l	< 1.33	0.067	U	1.33	26.60	pg/l	< 3.92	0.196	U	3.92	27.20	pg/l	< 2.74	0.137	U	2.74	27.80	pg/l	< 1.87	0.0935	U	1.87	28.40	pg/l				
SW8290	35822-46-9	1234678-HpCDD				0.01	pg/l	6.17	0.0617	B	3.58	31.30	pg/l	< 1.81	0.0091	U	1.81	26.60	pg/l	< 4.78	0.0239	U	4.78	27.20	pg/l	< 2.83	0.01415	U	2.83	27.80	pg/l	< 2.36	0.0118	U	2.36	28.40	pg/l				
SW8290	3268-87-9	OCDD				0.0003	pg/l	162	0.0486	J	7.47	62.50	pg/l	18.3	0.0055	B	4.37	53.20	pg/l	43.7	0.01311	B	9.77	54.30	pg/l	22.3	0.00669	B	6.67	55.60	pg/l	27.4	0.00822	B	6.70	56.80	pg/l				
						Total:			3.0123				pg/l		2.17604				pg/l		9.49051				pg/l		2.59134					pg/l		2.24752			pg/l				
SW8290	51207-31-9	2378-TCDF	5,800,000			0.1	pg/l	< 1.91	0.0955	U	1.91	12.50	pg/l	< 1.54	0.0770	U	1.54	10.60	pg/l	< 5.23	0.2615	U	5.23	10.90	pg/l	< 1.54	0.077	U	1.54	11.10	pg/l	< 1.59	0.0795	U	1.59	11.40	pg/l				
SW8290	57117-31-4	12378-PeCDF				0.03	pg/l	< 1.69	0.02535	U	1.69	31.30	pg/l	< 1.27	0.0191	U	1.27	26.60	pg/l	< 5.76	0.0864	U	5.76	27.20	pg/l	< 1.02	0.0153	U	1.02	27.80	pg/l	< 0.983	0.014745	U	0.983	28.40	pg/l				
SW8290	57117-41-6	23478-PeCDF				0.3	pg/l	< 1.79	0.2685	U	1.79	31.30	pg/l	< 1.35	0.2025	U	1.35	26.60	pg/l	< 6.12	0.918	U	6.12	27.20	pg/l	< 1.08	0.162	U	1.08	27.80	pg/l	< 1.03	0.1545	U	1.03	28.40	pg/l				
SW8290	70648-26-9	123478-HxCDF				0.1	pg/l	< 1.22	0.0685	U	1.22	31.30	pg/l	< 1.06	0.0530	U	1.06	26.60	pg/l	< 2.39	0.134	U	2.39	27.20	pg/l	< 1.11	0.062	U	1.11	27.80	pg/l	< 1.33	0.0715	U	1.33	28.40	pg/l				
SW8290	72918-21-9	123678-HxCDF				0.1	pg/l	< 1.64	0.061	U	1.64	31.30	pg/l	< 1.43	0.0715	U	1.43	26.60	pg/l	< 3.23	0.1195	U	3.23	27.20	pg/l	< 1.50	0.0555	U	1.50	27.80	pg/l	< 1.79	0.0665	U	1.79	28.40	pg/l				
SW8290	57117-44-9	123789-HxCDF				0.1	pg/l	< 1.37	0.082	U	1.37	31.30	pg/l	< 1.19	0.0595	U	1.19	26.60	pg/l	< 2.68	0.1615	U	2.68	27.20	pg/l	< 1.24	0.075	U	1.24	27.80	pg/l	< 1.43	0.0895	U	1.43	28.40	pg/l				
SW8290	60851-34-5	234678-HxCDF				0.1	pg/l	< 1.39	0.0695	U	1.39	31.30	pg/l	< 1.21	0.0605	U	1.21	26.60	pg/l	< 2.74	0.137	U	2.74	27.20	pg/l	< 1.27	0.0635	U	1.27	27.80	pg/l	< 1.51	0.0755	U	1.51	28.40	pg/l				
SW8290	67562-39-4	1234678-HpCDF				0.01	pg/l	< 2.04	0.0102	U	2.04	31.30	pg/l	< 1.30	0.0065	U	1.30	26.60	pg/l	< 2.98	0.0149	U	2.98	27.20	pg/l	< 2.18	0.0109	U	2.18	27.80	pg/l	< 1.89	0.00945	U	1.89	28.40	pg/l				
