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**FINAL
FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER
PROJECT MANAGEMENT PLAN**

**RAVENNA ARMY AMMUNITION PLANT,
RAVENNA, OHIO**

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

Prepared for

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

Prepared by

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November 17, 2011

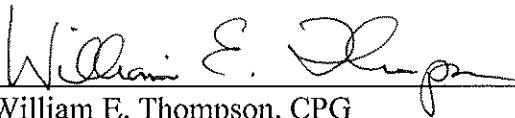
**RVAAP-66 Facility-Wide Groundwater Project Management Plan
Final
Distribution List**

<u>Organization</u>	<u>Number of Printed Copies</u>	<u>Number of Electronic Copies</u>
RVAAP Facility Manager	2	2
USACE Project Manager	2	3
USAEC Program Manager	0	1
Ohio EPA	1	2
OHARNG - RTLS/ENV	1	1
NGB Cleanup Program Manager	0	1
EQM	1	1

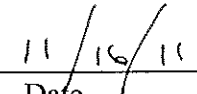
Ohio EPA – Ohio EPA Twinsburg Office
 OHARNG – RTLS/ENV – Ohio Army National Guard Ravenna Training and Logistics
 Site/Environmental
 RVAAP – Ravenna Army Ammunition Plant
 USACE – U.S. Army Corps of Engineers
 USAEC – U.S. Army Environmental Center
 NGB – National Guard Bureau
 EQM – Environmental Quality Management, Inc.

CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

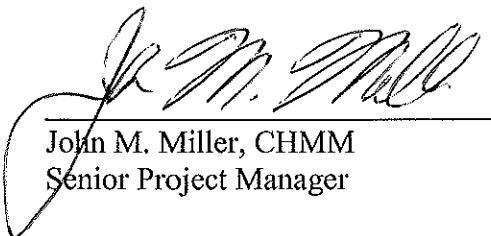
Environmental Quality Management, Inc. (EQM) has completed the *Final Facility-Wide Groundwater Monitoring Program RVAAP-66 Facility-Wide Groundwater Project Management Plan*. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity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



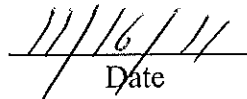
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Date



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Date

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ACRONYMS AND ABBREVIATIONS

ADR-EDMS	Automated Data Review - Electronic Data Management System
AOC	Area of Concern
ASTM	American Society of Testing Materials
BRAC	U.S. Army Base Realignment and Closure Division
Camp Ravenna	Camp Ravenna Joint Military Training Center
CEC	Civil & Environmental Consultants, Inc.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLIN	Contract Line Item Number
CMCOPC	Contaminant Migration Chemicals of Potential Concern
CHSM	Corporate Health and Safety Manager
CSM	Conceptual Site Model
COPCs	Chemicals of Potential Concern
COR	Contracting Officer's Representative
CR	Compliance Restoration
CRT	Comment Response Table
DA2	Demolition Area #2
DFFO	Director's Final Findings and Orders
DoD	Department of Defense
DQOs	Data Quality Objectives
EDD	Electronic Data Deliverables
EPA	Environmental Protection Agency
EQM	Environmental Quality Management, Inc.
FAR	Federal Acquisition Regulation
FFP	Firm-Fixed Price
FS	Feasibility Study
FWCUGs	Facility-Wide Cleanup Goals
FWGWMP	Facility-Wide Groundwater Monitoring Program
FWGWMPP	Facility-Wide Groundwater Monitoring Program Plan
FWSAP	Facility-Wide Sampling and Analysis Plan
GIS	Global Information System
gpm	gallons per minute
GPS	Geographic Positioning System
GOCO	Government-Owned, Contractor-Operated
GSA	Government Services Administration
ID	Identification
IDW	Investigation Derived Waste
IRP	Installation Restoration Program
ITRT	Independent Technical Review Team
KO	Contracting Officer
LL	Load Line
LTM	Long Term Monitoring
MAROS	Monitoring and Remediation Optimization System
MNA	Monitoring Natural Attenuation
NGB	National Guard Bureau
MRS	Munitions Response Sites

ACRONYMS AND ABBREVIATIONS (continued)

OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PBA	Performance Based Acquisition
pdf	Portable Document Format
PM	Project Manager
PMP	Project Management Plan
POC	Point of Contact
POP	Period of Performance
PP	Proposed Plan
PVC	Polyvinyl Chloride
PWS	Performance Work Statement
QAPP	Quality Assurance Project Plan
QASP	Quality Assurance Surveillance Plan
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
QSM	Quality Systems Manual
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
REIMS	Ravenna Environmental Information Management System
RI	Remedial Investigation
RQL	Ramsdell Quarry Landfill
ROD	Record of Decision
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SDG	Sample Delivery Group
SOW	Scope of Work
SSHP	Site Safety and Health Plan
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Command
USP&FO	United States Property and Fiscal Officer
UXO	Unexploded Ordnance
WP	Work Plan

SECTION 1

INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Louisville District, under a Government Services Administration (GSA) contract has retained Environmental Quality Management, Inc. (EQM) (Contract No. GS-10F-0293K – Delivery Order W912QR-11-F-0266) to obtain a signed Record of Decision (ROD) for the Facility-Wide groundwater (RVAAP-66) at the Ravenna Army Ammunition Plant (RVAAP). Associated major tasks under this firm fixed price task order using a Performance-Based Acquisition (PBA) approach include:

- Completion of a Remedial Investigation/Feasibility Study (RI/FS).
- Completion of the Proposed Plan (PP).
- Continued groundwater monitoring and associated reporting for the facility.

This Project Management Plan (PMP) has been prepared in accordance with the Performance Work Statement (PWS), Section 4.1, dated 6 July 2011.

1.1 Statement of Purpose

This PMP is designed to provide overall project guidance for the groundwater investigation, reporting and planning activities conducted under this PBA and describes the project approach, schedule, deliverables, and resource organization required to execute the project and meet project performance objectives.

The purpose of this PMP is to:

- Document EQM's technical approach for conducting environmental investigations and obtaining a signed ROD for RVAAP-66.
- Identify the project deliverables and stakeholder distribution.
- Present a detailed base-line schedule that includes milestones and costs associated with each milestone.
- Identify the project organization, members of the project team, and their roles and responsibilities.

The baseline project schedule included in this PMP (Appendix A) will be updated regularly and other sections of the document will be updated as required.

1.2 Project Objective

The objective of this project is to complete groundwater investigation activities:

- Install and sample additional monitoring wells at the facility in support the RI/FS and eventual ROD. In order to meet the required schedule EQM will prepare an amendment to the Facility-Wide Groundwater Monitoring Program Plan (FWGWMPP) to be submitted prior to the submittal of the RI Work Plan (WP).
- Prepare and submit the RI Work Plan including:
 - A review of historical data/studies.
 - Identification of data gaps.
 - Determine the need for additional analyses/testing as it relates to the RI.
- Preparation of the RI Report which will include:
 - Groundwater modeling, which will be performed in support of two major elements of project execution: 1) facility-wide fate-and-transport evaluation, and 2) evaluation and optimization of remedial alternatives in the FS.
 - Refining the facility-wide groundwater conceptual site model (CSM) using data collected during the RI phase, and historical hydrogeologic data.
 - Conduct a human health baseline risk assessment for facility-wide groundwater exposure including: 1) the use of the Facility-Wide Cleanup Goals (FWCUGs), 2) fate and transport modeling, and 3) an assessment for the potential of off-site impacts.
- Prepare and complete the FS.
- Preparation and Completion of the Proposed Plan including the public hearing and comment period.
- Prepare and complete the ROD.
- As required by *Ohio EPA's Director's Final Findings and Orders – Ravenna Army Ammunition Plan*. (DFFO) EQM will perform Facility-wide groundwater monitoring during the performance period for this contract including scheduled groundwater monitoring sampling and analysis, sampling event reporting, and annual report preparation and submittal.

EQM will complete all aspects of this project to ensure adequate:

- Safety – EQM will execute all work in a manner that ensures the health and safety of the workforce and the public at large. All work will be conducted in accordance with both EQM's corporate health and safety requirements as well as the *RVAAP Facility-Wide Safety and Health Plan for Environmental Investigations* (SAIC, February 24, 2011) and any addendums prepared under this PBA.

- Sustainable Practices – EQM has developed and refined our sustainability policy and Green practices programs based on *Executive Order 13101, Greening of the Government*, and numerous other guidance documents and web sites published by the U.S. Government and universities. To support the EQM sustainability policy, our Sustainability Program has been developed to ensure that our services, products, and facilities are delivered and operated in a sustainable manner.
- Schedule and Budget Performance – The project is a firm-fixed price (FFP) PBA contract and will be executed in accordance with the schedule outlined in the PWS and Section 7 of this PMP. EQM will execute the project in a cost-effective and schedule compliant manner
- Regulatory Acceptability – EQM will conduct all activities for this project in accordance with all applicable state, federal, and local rules, laws, regulations, and guidance to include the documents listed in the PWS and the Ohio EPA DFFOs.

1.3 PMP Organization

This plan contains eight sections:

- Section 1, Introduction, includes the project objective.
- Section 2, Site Background, presents the site description and history.
- Section 3, Scope of Work (SOW), is broken down by Contract Line Item Number (CLIN).
- Section 4, Project Organization.
- Section 5, Reporting and Deliverables.
- Section 6, Quality Control Plan, includes a description of the Independent Technical Review Team (ITRT) and document review process.
- Section 7, Schedule, presents the Resource Loaded Schedule, including project payment milestones.
- Section 8, References.

SECTION 2

SITE BACKGROUND

2.1 Site Description/History

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

2.2 Site Geology

The regional geology at RVAAP consists of horizontal to gently dipping sedimentary bedrock strata of Mississippian and Pennsylvanian-age overlain by varying thicknesses of