SW8290	55673-89-7	1234789-HpCDF				0.01	pg/l	< 2.75	0.01375	U	2.75	31.30	pg/l	< 1.75	0.0088	U	1.75	26.60	pg/l	< 4.03	0.02015	U	4.03	27.20	pg/l	< 2.94	0.0147	U	2.94	27.80	pg/l	< 2.39	0.01195	U	2.39	28.40	pg/l				
SW8290	39001-02-0	OCDF				0.0003	pg/l	< 5.61	0.0008415	UJ	5.61	62.50	pg/l	< 4.09	0.0006	U	4.09	53.20	pg/l	< 8.46	0.001269	U	8.46	54.30	pg/l	< 6.61	0.0009915	UJ	6.61	55.60	pg/l	< 5.61	0.0008415	U	5.61	56.80	pg/l				
						Total:			0.6951415				pg/l		0.55891				pg/l		1.854219				pg/l		0.5368915					pg/l		0.5739865			pg/l				
SW8290		Total TEQ					pg/l		3.72				pg/l		2.74				pg/l		11.4				pg/l		3.13					pg/l		2.82			pg/l				
SW8290	30402-14-3	TETRACHLORINATED DIBENZOFURANS, (TOTAL)					pg/l	8.50		B	1.91	12.50	pg/l	< 1.54		U	1.54	10.60	pg/l	< 5.23		U	5.23	10.90	pg/l	2.44		B	1.54	11.10	pg/l	< 1.59		U	1.59	11.40	pg/l				
SW8290	37871-00-4	Total HpCDD					pg/l	6.17		J	3.58	31.30	pg/l	< 1.81		U	1.81	26.60	pg/l	< 4.78		U	4.78	27.20	pg/l	4.42		J	2.83	27.80	pg/l	< 2.36		U	2.36	28.40	pg/l				
SW8290	38998-75-3	Total HpCDF					pg/l	< 2.04		U	2.04	31.30	pg/l	< 1.30		U	1.30	26.60	pg/l	< 2.98		U	2.98	27.20	pg/l	< 2.18		U	2.18	27.80	pg/l	< 1.89		U	1.89	28.40	pg/l				
SW8290	34465-46-8	Total HxCDD					pg/l	< 2.10		U	2.10	31.30	pg/l	< 1.31		U	1.31	26.60	pg/l	< 3.86		U	3.86	27.20	pg/l	< 2.70		U	2.70	27.80	pg/l	< 1.89		U	1.89	28.40	pg/l				
SW8290	55684-94-1	Total HxCDF					pg/l	< 1.22		U	1.22	31.30	pg/l	< 1.06		U	1.06	26.60	pg/l	< 2.39		U	2.39	27.20	pg/l	< 1.11		U	1.11	27.80	pg/l	< 1.33		U	1.33	28.40	pg/l				
SW8290	36088-22-9	Total PeCDD					pg/l	< 2.41		U	2.41	31.30	pg/l	< 2.25		U	2.25	26.60	pg/l	< 9.85		U	9.85	27.20	pg/l	< 2.21		U	2.21	27.80	pg/l	< 1.61		U	1.61	28.40	pg/l				
SW8290	30402-15-4	Total PeCDF					pg/l	< 1.79		U	1.79	31.30	pg/l	< 1.35		U	1.35	26.60	pg/l	< 6.12		U	6.12	27.20	pg/l	< 1.08		U	1.08	27.80	pg/l	< 1.03		U	1.03	28.40	pg/l				
SW8290	41903-57-5	Total TCDD					pg/l	< 2.73		U	2.73	12.5	pg/l	< 1.66		U	1.66	10.6	pg/l	< 7.84		U	7.84	10.9	pg/l	< 2.08		U	2.08	11.1	pg/l	< 2.28		U	2.28	11.4	pg/l				

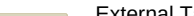
Notes:
For dioxin/furan data, a toxicity equivalence factor (TEF) must first be applied to adjust the measured concentrations to a toxicity equivalent concentration.