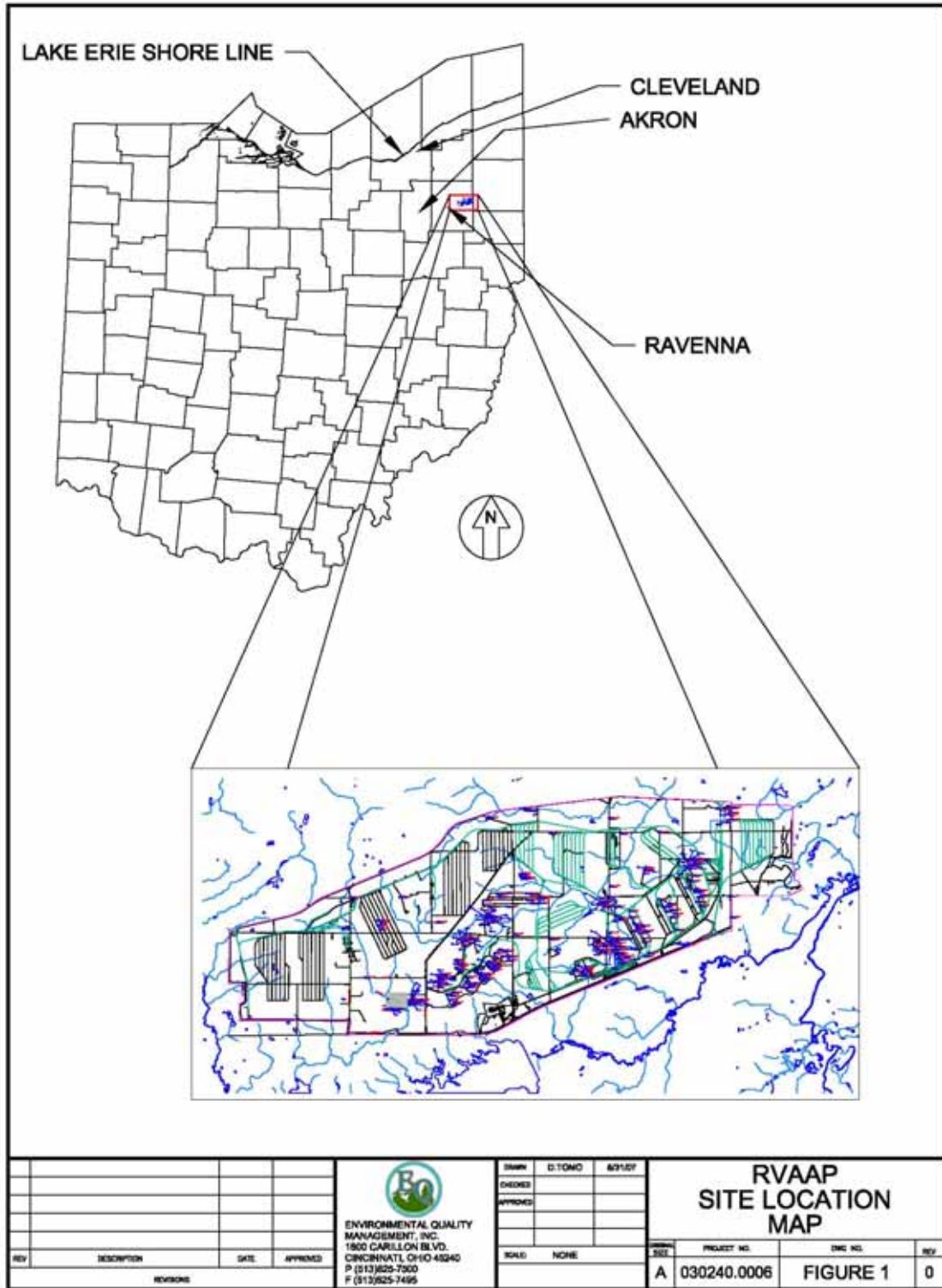


Figure 2-1. General Location Map

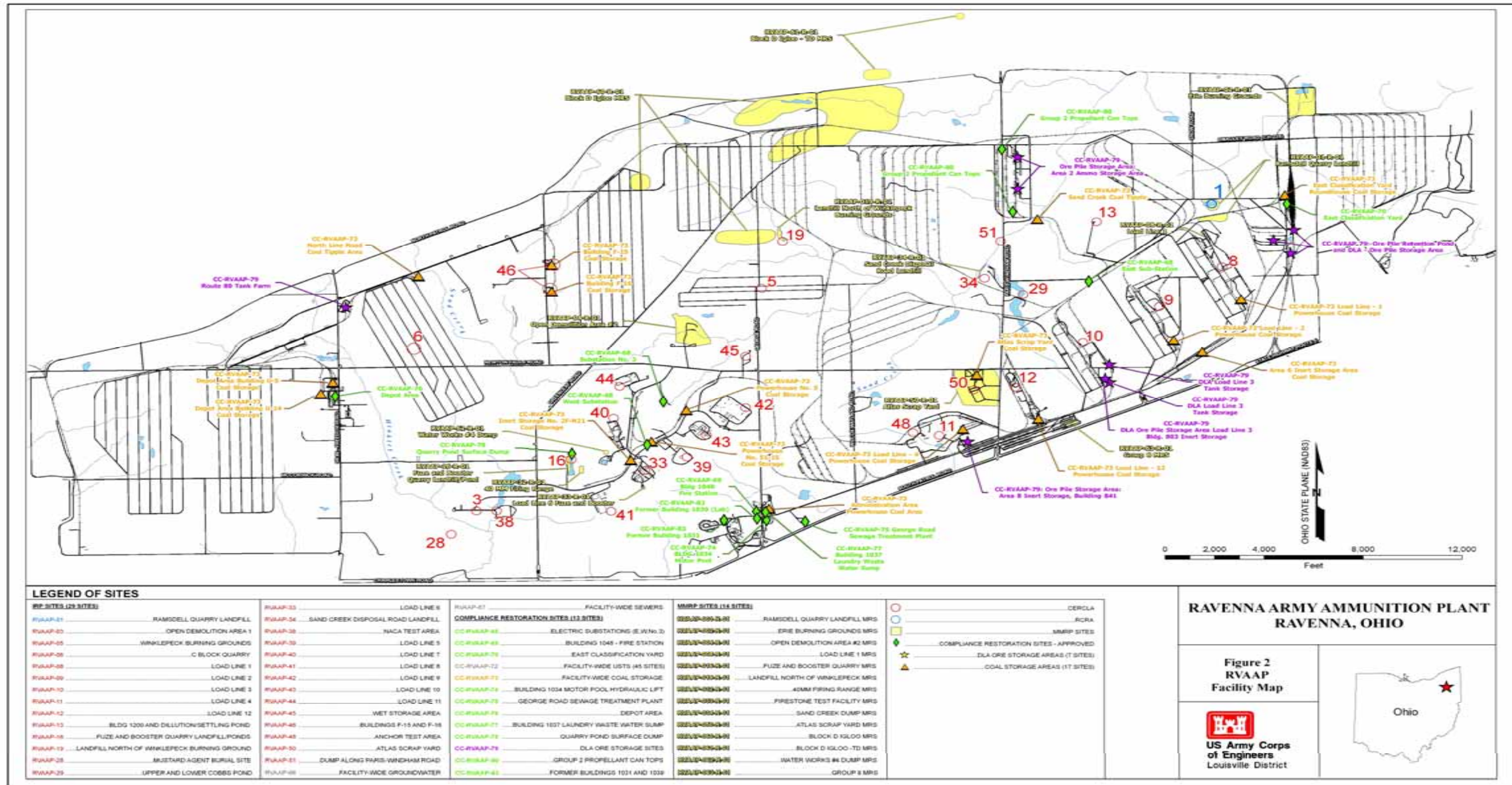


Figure 2-2. RVAAP Facility Map

unconsolidated glacial deposits. Water and associated environmental contamination in fine-grained glacial and alluvial materials travel down from the surface to underlying groundwater aquifers principally through fractures (termed secondary porosity) and flow between the grains (termed primary porosity).

2.3 Site Hydrogeology

2.3.1 Groundwater In Unconsolidated Deposits

Groundwater in the unconsolidated deposits is limited to sandy lenses in the glacial tills, saturated lake clays and outwash material, and the alluvium deposits associated with the numerous surface drainages at RVAAP. Groundwater is also present at the glacial till-bedrock contact. Outside of the facility boundaries, unconsolidated deposits can be an important source of groundwater, as many of the domestic wells and small public water supplies located near the facility obtain reasonable quantities of water from wells completed in unconsolidated deposits. There is evidence that a buried valley tributary to the Mahoning River is present in the west-central portion of RVAAP (USATHAMA, 1978). Although buried valleys can be important aquifers, there is no evidence to support the occurrence of significant water-bearing material in this buried valley tributary. The main buried valley aquifer associated with the Mahoning River does not yield significant quantities of water (USATHAMA, 1978). Because the buried valley aquifer that may be found on RVAAP is a tributary, finer-grained sediment compared to the main buried valley aquifer would be expected, suggesting that lower water yields would be expected. Water production wells previously drilled in the area (Barnes 1950) also support the insignificance of a buried valley aquifer at RVAAP. Figure 2-3 shows the potentiometric surface of unconsolidated sediment within the facility from October 2010 (USACE, 2010a). Groundwater in the unconsolidated aquifer predominantly flows in an eastward direction; however, the unconsolidated zone shows numerous local flow variations influenced by topography and drainage patterns. The local variations in flow direction suggest: (1) groundwater in the unconsolidated deposits is generally in direct hydraulic communication with surface water; and (2) surface water drainage ways may also act as groundwater discharge locations. In addition, topographic ridges between surface water drainage features act as groundwater divides in the unconsolidated deposits.

2.3.2 Groundwater in Bedrock Deposits

The principle water-bearing aquifer at RVAAP is the Sharon Sandstone/Conglomerate. Depending on the existence and depth of overburden, the Sharon ranges from an unconfined to a leaky artesian aquifer. Water yields from area wells completed in the Sharon ranged from 30 to 400 gallons per minute (gpm) (USATHAMA 1978). Well yields of 5 to 200 gpm were reported for on-site bedrock wells completed in the Sharon (Kammer, 1982). Other local bedrock units capable of producing water include the Homewood Sandstone, which is generally thinner and only capable of well yields less than 10 gpm.

Figure 2-4 shows the potentiometric surface of bedrock groundwater within the facility from October 2010 (USACE, 2010a). The bedrock potentiometric map shows a more uniform and regional eastward flow direction that is not as affected by local surface topography as the unconsolidated aquifer system. Due to the lack of well data in the western portion of RVAAP, the discussion below focuses on groundwater occurrence in the eastern portion of RVAAP (note

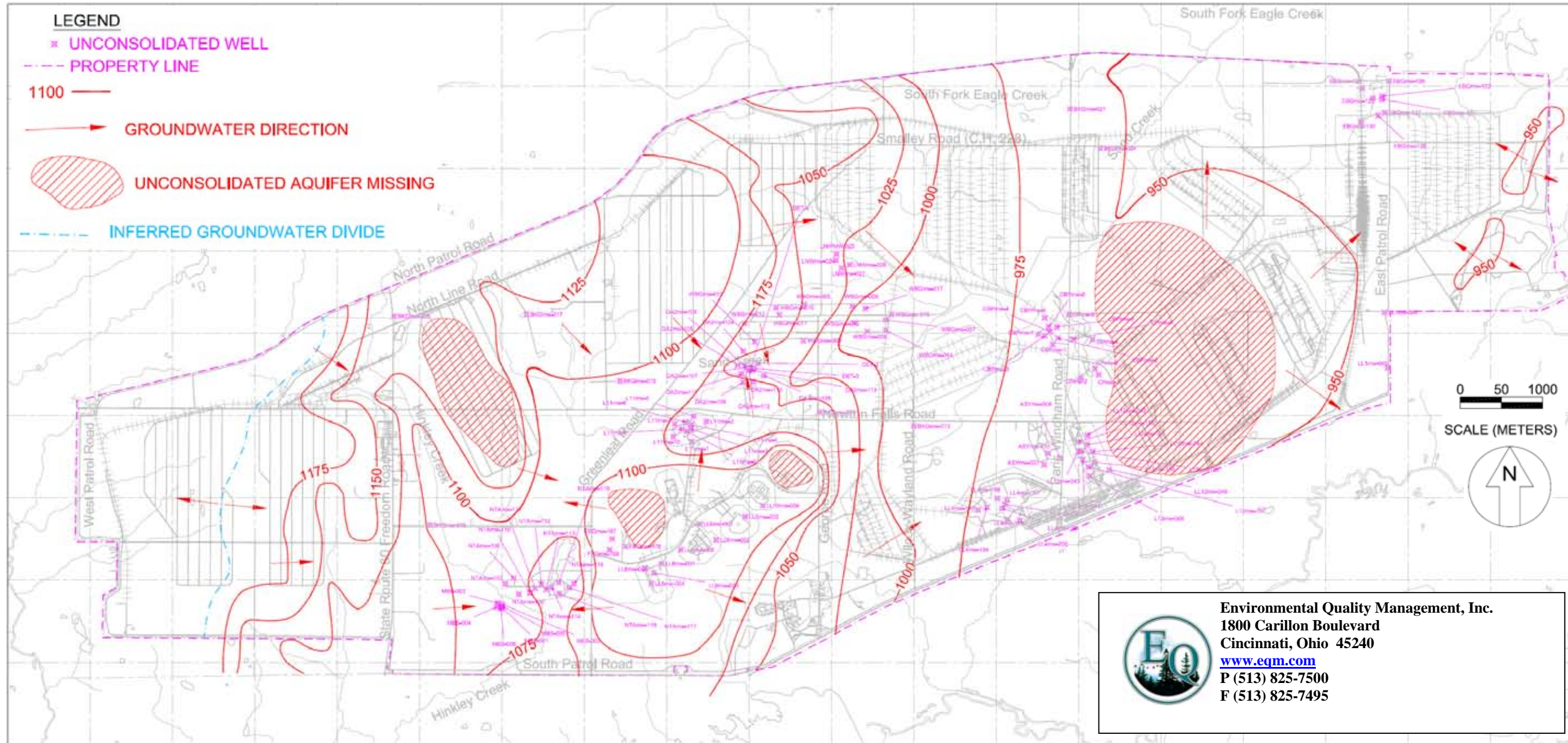


Figure 2-3. Potentiometric Surface of Unconsolidated Aquifer (Oct. 2010)

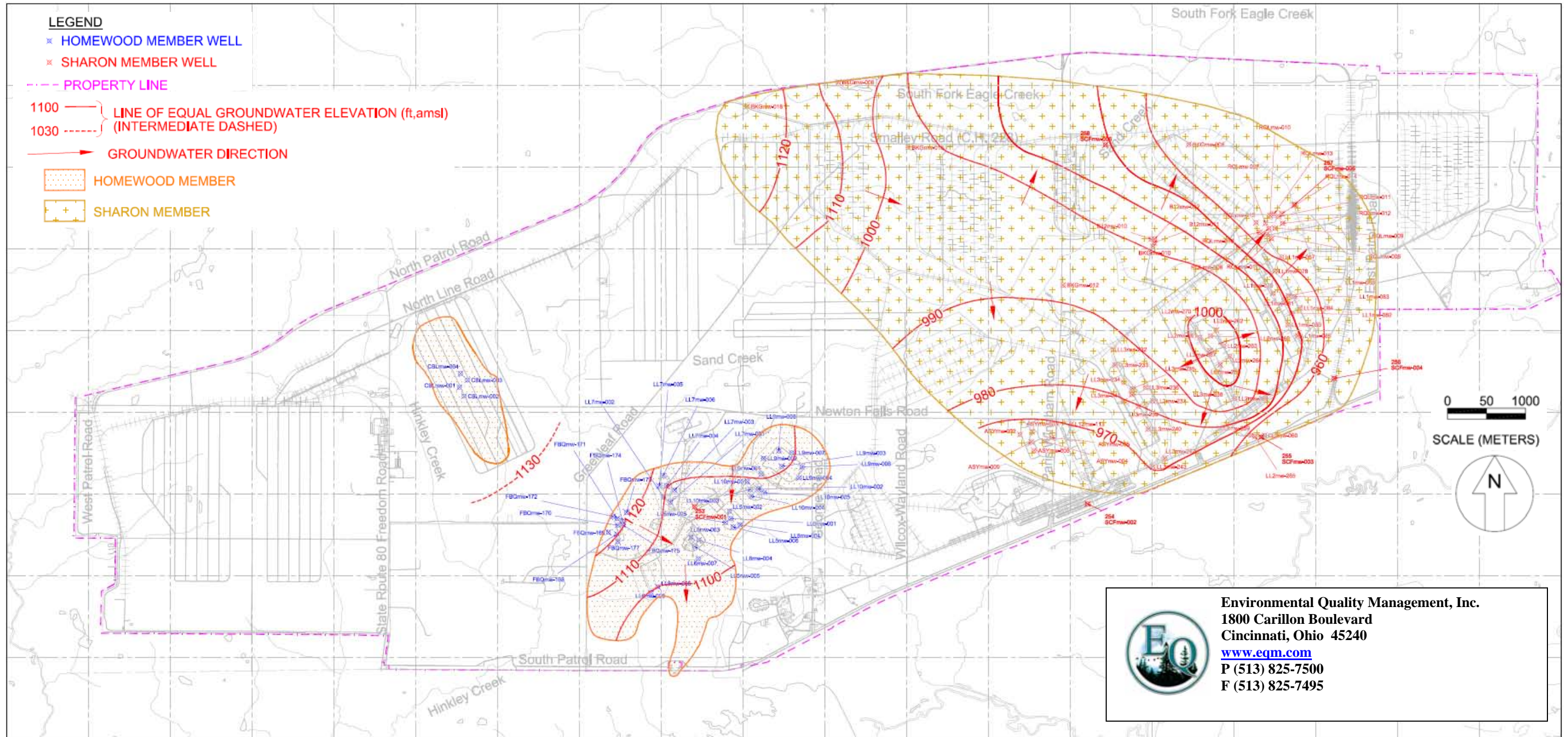


Figure 2-4. Potentiometric Surface of Bedrock-Homewood and Sharon (Oct. 2010)

that the lack of well data for the western portion of the facility will be addressed as part of the RI). For much of the eastern half of RVAAP, the bedrock potentiometric surface is higher than the overlying unconsolidated potentiometric surface, thus indicating an upward hydraulic potential. This evidence suggests that there is a confining layer that separates the two aquifers. In the far eastern area, the two potentiometric surfaces are approximately at the same elevation, thus suggesting that hydraulic communication between the two aquifers is occurring.

SECTION 3

SCOPE OF WORK

This Section details, by CLIN, the activities to be conducted under this PBA. Note that EQM has not called out a specific management milestone for this PBA, however the following activities and deliverables will be included in support of this project:

- *Project Kick-off Meeting* – In coordination with the Army and Ohio EPA, EQM will conduct an initial Project Kick-Off Meeting at the RVAAP facility. During the meeting EQM will present details of the PMP and the anticipated approach to conducting the investigation activities. The Kick-Off Meeting is intended to assist EQM with the submittal and stakeholder approval of project amendments and Work Plans.
- *Monthly Progress Report* - EQM will prepare monthly progress reports to the USACE for submittal by the fifth (5th) day of each month. The monthly reports will include an accurate and current account of all work completed and deliverables furnished to the government. Progress reports will be prepared following the described sections presented in Section XVI of the Ohio EPA DFFO. Reports will be submitted to the RVAAP Contracting Officer's Representative (COR) staff, Base Realignment and Closure (BRAC) field office and USACE detailing the project status, milestones, schedule, safety production data and other pertinent information.
- *Record of Conversations* – EQM will prepare and maintain records of telephone conversations and significant verbal conversations conducted in support of this project. These records will be forwarded with monthly progress reports as necessary.
- *Teleconference Progress Updates* – As requested, EQM will attend scheduled teleconference progress meetings with the USACE to provide project status updates.
- *Meeting Minutes Documentation* – EQM will document discussions at all meetings held in support of this project.
- *Public Involvement / RAB meetings* – EQM will attend Restoration Advisory Board (RAB) meetings as needed at the direction of the USACE.

EQM's Project Manager (identified in Section 4 of this PMP) is qualified to oversee all work described in the SOW. The Project Manager will serve as the single point of contact (POC) and liaison for all work required. EQM will accept direction only from the USACE Contracting Officer (KO) or designated COR. Any changes to the SOW must be authorized in writing by the KO.

Listed below in Table 3-1 is a breakdown of the major milestones to be completed under this PBA. Additional schedule details for the milestones are presented in Section 7 of this PMP.

Table 3-1. Project Milestones By CLIN

Milestone	DESCRIPTION
1	CLIN 0001 - ACHIEVE APPROVED PMP AND QASP
1.1a	Approval of the Draft PMP and QASP
1.1b	Approval of the Final PMP and QASP by 31 December 2011
2	CLIN 0002 - ACHIEVE APPROVED ROD FOR RVAAP-66 FACILITY-WIDE GROUNDWATER
2.1	Addendum(s) to FWGWMP Plan for New Wells & Semi-annual Monitoring
2.2a	Installation of New Groundwater Monitoring Wells
2.2b	Well Installation Report
2.3a	Complete 4 Quarters of Groundwater Monitoring for New Wells - 1st Quarter
2.3b	Complete 4 Quarters of Groundwater Monitoring for New Wells - 2nd Quarter
2.3c	Complete 4 Quarters of Groundwater Monitoring for New Wells - 3rd Quarter
2.3d	Complete 4 Quarters of Groundwater Monitoring for New Wells - 4th Quarter
2.4a	Approval of the Remedial Investigation Work Plan by 27 April 2012
2.4b	Remedial Investigation Implementation
2.4c	Approval of the Remedial Investigation Report by 30 September 2013
2.5	Approval of the Feasibility Study by 30 April 2014
2.6	Approval of the Proposed Plan by 30 November 2014
2.7	Approval/Signature of the Record of Decision by 31 December 2015
3	CLIN 0003 - ACHIEVE REQUIREMENTS OF THE FWGWMP PROGRAM THROUGH ROD APPROVAL
3.1a	2012 FWGWMP Semi-annual Groundwater Monitoring - 1st Semi-annual Event
3.1b	2012 FWGWMP Semi-annual Groundwater Monitoring - 2nd Semi-annual Event
3.1c	Approval of the 2012 Annual FWGWMP Report
3.2a	2013 FWGWMP Semi-annual Groundwater Monitoring - 1st Semi-annual Event
3.2b	2013 FWGWMP Semi-annual Groundwater Monitoring - 2nd Semi-annual Event
3.2c	Approval of the 2013 Annual FWGWMP Report
3.3a	2014 FWGWMP Semi-annual Groundwater Monitoring - 1st Semi-annual Event
3.3b	2014 FWGWMP Semi-annual Groundwater Monitoring - 2nd Semi-annual Event
3.3c	Approval of the 2014 Annual FWGWMP Report
3.4a	2015 FWGWMP Semi-annual Groundwater Monitoring - 1st Semi-annual Event
3.4b	2015 FWGWMP Semi-annual Groundwater Monitoring - 2nd Semi-annual Event

3.1 CLIN 0001 - Project Management Plan and Quality Assurance Surveillance Plan

The project milestones define the project activities to be conducted under CLIN 0001 and are presented in Table 3-1.