The following table contains the various dioxin-like toxicity equivalency factors for Dioxins and Furans (Van den Berg et al. 2006), which are the World Health Organization 2005 values.

CAS = Chemical Abstracts Service pg/L = Picogram Per Liter CSL = Carcinogenic Screening Level T-NCSL = Adjusted Noncarcinogenic Screening Level MCL = Maximum Contaminant Level ### = Lowest Value For Screening	U = Not Detected. The associated number indicates the approximate sample concentration B = Not detected substantially above the level reported in laboratory or field blanks. R = Unusable result. Analyte may or may not be present in the sample. J = Analyte present. Reported value may or may not be accurate or precise. K = Analyte present. Reported value may be biased high. Actual value is expected to be lower. L = Analyte present. Reported value may be biased low. Actual value is expected to be higher UJ = Not detected. Quantitation limit may be inaccurate or imprecise. UL = The analyte was not detected, and the reported quantitation limit is probably higher than reported.
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Bold = Exceeds the Carcinogenic or Adjusted Noncarcinogenic Screening Level
VQ = Validation Qualifier
LOD = Limit of Detection
LOQ = Limit of Quantitation
DL = Detection Limit
N = Normal
FD = Field Duplicate

APPENDIX F
Schedule

Radford Schedule (Revision 03-11-13)																										
ID		Task Name	Duration	Start	Finish	1 5/23	September 1 9/19	May 1 1/16	May 1 5/15	9/11	January 1 1/8	5/6	September 1 9/2	12/30	May 1 4/28	8/25	January 1 12/22	4/20	September 1 8/17	May 1 12/14	4/12	8/9	January 1 12/6	4/3	September 7/31	11/27
0		Radford AAP Schedule	1964 days?	Thu 7/15/10	Fri 1/19/18																					
1	✓	Notice to Proceed	88 days	Thu 7/15/10	Mon 11/15/10																					
2		(Task 1) Project Management Plan (PMP) / Quality Assurance Surveillance Plan (QASP) / Site Wide Plans	1655 days?	Thu 7/15/10	Mon 11/14/16																					
3	✓	1a Kick off Meeting	1 day	Thu 7/29/10	Thu 7/29/10																					
4	✓	1b Project Management Plan (PMP)	56 days	Thu 7/15/10	Thu 9/30/10																					
10		1c Quality Assurance Surveillance Plan (QASP)	41 days	Thu 7/15/10	Thu 9/9/10																					
11	✓	Preparation of Army Draft QASP	21 days	Thu 7/15/10	Thu 8/12/10																					
12		Army Review	15 days	Thu 8/12/10	Thu 9/2/10																					
13		Incorporate Army Comments in Final QASP	5 days	Fri 9/3/10	Thu 9/9/10																					
14		Final QASP Approved by Army	0 days	Thu 9/9/10	Thu 9/9/10																					
15		Performance Objective Achieved	0 days	Thu 9/9/10	Thu 9/9/10																					
16	✓	1d Accident Prevention Plan (APP) / Site Safety and Health Plan (SSHP)	134 days?	Fri 7/16/10	Wed 1/19/11																					
22	✓	1e Quality Assurance Project Plan (QAPP)/Master Work Plan Addendum	287 days	Thu 7/22/10	Fri 8/26/11																					
29	🔄	1F RAB Meetings/Stakeholder Communication	1610 days	Thu 9/16/10	Mon 11/14/16																					
30	✓	1F RAB Quarterly Meetings 1	1 day	Thu 9/16/10	Thu 9/16/10																					
31	✓	1F RAB Quarterly Meetings 2	1 day	Fri 11/12/10	Fri 11/12/10																					