3.1.1 Milestone 1. Achieve Approved Project Management Plan and Quality Assurance Surveillance Plan

Project Management Plan. EQM will prepare a Draft PMP for submittal within 30 calendar days of contract award. The PMP will provide a discussion of project team roles and responsibilities, an organizational chart, deliverable matrix and schedule, and will address coordination with RVAAP stakeholders, as well as other facility environmental and operational activities. The PMP will be updated as necessary throughout the period of performance (POP). This PMP includes a detailed work schedule that lists the proposed milestones and due dates necessary to meet the performance objectives and contract requirements through the contract period. The schedule incorporates milestones that will be used (upon agreement with the USACE) as payment milestones.

Quality Assurance Surveillance Plan. As described in the PWS, EQM will prepare a Draft Quality Assurance Surveillance Plan (QASP) for submittal within 30 calendar days of contract award. The QASP will be completed in accordance with Attachment E of the PWS. This task will include the preparation and submittal of draft and final versions of this document as well as preparation of response to comments from all stakeholders.

3.2 CLIN 002 – Achieve an Approved Record of Decision

The project milestones define the project activities to be conducted under CLIN 0002 and are presented in Table 3-1.

3.2.1 Milestone 2.1 & 2.2. Install Additional FWGWMP Wells/Semi-Annual Monitoring Addendum

Installation of New Wells. After reviewing the currently available data, including the *Draft 2010 Addendum to the Facility-Wide Groundwater Monitoring Program Plan (FWGWMPP) RVAAP-66 Facility-Wide Groundwater, November 15, 2010*, EQM has determined that additional monitoring wells are needed at the facility in order to complete the RI/FS and eventual ROD. EQM believes that additional wells are necessary in order to complete hydrogeologic system modeling and to conduct contaminant fate-and-transport modeling for a facility-wide groundwater approach.

The new wells will be installed in accordance with Section 5.4 of the *FWGWMP Sampling and Analysis Plan for Environmental Investigations (FWSAP)* (SAIC, February 24, 2011). EQM will use multiple drill rigs as necessary in order to complete the work. EQM will also use an unexploded ordnance (UXO)-Qualified Technician to conduct a surface clearance and borehole clearance for UXO at each of the proposed Munitions Response Sites (MRS) well locations. A topographical survey for horizontal and vertical locations will be prepared for all new wells.

Tasks to be completed under this milestone include the preparation of an amendment to the FWGWMP for the installation of additional groundwater monitoring wells followed by the installation and development of the wells. The number of wells, location and installation details will be presented in the addendum. Additionally, EQM will prepare a Site Safety and Health Plan (SSHP) addendum for all the field activities to be conducted under this contract.

Anticipated field activities include:

- Groundwater monitoring
- Groundwater monitoring well installation
- Well surveys and inspections
- Groundwater pump testing

The SSHP addendum will address task hazard analyses, emergency response, contingency plans, and emergency contacts. The SSHP will meet the requirements of federal, state, and local regulations and will identify safety and health regulations applicable to the work

EQM will prepare an amendment to the FWSAP. This will include specific project scope and objectives, sampling rationale and locations, analytical Data Quality Objectives (DQOs), analytical laboratory specifications, and the project schedule, if necessary. Sampling procedures not addressed in the FWSAP will also be included as appropriate, including any need to modify specific procedures and standards, according to the goals of the specific investigation.

EQM will also prepare an amendment to *the Facility-Wide Quality Assurance Project Plan* (SAIC, February 24, 2011); however it is anticipated that EQM would primarily adopt the existing Quality Assurance project Plan (QAPP) for environmental investigations, with addendums as required.

The schedule presented in Section 7 presents an aggressive schedule for this milestone, resulting in installation and development of the wells by March 2012, and is on a separate track from the RI Work Plan.

Prepare Amendment to the FWGWMP for Semi-Annual Monitoring. The current facility-wide groundwater monitoring schedule involves quarterly sampling for a subset of all wells present at RVAAP. Note that the DFFOs and FWGWMP do not contain a schedule for sampling the non-RCRA wells, only that approximately 20% of the wells be sampled during any event. From an historical perspective the quarterly sampling schedule has been used to complete a minimum of four quarters sampling for all of the wells at the facility, thereby providing a baseline for all of the facility groundwater monitoring wells. Excluding the proposed new wells to be installed as described in Milestones 2.1 and 2.2 of this PMP, a minimum of four quarters of sampling has been completed for all 243 existing wells at the facility. Part of the proposed RI/FS process will be to move forward to determine future monitoring needs in support of any remedial activities or long-term monitoring/monitored natural attenuation (LTM/MNA) required under the ROD. At this time it appears that the initial investigative phase for the existing wells has been completed (i.e., there is an understanding of the impacts of specific AOC sources to individual wells at the facility) thus the desire on the part of the Army and the Ohio EPA to move from an Areas of Concern (AOC)-based approach to a facility-wide approach for groundwater.

Therefore EQM proposes to move from sampling on a quarterly basis to a semi-annual (twice a year in January and July) basis. EQM believes that the seasonal fluctuation of water levels and contaminant levels has been addressed by the historical quarterly sampling and that semi-annual sampling would still provide the information necessary to ensure no adverse effects to human health and the environment during the RI/FS process. EQM proposes that this schedule be initiated in January 2012 (it is assumed that the current quarterly monitoring schedule will continue for July and October 2011 under another contract as outlined in the *Draft Addendum to the FWGWMP RVAAP-66 Facility-Wide Groundwater*. Key elements of this approach would include:

- In addition to the new wells to be sampled in 2012 EQM is proposing an additional 29 wells (including the 5 RCRA wells) to be sampled during each of the semi-annual events in 2012. It is understood that selection of wells to be included in the semi-annual program will be determined jointly by the Army and the Ohio EPA with input as needed from EQM and will be formally presented as an addendum to the FWGWMP. EQM believes that the 2012 semi-annual sampling regime should include the wells associated with or nested to the proposed new wells as described in Milestones 2.1 and 2.2. Additionally, potential exit pathway wells should be evaluated for inclusion in the list of wells to be sampled (e.g., LL3mw-242, LL2mw-059, and LL2mw-265).
- As described in Milestone 2, the new wells will be sampled quarterly (April, July, and October 2012; and January 2013) and are not included in the semi-annual sampling pool although they will be sampled at the same time as the January and July semi-annual events.
- EQM believes that the wells selected for the semi-annual monitoring should not change between monitoring events in 2012. The wells will be selected based on a facility-wide monitoring approach and should remain unchanged during 2012. Further EQM believes that the list of analytes for each well should be modified based on the historical sampling conducted for each well. These issues will be addressed in an addendum to the FWGWMP. The choice of wells to be included in the semi-annual program will be determined jointly by the Army and the Ohio EPA with input from EQM and other stakeholders.
- The amendment will also include recommendations for specific analytes for each well selected for monitoring.

EQM will prepare the amendment to the FWGWMP Plan detailing the approach for moving forward to semi-annual groundwater monitoring. This amendment will be prepared such that approval would be anticipated in order to implement it for the January 2012 event and is included in our schedule. This would be prepared in conjunction with the amendment for the installation and monitoring of the proposed new wells.

3.2.2 Milestone 2.3. Complete 4 Quarters of Sampling and Analysis for the New Wells

As required by the USACE, the new wells will require four consecutive quarters of sampling and analysis for the constituents in Table 3-2. Assuming completion of the installation of the new wells by March 2012, the four quarters of sampling and analysis will be conducted in, April,

July, and October 2012; and January 2013 with associated reporting. In addition all of the new wells will be sampled for hexavalent chromium and perchlorates during one of the 2012 monitoring events.

Table 3-2. Current Analytical Suite

Analyte	Method
Polychlorinated Biphenyls (PCBs)	Gas Chromatograph (GC) Semivolatile Organics (SVOC) (8082)
Pesticides	GC Semivolatile Organics (8081A)
Base/Neutrals and Acids (SVOCs)	GC/MS Semivolatile Organic (8270C)
Volatile Organic Compounds (VOCs)	GC/ Mass Spectrograph (MS) Volatile Organics (8260B)
Nitroguanidine (Propellants)	Organic Compounds by UV/HPLC (8330 modified)
Nitroaromatics & Nitramines (Explosives)	GC Semivolatile Organics Explosives (8330)
Nitrocellulose as N (Propellant)	General Chemistry (WS-WC-0050)
Nitrate/Nitrites	General Chemistry (353.2) ²
Cyanide, (Total)	General Chemistry (9012A)
Metals (Magnesium, Manganese, Barium, Nickel, Potassium, Silver, Sodium, Vanadium, Chromium, Calcium, Cobalt, Copper, Arsenic, Lead, Selenium)	Inductively Coupled Plasma (6010B)
Metals (Antimony, Iron, Beryllium, Thallium, Zinc, Cadmium, Aluminum)	Inductively Coupled Plasma Mass Spectrometry (6020)
Metals (Mercury)	(7470A, Cold Vapor) – Liquid
Hexavalent Chromium	Method 7196A (1 quarter only)
Perchlorates	Method 6860 (1 quarter only)

1 = USEPA SW846

2 = EPA Methods for Chemical Analysis of Water and Waste

3.2.3 Milestone 2.4. Approval of Final Remedial Investigation Report

Remedial Investigation Work Plan. Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft, and final versions of the WP as well as preparation of response to comments from all stakeholders. The WP will be prepared in accordance with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requirements as well as the Ohio EPA DFFOs. Key elements of the RI WP are described below.

- EQM will conduct a review of historical studies and monitoring activities at the facility to coordinate the facility groundwater investigation with all other relevant investigations conducted to date. This will include the review of documents such as the *FY 2010 RVAAP Installation Action Plan* (USACE, 2010), and the *Draft 2010 Addendum to the Facility-Wide Groundwater Program Plan* (USACE, 2010). The technical approach will consider risk management methods to address common contaminants in groundwater that may be attributable to natural sources, such as arsenic and manganese. These methods may include the use of updated facility-wide groundwater background values if required and researching other state of Ohio studies on quality of groundwater potable groundwater supplies.
- EQM will assess the relevancy of the work recently conducted by the Shaw Group for the geochemical evaluation of metals. Additionally, the ongoing evaluation being conducted by the U.S. Geological Survey for cations, anions, trace elements, and isotopes; as well as the investigation into bis(2ethylhexyl)phthalate impacts in some of the wells, will also be evaluated. In addition EQM will also install, as part of the new well installation described in Milestones 2.1, a well with a stainless steel casing next to a well with known bis(2ethylhexyl)phthalate impacts in order to further determine the impacts, if any, from the existing PVC casings.
- This project will identify key data gaps to be addressed in the RI. Some of the potential data gaps we currently recognize, based on our evaluation of the existing data, include:
 - Preferential flow zones/exit pathways in the unconsolidated zone and Sharon Conglomerate, Hinkley Creek area off of RVAAP, via an unnamed tributary through Load Line (LL) 4 off of the installation and key watershed or subwatershed exit zones (Sand Creek and major tributaries).
 - Potential fracture aperture/density analysis on existing bedrock cores.
 - Additional geotechnical analyses in support of hydrogeologic and fate-and-transport models.

EQM will also evaluate the need for additional analyses to be conducted in support of the groundwater evaluation including:

- Geotechnical: EQM anticipates that some geotechnical analyses will be required to further understand the geology at the facility as it affects groundwater flow. To this end EQM will conduct geotechnical (permeability) testing for some of the new wells to be installed.
- Additional (new) analyses for constituents not previously analyzed for are also recommended in order to fully characterize groundwater conditions. This includes thiodiglycol, and chemical warfare breakdown products 1,4-dithiane. and 1,4-oxathiane by EPA 8321 and modified EPA 8270 for the wells at the Mustard Burial Site (MBS). Additionally, the USACE has recommended groundwater analysis for hexavalent chromium. As part of the review for the RI, EQM will conduct a review of the data for the facility groundwater, in conjunction with the Army and USACE in order to determine the need for additional hexavalent chromium testing.

- Pump (i.e., aquifer) tests will be conducted to demonstrate the effects of pumping to identify early attainment use zones and cross connection between the unconsolidated aquifer and the production zone of the key bedrock aquifers (Sharon and Homewood). These types of data are not currently available for RVAAP. This would include two short-term pump tests (e.g., 24-hr) to address this data need. One pump test each to be conducted in the Sharon and Homewood aquifers. EQM will use existing monitoring wells to the extent possible as observation wells. However, one pump test in western RVAAP (Homewood) will require a piezometer installation.

EQM will prepare the RI WP detailing all activities to be conducted as part of the RI, incorporating all of the information described above. EQM will prepare preliminary draft (Army review), draft (all stakeholders review), and final versions of the plan. The schedule details proposed submittal dates for all of these versions of the plan necessary to meet the milestone goal for approval of the final RI WP as presented in our schedule in Section 7.

Implementation of RI Field Activities. EQM will conduct all field activities required to complete the RI (note that the field activities to install the additional wells are discussed under Milestone 2). Field activities anticipated to be conducted during this phase of the project include pump tests to be conducted in the Sharon and Homewood aquifers. The ongoing RVAAP groundwater monitoring activities are presented under CLIN 0003.

Preparation of the Remedial Investigation Report. Tasks to be completed under this milestone include field activities associated with the RI, the preparation and submittal of preliminary draft (Army review), draft (all stakeholders review), and final versions of the RI Report as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFOs. Key elements of the RI Report are described below.

- Groundwater modeling will be performed in support of two major elements of project execution: 1) facility-wide fate and transport evaluation, and 2) evaluation and optimization of remedial alternatives in the FS. EQM will engage RVAAP stakeholders to outline modeling approaches and objectives, present updates of modeling efforts, and discuss preliminary results for feedback and suggestions for improvement.

To support the facility-wide fate-and-transport analysis, the EQM team will update the RVAAP groundwater CSM using newly acquired and existing data from previous projects. Following American Society of Testing Materials (ASTM) standards, the EQM Team will select a numerical model(s) for groundwater flow and transport of contaminant migration chemicals of potential concern (CMCOPCs) based on the CSM. It is anticipated that MODFLOW and MT3DMS will be selected as modeling tools for groundwater flow and CMCOPC fate and transport, respectively. These models are applicable for RVAAP and are widely accepted by the regulatory and the scientific communities. Using Groundwater Vistas software and MODFLOW, EQM will develop a facility-wide 3-dimensional groundwater flow model consistent with the RVAAP CSM. Hydrostratigraphic units to be modeled include the major RVAAP aquifers and aquitards within the model domain. Boundary conditions will be derived from natural groundwater

boundaries where appropriate (streams, groundwater divides, etc.). Using Groundwater Vistas software and MT3DMS, 3-dimensional transport model(s) will be developed for primary CMCOPCs at source AOCs. A contaminant mass balance will be developed to show mass flux rates in/out of aquifers/aquitards and across model boundaries. Transport model output will include predicted migration paths and maximum future extent of CMCOPCs in potentially affected aquifers, as well as concentrations of CMCOPCs over time at selected locations, such as AOC boundaries and key groundwater discharge locations (e.g., Sand Creek, Hinkley Creek, and major tributaries). These results are key data inputs to the human health risk assessment to evaluate future risk related to potential groundwater use.

To support development of the FS, simulations will be performed using the calibrated flow model to demonstrate the zones of influence in response to groundwater pumping to identify “early attainment” groundwater resource use zones. Model simulations will also be performed to evaluate the effects of source remediation, combinations of remedial technologies, or changes in remedial system configurations. These simulations can help predict effectiveness and timelines for remedial alternatives to achieve cleanup objectives. Modeling results will be used to help evaluate and rank single or combined technologies based on predicted time to reach cleanup goals and reduction of peak concentrations and contaminant mass in aquifers and at surface water discharge points. Although not anticipated to be necessary optimization simulations will also be conducted for active remedial technologies if selected (e.g., pump and treat or in-situ technologies). For LTM and MNA technologies, the adequacy of the existing groundwater monitoring well network will be evaluated using statistical applications or other suitable tools, such as MAROS, to optimize proposed monitoring locations, sampling frequency and duration, and target parameters.

Models will be thoroughly documented. Reasonable calibration goals for the models will be established using RVAAP long-term head values, measured/inferred groundwater flux and recharge rates, flow trajectories, and analytical results. Sensitivity analyses for flow and transport model parameters will be conducted to address model uncertainties. Independent technical reviews, engineering calculation reviews, and model quality control (QC) and quality assurance (QA) packages will be maintained as part of the permanent project files.

- As part of the preparation of the RI a human health baseline risk assessment for the facility-wide groundwater exposure will be conducted. This will include:
 - Use of the Facility-Wide Cleanup Goals (FWCUGs)
 - Fate and transport modeling
 - Assessment for the potential of off-site impacts

It is not anticipated that a full ecological risk assessment will be required for the groundwater due to the lack of exposure pathways. However an ecological assessment will be made, from existing data, as to potential groundwater impacts to receiving streams.

- The facility-wide CSM will be refined using data collected during the RI phase and hydrogeologic data collected since the *2007 USACE Proposal to Update the Facility-Wide Groundwater Monitoring Program Report*, FWGWMP, AOC groundwater models, Sharon Conglomerate wells).
- EQM will prepare the RI Report detailing all activities to be conducted as part of the RI, incorporating all of the information described above. EQM will prepare preliminary draft (Army review), draft (all stakeholders review), and final versions of the report. The schedule details proposed submittal dates for all of these versions of the plan necessary to meet the milestone goal for approval of the final RI Report as presented in our schedule in Section 7.

3.2.4 Milestone 2.5. Preparation of Feasibility Study

Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the FS Report as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO. Key elements of the FS are described below.

One of the goals of the FS would be to eliminate the “early attainment” groundwater resource use zones (i.e., free those up for use prior to the completion of the ROD) and focus on the remedial action zones requiring LTM/MNA or groundwater resource use controls. This approach would:

- Allow early attainment of unrestricted groundwater use for the OHARNG within as much of RVAAP as possible.
- Provide information to be presented and evaluated by RVAAP stakeholders.
- Allow monitoring wells to be targeted to exit pathways and to confirm absence of contamination in previously uncharacterized areas. This will be completed to provide data to develop the resource use zones.

Groundwater flow and contaminant fate-and-transport modeling will be conducted to demonstrate zones of influence in response to groundwater pumping and where groundwater resources can be used now without affecting identified contaminated areas. Additionally, the FS will address optimization for remedial alternatives.

3.2.5 Milestone 2.6. Preparation and Submittal of the Proposed Plan

Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the Proposed Plan (PP) as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO. Key elements of the PP are described below.

Preparation and Completion of the Preliminary Draft, Draft, and Final Proposed Plan. As part of the CERCLA cleanup process EQM will prepare the PP prior to finalizing the ROD. The PP is a communications document required for the purpose of informing the general public about all alternatives analyzed and EPA’s preferred remedy and notifying them of an opportunity to

comment on it. This will be the key point in the process to involve and obtain buy-in from the general public (although the public will be kept informed throughout the process through participation as necessary with the RAB).

Conduct the Public Hearing. The public hearing and comment period will be scheduled after finalization of the PP as reflected in our overall schedule. EQM will use our in-house environmental communications and public outreach specialist to assist RVAAP personnel in conducting the public hearing.

3.2.6 Milestone 2.7. Preparation and Completion of the Record of Decision

Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the ROD as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO. As described in the CERCLA process the ROD will contain facility history, description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, scope and role of response action and the remedy selected for cleanup.

3.3 CLIN 003 – Groundwater Monitoring

The project milestones define the project activities to be conducted under CLIN 0003 and are presented in Table 3-1.

Tasks associated with these milestones will be the completion of the groundwater monitoring activities conducted in support of the annual report.

3.3.1 Milestones 3.1, 3.2, 3.3, & 3.4. Groundwater Monitoring/Field Activities

EQM will perform the quarterly sampling of the wells in accordance with the FWGWMP and any necessary Field Sampling Plan Addendums. EQM's overall field approach includes:

- Monitoring activities to be completed within 5-12 consecutive calendar days depending on the number of wells to be sampled.
- EQM will mobilize multiple field crews of sampling technicians under the authority of the field team leader. EQM also has a designated Sample Manager on site during all phases of the sampling activities.
- Micropurge purge/sampling with flow-thru cells will be used for more accurate stability calculations.
- Multi-parameter water quality meters will be used in the field for increased efficiency (i.e., Horiba U22 or Troll style meters).
- Field data will be entered into an electronic database at the time of sample collection (i.e., in the field). This process has been proven at RVAAP to reduce errors and allows for swift generation of accurate and legible field reports.

- EQM uses Global Positioning System (GPS) coordination from electronic maps to accurately locate monitoring wells.
- EQM will maintain open communication with Ravenna and OHARNG personnel to ensure safety and minimal disruption to normal facility activities. We will schedule, in advance, for any area that requires access to OHARNG controlled areas. (e.g., Winklepeck Burning Grounds).

Sample Collection and Management. During the scheduled sampling events for RVAAP, the designated EQM Sample Manager is on site to coordinate sample-related activities. The EQM Sample Manager will ensure that all samples are properly handled and shipped by:

- Ensuring that all samples are properly cooled and appropriately preserved.
- Verifying that samples are correctly labeled and identified.
- Filling out sample chain-of-custody forms accurately.
- Properly packaging sample containers into shipping coolers for transport.
- Coordinating sample shipments with the contracted analytical laboratory in an expeditious manner.

The EQM Sample Manager also will serve as the Laboratory Coordinator for this project, and as such will maintain regular communication with laboratory personnel with regard to sample schedule and shipment of collected samples.

Due to the close proximity of the EQM contracted laboratory (TestAmerica–Canton) to RVAAP, the contracted laboratory uses its courier service to directly pick up samples, including weekends as necessary. This approach has helped to mitigate unnecessary risks associated with the use of a commercial courier (e.g., sample shipment delays and bottle breakage). Custody of the samples is transferred directly from EQM personnel to personnel of the contracted laboratory. EQM has also stipulated through a contractual agreement that the contracted laboratory is required to provide evidence of acceptable sample receipt at the laboratory within 24 hours of sample receipt. The laboratory complies with this sample receipt confirmation requirement by using an automatic report electronically generated and e-mailed from its Laboratory Information Management System. This report is sent at the close of business each day of sample receipt, and can be routinely provided to USACE upon request. The designated laboratory Project Manager is also responsible for notifying EQM of any non-conforming sample receipt issues by phone or e-mail as soon as possible following identification of the problem.