32	✓	1F RAB Quarterly Meetings 3	1 day	Thu 3/17/11	Thu 3/17/11																					
33	✓	1F RAB Quarterly Meetings 4	1 day	Thu 6/16/11	Thu 6/16/11																					
34	✓	1F RAB Quarterly Meetings 5	1 day	Thu 9/15/11	Thu 9/15/11																					
35	✓	1F RAB Quarterly Meetings 6	1 day	Thu 12/8/11	Thu 12/8/11																					
36	✓	1F RAB Quarterly Meetings 7	1 day	Wed 3/28/12	Wed 3/28/12																					
37	✓	1F RAB Quarterly Meetings 8	1 day	Wed 6/27/12	Wed 6/27/12																					
38	✓	1F RAB Quarterly Meetings 9	1 day	Wed 9/26/12	Wed 9/26/12																					
39	📅	1F RAB Quarterly Meetings 10	1 day	Mon 11/12/12	Mon 11/12/12																					
40	📅	1F RAB Quarterly Meetings 11	1 day	Tue 2/12/13	Tue 2/12/13																					
41	📅	1F RAB Quarterly Meetings 12	1 day	Mon 5/13/13	Mon 5/13/13																					
42	📅	1F RAB Quarterly Meetings 13	1 day	Mon 8/12/13	Mon 8/12/13																					
43	📅	1F RAB Quarterly Meetings 14	1 day	Tue 11/12/13	Tue 11/12/13																					
44	📅	1F RAB Quarterly Meetings 15	1 day	Wed 2/12/14	Wed 2/12/14																					
45	📅	1F RAB Quarterly Meetings 16	1 day	Mon 5/12/14	Mon 5/12/14																					
46	📅	1F RAB Quarterly Meetings 17	1 day	Tue 8/12/14	Tue 8/12/14																					
47	📅	1F RAB Quarterly Meetings 18	1 day	Wed 11/12/14	Wed 11/12/14																					
48	📅	1F RAB Quarterly Meetings 19	1 day	Thu 2/12/15	Thu 2/12/15																					
49	📅	1F RAB Quarterly Meetings 20	1 day	Tue 5/12/15	Tue 5/12/15																					
50	📅	1F RAB Quarterly Meetings 21	1 day	Wed 8/12/15	Wed 8/12/15																					
51	📅	1F RAB Quarterly Meetings 22	1 day	Thu 11/12/15	Thu 11/12/15																					
52	📅	1F RAB Quarterly Meetings 23	1 day	Fri 2/12/16	Fri 2/12/16																					
53	📅	1F RAB Quarterly Meetings 24	1 day	Thu 5/12/16	Thu 5/12/16																					
		Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task														
		Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone														
		Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary														
		Task		Start-only		Baseline Split		Summary		External Milestone		Deadline														
Page 1																										

Radford Schedule (Revision 03-11-13)																											
ID		Task Name	Duration	Start	Finish	1/5/23	September 9/19	May 11/16	May 15/15	May 19/11	January 11/8	January 5/6	September 9/2	September 12/30	May 14/28	May 18/25	January 12/22	January 4/20	September 8/17	September 12/14	May 14/12	May 18/9	January 12/6	January 4/3	September 7/31	September 11/27	
54		1F RAB Quarterly Meetings 25	1 day	Fri 8/12/16	Fri 8/12/16																					0%	
55		1F RAB Quarterly Meetings 26	1 day	Mon 11/14/16	Mon 11/14/16																					0%	
56		(Task 2) Interim Measures Implementation Work Plan (IMI Work Plan) - RAAP-009: Landfill Nitro Area (S40)	291 days	Fri 7/16/10	Fri 8/26/11																						
68		(Task 3) Interim Measures Implementation - RAAP-009: Landfill Nitro Area (S40)	25 days	Sun 10/16/11	Fri 11/18/11																						
73		(Task 4) Interim Measures Completion Report (IMC Report) - RAAP-009: Landfill Nitro Area (S40)	161 days	Thu 12/1/11	Wed 7/11/12																						
84		(Task 5) Long Term Monitoring (LTM)	1744 days	Fri 7/16/10	Mon 3/20/17																						