Field Data Management. All work performed at RVAAP by EQM has been in the past, and will be for this project, completed in strict accordance with the approved plans and addenda. EQM's data management procedures for all of the activities, implemented as a part of this project will streamline the data handling and reporting process from the field and laboratory for presentation in the final reports. Our goal to "enter data one time" eliminates transcription errors, reduces data management costs, and expedites final reporting. EQM has completed the identical work required under this project for the past four years at RVAAP where all field measurements and records were recorded using field-durable laptops in conjunction with the use of standard logbooks. This has allowed for direct loading of data into a Microsoft AccessTM database, which performs check-routines for correct loading. These electronic data are then processed to generate data summary tables and electronic deliverables.

EQM's approach to field data management was developed in-house to incorporate our experience with field data collection, electronic data deliverables (EDD) management, and for USACE Automated Data Review (ADR) deliverables. Field data are directly input to the program and identified and listed under one of the following parameters: calibration, well information and purging, and sample and test tracking. The calibration field allows input of numerous instrument and calibration standards for tracking of calibration conditions, standards, and concentrations. The well information and purging field simplifies routine tracking of historical and field input of well, water level, and purging data sets. This includes the tabular summarization of trends denoting stabilization of water, programmable to current project conditions. The sample and test tracking parameter also produces a tabular summation of all samples collected including associated analytical tests and QA data sets. This program enables individual project-specific forms and/or tabular spreadsheets to be completed and reproduced straight from field data input. The program has several internal check-routines that alert the user to potential field data entry errors.

RCRA Well Sampling. The semi-annual sampling of the wells at Ramsdell Quarry Landfill (RQL) and Demolition Area #2 (DA2) will be conducted in association with the proposed semi-annual sampling events for the FWGWMP wells. These wells will be sampled using the same protocols and procedures as for the FWGWMP wells.

Water Level Measurements. Water level measurements will be taken on the first day of mobilization for each monitoring event for the wells sampled. EQM will also obtain water level measurements from all 243 wells (and any newly installed wells) at the facility on an annual basis. The information gathered from this task is used to prepare updated potentiometric maps for the site each year. In addition to obtaining the water level measurements, EQM is responsible for all maintenance activities for the facility-wide monitoring wells. This includes annual well inspections, well repair, painting of well identification numbers, integrity testing of the well casings, and clearing of vegetation/debris around all of the wells over the facility. Sampling activities are coordinated with the current owner's (OHARNG) training/operations mission.

In conjunction with the water level measurement event for all wells at the facility, EQM will conduct well inspections for all wells detailing the condition of the pad, casing, guard posts, etc. The inspection will also identify any maintenance needs.

Clear Brush and Well Maintenance. A path will be cleared to each of the monitoring wells at the facility using a tractor-mounted mower. Any brush surrounding each of the wells will be cleared to a 3-foot diameter around each well. It is anticipated that the majority of this work can be completed using hand tools such as weed-eaters, pruning shears, and (where necessary) small chain saws.

Additionally, EQM will conduct annual well maintenance as identified during the annual well inspections. This will include as necessary:

- Painting well identification numbers that have faded on the sides of the monitoring wells using stencils as we have done in the past.
 - Concrete repair of pads or guard posts.
 - Outer casing repair including new well tops.
 - Replacement of well caps.
 - EQM will repaint and reapply well ID numbers on 30 wells each year of the PBA period of performance (note that not all existing wells need repainting).
-
- EQM will also conduct any redevelopment of wells due to excessive silting.

Prepare and Submit Groundwater Monitoring Report. EQM will prepare and submit the preliminary draft, draft, and final groundwater monitoring reports per the requirements and schedule set forth in the PWS, DFFO and FWGWMPP. Each groundwater monitoring event report will include the following elements (note that it is anticipated that the semi-annual sampling and the quarterly sampling for the new wells described in Milestone 2.3 will be combined into one report).

Laboratory Analysis and Data Validation. EQM will use TestAmerica Laboratories, Inc. as our analytical subcontractor to support us in accomplishing the objectives specified in the SOW. More specifically, the TestAmerica North Canton facility will perform the majority of the analytical methodologies and coordinate all logistical aspects associated with the analysis and reporting of samples. They will be supported by the TestAmerica Sacramento laboratory for the analysis of explosive, propellant, and sulfur mustard degradation constituents and the Denver laboratory for perchlorate analysis. This arrangement is consistent with the current analytical process at RVAAP.

Qualified EQM project chemists will verify 100% of the data generated for this project as outlined to the Quality Systems Manual (QSM) 4.1 w/ the Louisville Supplement for validation. This is in accordance with validation requirements specified in the SOW.

The ADR EDD supplied with each secure data group (SDG) will be processed by EQM using the project-specific library and ADR software. Each ADR EDD provided by TestAmerica will be compliance screened using the ADR software and project-specific library. The ADR report generated will be combined with any issues identified by EQM project chemists during the course of the manual verification into one report and submitted to the USACE.

Sampling Event Reporting. EQM will prepare preliminary draft, draft, and final versions of all reports in accordance with PWS, DFFOs, and the FWGWMP Plan. The reports will include:

- Introduction including facility description, historical monitoring activities and current monitoring schedule.
- Description of project activities including groundwater level monitoring results; a description of the sampling activities including any anomalies such as sediment accumulation in the wells or pH variations; a description of the analyses conducted, the Investigation Derived Waste Report documenting that the purge and decontamination waters collected were disposed of properly.

- The analytical results from sampling event will be summarized including groundwater elevation measurements, analytical results, and data verification/validation information, including QA/QC information. This will also include a comparison to applicable cleanup levels/goals.
- Updated facility and groundwater flow maps.
- Raw analytical data sheets.

Prepare and Submit of Annual FWGWMP Report. EQM will prepare and submit the preliminary draft, draft, and final Annual Report per the requirements and schedule set forth in the PWS, DFFO and FWGWMP. Each groundwater annual report will include the following elements.

- Introduction including a facility description, summary of the scope of work for each annual report, and any changes to the FWGWMP.
- A summary will be included describing any activities involving monitoring wells installed or abandoned during the previous year.
- A summary of Annual FWGWMP field activities including sampling, well inspections, redevelopment and well repairs completed
- A summary and assessment of the Annual FWGWMP analytical results for the previous quarterly/semi-annual sampling events including a comparison to applicable cleanup levels/goals. Time-trend graphs (concentration versus time) will be prepared for specific chemicals of potential concern (COPCs) and will be organized by AOC.
- Updated facility and groundwater flow maps.
- Monitoring well network map(s).
- FWGWMP Annual Recommendations/Review will be included.

EQM is aware that the deadline of 15 December each year for the draft Annual Groundwater Reports is a DFFO milestone. We will continue to prepare and delegate resources necessary to meet this deadline for all future draft Annual Reports.

As previously discussed EQM will be preparing an addendum to the FWGWMP to change future groundwater monitoring from quarterly to semi-annually. EQM realizes that this has an effect on the reporting periods for the Annual Report. Presented in Table 3-3 is EQM’s understanding of future reporting in the Annual Report (this takes into account that EQM will be preparing the 2011 Annual Report under an existing contract separate from this PBA). It also includes the reporting for the new wells proposed in this proposal for installation in 2012.

Table 3-3. Sampling Events Covered Under Each Annual Report

Annual Report Date	Sampling Events, Reported
2012	October 2011, January 2012, April 2012, July 2012
2013	October 2012, January 2013, July 2013
2014	January 2014, July 2014

SECTION 4

PROJECT ORGANIZATION

4.1 EQM Project Organization

The EQM Project Team assembled to complete the RVAAP-66 groundwater project will include the following key subcontractors:

EQM – overall project management, direction of all subcontractors, and responsibility for all completion of all deliverables. EQM will also provide field crews for sampling and well installation, geology/hydrogeology expertise, engineering evaluation and oversight for all groundwater modeling and risk assessment activities.

Science Applications International Corporation (SAIC) – will provide field support, groundwater modeling, risk assessment, and regulatory support.

Civil & Environmental Consultants (CEC) – will provide field support including surveying wells groundwater sampling support, Geographic Information System (GIS) analysis, risk assessment and groundwater modeling support, and geotechnical expertise.

PIKA International – will provide UXO support primarily for clearance of any subsurface excavation activities associated with this project.

TestAmerica – will conduct analysis of groundwater samples.

Figure 4-1 is the project organizational chart showing the principal project-specific roles and lines of communication/reporting. Subcontracting and procurement details are provided in Section 4.3 of this PMP.

4.2 Subcontracting and Procurement Procedures

As the prime contractor, EQM will be responsible for successful completion of all project activities. As indicated above, the EQM Team will include several subcontractors selected for their experience with the groundwater investigations/CERCLA activities to be completed. EQM will use formal subcontracting mechanisms (i.e., subcontract agreement or Purchase Order) through which subcontract direction will be implemented. EQM will meet the contract requirements of the Federal Acquisition Regulation (FAR) relative to procuring and managing federal contracts requiring multiple subcontractors.

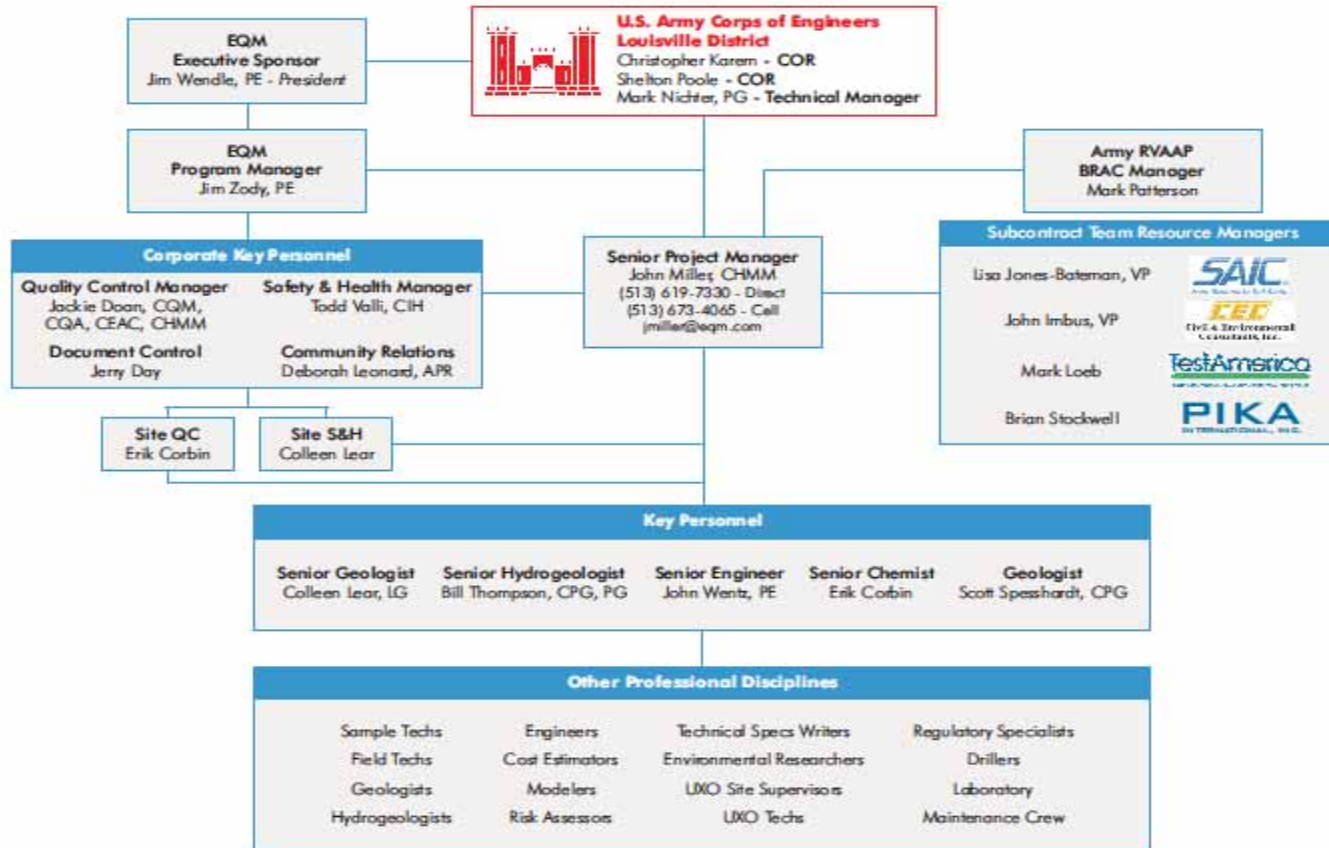


Figure 4-1. Project Organization

As part of subcontractor management, EQM will:

- Facilitate subcontractor communication with the USACE and RVAAP.
- Direct subcontractor preparation of written materials (e.g., project work plan sections, completion report section, etc.).
- Coordinate mobilization and demobilization plans.
- Provide oversight of subcontracted field activities.
- Review and coordinate schedules.
- Include subcontractors in partnering.
- Review and approve all payment requests.
- Closeout subcontracts promptly and obtain signed releases.

EQM's approach to budgeting and controlling subcontractor costs and field schedules will begin at the planning stage. At that time, subcontractor activities will be defined and converted to quantifiable and measurable tasks. This forms the basis for the subcontractor's cost and schedule estimate, which is then rolled up into the overall schedule. The resulting cost-loaded schedule becomes the baseline against which the subcontractor's performance is monitored and measured for the life of the project.

Monitoring subcontractor progress and costs will begin with daily field reporting and associated documentation. The Field Geologist will oversee subcontractor activities, including material and equipment deliveries, and on-site labor resources. The Field Geologist will document these activities in a daily report to the EQM Project Manager. Progress payment requests will be reviewed against the progress documented in the field. This information (i.e., field reports, employee time cards, subcontractor reports, etc.) is reviewed by the Project Manager in the context of the planned schedule and costs for that activity. Subcontractor progress will be measured against the baseline schedule to assess and quantify any potential variance and the need for any corrective action.

SECTION 5

REPORTING/DELIVERABLES

Deliverables for this project will include preliminary draft, draft, and final versions in printed copy and electronic Portable Document Format (pdf). Documents will be in compliance with the latest version of the *RVAAP Submission Format Guidelines Version 18.0* (VISTA, 2009). Preliminary draft versions of the documents will be prepared and submitted for Army review only. Once Army comments on the preliminary draft have been addressed, a draft version of the document will be prepared for review by the regulators, the Army and other stakeholders as appropriate. Following receipt and resolution of stakeholder comments on the draft document, it will be revised and a final version of the document issued. Deliverables will include the following:

- Quarterly and semianual groundwater monitoring reports
- Annual groundwater reports
- Amendments to the FWGWMP
- Letter report documenting the installation of new wells
- RI Work Plan
- RI Report
- Feasibility Study
- Proposed Plan
- ROD
- Monthly update reports

Key deliverables and their associated deadlines are as follows (note that a full list of milestones are presented in Section 7 of this PMP):

- Approval of final PMP and QASP by 31 December 2011
- Approval of final RI Work Plan by 27 April 2012
- Submittal of draft 2012 Annual FWGWMP Report by 15 December 2012 (per DFFOs)
- Approval of final RI Report by 30 September 2013
- Submittal of draft 2013 Annual FWGWMP Report by 15 December 2013 (per DFFOs)
- Approval of final FS Report by 30 April 2014
- Approval of final PP by 30 November 2014
- Submittal of draft 2014 Annual FWGWMP Report by 15 December 2014 (per DFFOs)
- Approval/signature of final ROD by 31 December 2015

The Resource Loaded Schedule in Appendix A identifies all project-required deliverables including anticipated submittal dates. This project will also include:

- Biweekly status meetings will be conducted with the appropriate stakeholders per the PWS by means of a conference call. The purpose of these meetings is to address the

progress to date, summarize anticipated activities, address any problems or issues with regard to the project, and discuss any corrective actions

- Biweekly contractors scheduling meetings conducted to update stakeholders on the schedule for all project activities

Additional information on Deliverable Management Procedures are presented in Section 6 of this PMP.

Presented in Table 5-1 is the anticipated Deliverables Distribution List for this project.

Table 5-1. Anticipated Deliverables Distribution List

Document Distribution Organization	Printed Copies	Electronic Copies
Preliminary Draft		
USACE Technical Manager	2	3
RVAAP Facility Manager	2	2
USAEC Program Manager	0	1
OHARNG – RTLS/ENV	1	1
NGB Cleanup Program manager	0	1
EQM	1	1
Draft		
USACE Technical Manager	2	3
RVAAP Facility Manager	2	2
USAEC Program Manager	0	1
Ohio EPA	2	2
OHARNG – RTLS/ENV	1	1
NGB Cleanup Program Manager	0	1
EQM	1	1
Final		
USACE Technical Manager	2	3
RVAAP Facility Manager	2	2
USAEC Program Manager	0	1
Ohio EPA	2	2
OHARNG – RTLS/ENV	1	1
NGB Cleanup Program Manager	0	1
EQM	1	1
REIMS	0	1

Ohio EPA – Ohio EPA Twinsburg Office

OHARNG – RTLS/ENV – Ohio Army National Guard Ravenna Training and Logistics Site/Environmental

RVAAP – Ravenna Army Ammunition Plant

USACE – U.S. Army Corps of Engineers

USAEC – U.S. Army Environmental Center

NGB – National Guard Bureau

EQM – Environmental Quality Management, Inc.

REIMS – Ravenna Environmental Information Management System

SECTION 6

QUALITY CONTROL PLAN

This section presents the Quality Control Plan (QCP) which describes the methods that EQM will employ to provide quality work and products to the USACE.

6.1 Quality Control Organization

The following section describes the structure of the quality management team for EQM's work for the RVAAP-66 groundwater PBA. Personnel were selected based on previous experience and their familiarity with EQM's Corporate Quality Assurance Plan. The project team will provide the specific technical and management capabilities and qualifications to perform the contract work. The EQM organization chart of positions responsible for establishing EQM's QCP is shown in Figure 6-1. It includes the President, Program Manager, Corporate Quality Assurance Manager, Project Manager (PM), and Corporate Health and Safety Manager. Project staff members will be qualified to perform their assigned tasks in accordance with terms outlined in the work plan PWS.

President

EQM's President, Jim Wendle, PE is ultimately responsible for the effective implementation of the QCP for operations. The President issues the Corporate Policy Statement and directs management and workers to follow the requirements of the QCP. The President has chosen to delegate QA authority as defined in the following paragraphs. Each designee is held accountable for delegated authorities.

Program Manager

EQM's Program Manager, Jim Zody, PE has overall authority and responsibility for quality for quality achievement of assigned projects and project support programs. He will foster a culture of excellence for quality and safety and assign responsible personnel to the Program and PM positions in support of the QA management direction of the President and QA Manager.

Corporate QA Manager

EQM's Corporate QA Manager, Jackie Doan reports to the President and has the authority and overall responsibility for independently verifying that quality is achieved. The QA Manager is responsible for development, maintenance and implementation of the quality program. This responsibility includes overseeing activities under the guidance of this QCP, performing periodic reviews of the processes being implemented, evaluating any recommendations made by the project team over the course of the program regarding use of these process, and implementing continuous improvement evaluations of the program.

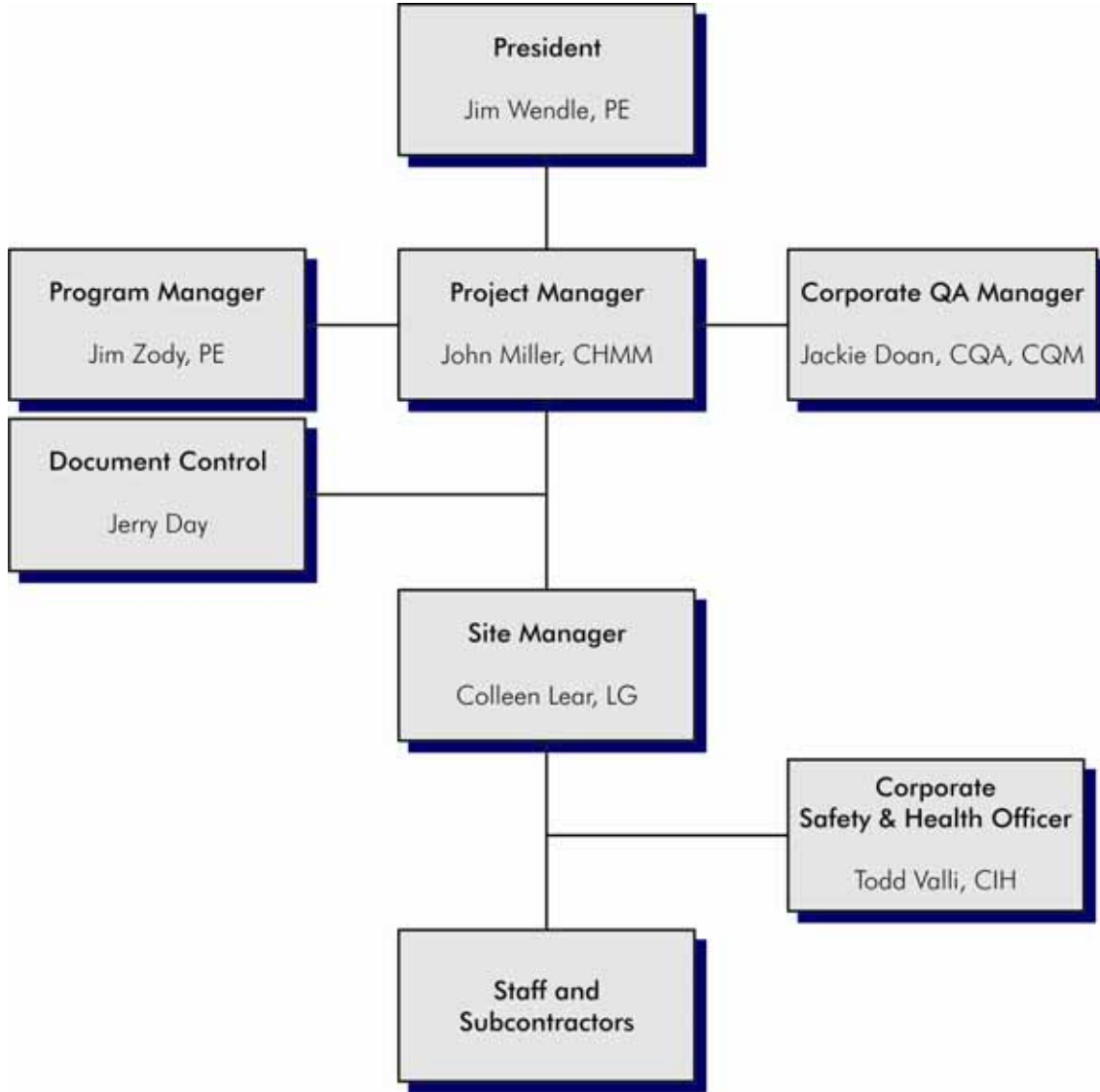


Figure 6-1. Quality Control Organizational Chart

Project Manager

EQM’s PM, John Miller is responsible for ensuring the availability of the resources needed to implement the project QCP and will ensure the QC processes are incorporated in the project plans, procedures, and training for the specific project. The primary responsibility of the PM is the overall direction of the project and accountability for work activities undertaken as part of the PWS. The PM is responsible for the quality and timeliness of project activities, including those performed by subcontractors and suppliers.