85		5a LTM Plan	291 days	Fri 7/16/10	Fri 8/26/11																						
86		Preparation of Army Draft LTM Plan	29 days	Fri 7/16/10	Wed 8/25/10																						
87		Army Review	46 days	Thu 8/26/10	Thu 10/28/10																						
88		Incorporate Army Comments into Draft Final LTM Plan	8 days	Fri 10/29/10	Tue 11/9/10																						
89		Army Review of Draft Final LTM Plan	16 days	Wed 11/10/10	Wed 12/1/10																						
90		Draft Final LTM Plan Approved by Army	1 day	Thu 12/2/10	Thu 12/2/10																						
91		Regulator Review	58 days	Sat 12/4/10	Wed 2/23/11																						
92		Respond to, Resolve and Incorporate Regulator Comments into Final IMC Work Plan	41 days	Thu 2/24/11	Thu 4/21/11																						
93		Final LTM Plan Approved by Regulator	91 days	Fri 4/22/11	Fri 8/26/11																						
94		5b LTM and Reporting - Year 1 (2011)	226 days	Sun 11/20/11	Thu 9/27/12																						
95		5c LTM and Reporting - Year 2 (2012)	262 days	Mon 6/3/13	Tue 6/3/14																						
96		5d LTM and Reporting - Year 3 (2013)	261 days	Mon 3/3/14	Mon 3/2/15																						
97		5e LTM and Reporting - Year 4 (2014)	262 days	Mon 12/1/14	Tue 12/1/15																						
98		5f LTM and Reporting - Year 5 (2015)	263 days	Tue 9/1/15	Thu 9/1/16																						
99		5g LTM and Reporting - Year 6 (2016)	87 days	Thu 9/1/16	Fri 12/30/16																						
100		5h Preparation of Ramp Down Strategy	142 days	Fri 9/2/16	Mon 3/20/17																						
101		Preparation of Army Draft Ramp Down Strategy	41 days	Fri 9/2/16	Fri 10/28/16																						
102		Army Review	22 days	Mon 10/31/16	Tue 11/29/16																						
103		Incorporate Army Comments into Draft Final Ramp Down Strategy	10 days	Wed 11/30/16	Tue 12/13/16																						
104		Army Review of Draft Final Ramp Down Strategy	22 days	Wed 12/14/16	Thu 1/12/17																						
105		Draft Final Ramp Down Strategy Approved by Army	0 days	Thu 1/12/17	Thu 1/12/17																						
106		Regulator Review	42 days	Fri 1/13/17	Mon 3/13/17																						
107		Incoporate Regulator Comments into Final Ramp Down Strategy	5 days	Tue 3/14/17	Mon 3/20/17																						
108		Final Ramp Down Strategy Approved by Regulator	0 days	Mon 3/20/17	Mon 3/20/17																						
109		(Task 6) Interim Measures Implementation Work Plan (IMI Work Plan) - RAAP-022: Pond by Buildings 4931 and 4928	162 days	Fri 7/16/10	Mon 2/28/11																						
121		(Task 7) Interim Measures Implementation - RAAP-022: Pond by Buildings 4931 and 4928	287 days	Tue 10/12/10	Wed 11/16/11																						
122		7a Pre-excavation Sampling	287 days	Tue 10/12/10	Wed 11/16/11																						
132		7b Implementation of IMWP	23 days	Thu 3/17/11	Mon 4/18/11																						
		Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task															
		Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone															
		Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary															
		Task		Start-only		Baseline Split		Summary		External Milestone		Deadline															
Page 2																											

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