Corporate Health and Safety Manager (CHSM)

EQM’s CHSM Todd Valli has the authority to implement corrective measures related to health and safety issues and to stop work, if required, to ensure a safe working environment.

A matrix showing the roles and responsibilities for key EQM staff for this project are presented in Table 6-1

Table 6-1 Key Personnel Roles and Responsibilities

Key Personnel Roles	
Position	Key Responsibilities
Program Manager, Jim Zody, PE	<ul style="list-style-type: none"> ✓ Provides program leadership, management, direction, and coordination. ✓ Serves as single POC for coordination with the District. ✓ Ensures technical quality of deliverables and field execution. ✓ Ensures compliance with program scope, schedule, and budget. ✓ Actively supports focus on safety. ✓ Administers all USACE instructions. ✓ Establishes USACE protocols and standard operating procedures (SOPs). ✓ Develops and maintains alliances with Team subcontractors. ✓ Monitors program budget and schedule requirements. ✓ Promotes “Partnering” to meet a shared vision of program success.
Senior Project Manager, John Miller, CHHM	<ul style="list-style-type: none"> ✓ Manages and executes project activities in accordance with approved SOW and work plans, and federal, state, and local laws and regulations ✓ Understand the Contract and project objectives for the specific project. ✓ Overall project quality. ✓ Ensures proper technical resources are assigned. ✓ Schedules activities and prepares documents and reports associated with the project. ✓ Manages/integrates staff and subcontractor activities. ✓ Coordinates with site safety officer so all site activities are performed safely. ✓ Monitors and controls project cost and schedule baselines and develops corrective action plans, if warranted. ✓ Technical review of project deliverables. ✓ Interfaces with regulatory agencies, as appropriate. ✓ Evaluates subcontractors’ performances and productivity and develops corrective action plans, if warranted. ✓ Serves as final reviewer prior to release of project information. ✓ Evaluates the effects that nonconformance has on the project and the appropriateness of reporting these issues with the client.
Todd Valli, CIH Senior Safety & Health Officer	<ul style="list-style-type: none"> ✓ Implements the Corporate Health and Safety Program. ✓ Reviews and monitors compliance with site safety and health plans (SSHPs). ✓ Implements corrective measures for health and safety deficiencies. ✓ Ensures required training and medical monitoring of personnel.
Jackie Doan Corporate QA/QC	<ul style="list-style-type: none"> ✓ Foster a culture of excellence for quality, ✓ Approves QA requirement documents, project and program implementing procedures. ✓ Assesses the effective implementation of the QCP. ✓ Ensures corrective actions are documented and acknowledged by the PM and field personnel. ✓ Reports regularly to the President of EQM on the adequacy, status and effectiveness of the QC program. ✓ Ensures project deliverables are defined prior to initiation of field operations and are submitted as required by the WP and project schedule. ✓ Establishes guidelines to assist in the development of program, project, site and task specific Quality Control (QC) policies and procedures.

Key Personnel Roles	
Position	Key Responsibilities
Senior Chemist, Erik Corbin	<ul style="list-style-type: none"> ✓ Project QCM. ✓ Coordinates with analytical laboratory. ✓ Coordinates data validation/verification. ✓ Assists development of SAP and QAPP. ✓ Interfaces with Sr. Geologist during sampling events. ✓ Ensures the goals of the field investigations are achieved. ✓ Interfaces with regulatory agencies, as appropriate.
Senior Engineer, John Wentz, PE	<ul style="list-style-type: none"> ✓ Identifies potential remedial technologies. ✓ Develops and evaluates remedial alternatives. ✓ Conducts remedial technology pilot tests, if necessary. ✓ Interfaces with PM and others to prepare FS.
Senior Field Geologist, Colleen Lear, LG	<ul style="list-style-type: none"> ✓ On site for drilling, sampling, and monitoring well installation. ✓ Ensures the goals of the field investigations are achieved. ✓ Interfaces with Sr. Modeler to define facility-wide geologic conditions. ✓ Interfaces with regulatory agencies, as appropriate.
Senior Hydrogeologist, Bill Thompson ,PG, CPG	<ul style="list-style-type: none"> ✓ Interfaces with Sr. Geologist and Sr. Modeler to define facility-wide hydrogeologic conditions. ✓ Interfaces with regulatory agencies, as appropriate. ✓ Develops groundwater protection remedial alternatives. ✓ Senior reviewer for project Plans, RI, FS and other deliverables
Senior Geologist Scott Spesshardt, CPG	<ul style="list-style-type: none"> ✓ Interfaces with Sr. Hydrogeologist to define facility-wide hydrogeologic conditions. ✓ Develops groundwater protection remedial alternatives. ✓ Assists the Senior Field Geologist to ensure the goals of the field investigations are achieved.

6.2 Technical Interfaces

The lines of communication and technical interfaces are presented in the organization chart (Figure 4-1, Section 4).

6.3 Deliverable Management Procedures

6.3.1 Transmittals

All project deliverables will undergo a comprehensive independent technical review performed by senior personnel on major document deliverables. Project deliverables will be signed and dated by the ITRT. EQM will provide copies of all submittals in both hard copy and electronic format (CD-ROM). The appropriate electronic formats are Microsoft Word[®] for text, Microsoft Excel[®] for tables, and pdf for figures and will be in compliance with the latest version of the *RVAAP Submission Format Guidelines Version 18.0* as described in Section 5 of this PMP.

6.3.2 Submittal Review

The following approach will be used to prepare the various deliverables requiring ITRT evaluation. All project deliverables will be processed through EQM’s Document Control Officer.

The EQM Document Control Officer, Mr. Jerry Day, is the editor and is also responsible for document tracking and completion. After receiving the draft with figures and tables, the Document Control Officer will track the report through report preparation and ITRT review.

This centralized control of report flow makes efficient use of support personnel and allows optimum scheduling of services (typing, editing, graphics, and reproduction) for the reports that are in production.

All comments made by the ITRT team and editor will be provided to the submittal author for verification and resolution. The author and the Project Manager will evaluate issues of technical adequacy. The submittal author will revise the project deliverable to address all comments. The revised submittal will be given to the Document Control Officer for finalization.

The Document Control Officer completes the Final Review. The review constitutes a thorough check of typist accuracy in following editorial input, any problems with that input, the consistency of presentation, whether all elements of the report (e.g., tables, figures, etc.) are included, and whether comments of the ITRT team have been addressed.

The Document Control Officer, under direction of the Project Manager, will ensure that the completed report(s), including a cover letter, is delivered to the proper destination(s) on or before the date required. The Project Manager will conduct a “leaf through” quality check before the finished product is packaged. At this point, the Project Manager will ensure that the report original (Master) is put into the original report file.

The Project Manager is responsible for maintaining contact with the designated USACE during report production as well as after delivery.

6.3.3 Review Comments Management

The USACE, the U.S. Army, the OHARNG and the Ohio EPA may provide comments on project deliverables. Upon receipt of comments, EQM will prepare an annotated response using an approved Comment Response Table (CRT), including conditions of disagreement with the commenter. The responses will be prepared/reviewed by the Project Manager and submitted to the commenter.

When necessary, the Project Manager will consult with the commenter to discuss EQM’s response to comments and to resolve any differences. The annotated response to comments will be used to prepare the next version of the submittal to the USACE.

6.4 Field Quality Management

Prior to the start of field sampling activities, EQM will prepare amendments to existing RVAAP Facility-Wide guidance and plans to ensure field sampling activities are conducted according to approved established Ravenna standards. Specifically, a project specific Sampling and Analysis Plan Addendum and RI Work Plan will be prepared. Amendments detailing the installation of new wells, sampling scheduling changes and an amendment to the Facility-Wide Health and Safety Plan will also be prepared.

6.4.1 Sampling and Testing

The purpose of sampling and testing is to obtain an objective, typically quantitative, data in support of the PWS. EQM will outline the type and frequency of sampling and testing to be conducted for each specific task for the project. The testing and analytical laboratories will be discussed with the USAC for approval. The sampling and testing include:

- Groundwater sampling and testing for environmental contaminants;
- UXO clearance for subsurface drilling
- Soil geotechnical testing
- Waste sampling for waste characterization and disposal requirements
- Pump testing

The QC Manager and support personnel will verify that the sampling and testing personnel are trained in the relevant procedures. They will witness the sampling and testing to verify that the proper equipment is available, that the equipment has been calibrated against certified standards, that the procedures are followed, and that the activities are documented. Any nonconformance will be discussed and resolved immediately or corrective actions will be instituted. EQM will use TestAmerica for the analysis for environmental contaminants and all waste characterization samples.

USACE personnel will be advised of the analytical and test results on a regular basis. EQM understands that the USACE COR may conduct QA checks of testing techniques and results.

6.4.2 Equipment Calibration and Tests

Measurement equipment used on site, (e.g., sampling pumps, Horibas, real-time monitors, etc.), will be checked for operational reliability and calibration in accordance with the manufacturer's specifications

6.4.3 Documentation of Testing

Results of the calibrations will be documented by the individual performing the test. Calibration and maintenance records associated with the measuring and testing equipment will be generated by the individual performing the activity. Documentation for required calibrations, testing and maintenance of measuring and testing equipment will be stored in the field office or EQM's Corporate Office in Cincinnati, Ohio until the project is completed. All project files will be made available to the USACE upon request.

6.4.4 Maintenance Program

All tools, instruments and equipment used during this project will be properly maintained and calibrated (as necessary) in accordance with the instrument manufacture specifications or standard industry practices. This applies to equipment used in the field for safety support and related activities affecting quality, including sampling equipment, communications equipment, vehicles/machinery, environmental monitoring equipment, and personal protective equipment.

Equipment will be protected from contamination, or decontaminated as necessary, and visually checked for damage prior to use. Critical spare parts will be kept on site to minimize downtime.

6.5 Laboratory Quality Management

High quality laboratory data will be promoted by use of an approved QAPP Addendum to the FWGWMP QAPP. Qualified EQM project chemists will verify 100% of the data generated for this project as outlined in QSM 4.1 with the Louisville Supplement for validation, This is in accordance with validation requirements specified in the SOW.

The ADR EDD supplied with each SDG will be processed by EQM using the project-specific library and ADR software. Each ADR EDD provided by TestAmerica will be compliance screened using the ADR software and project-specific library. The ADR report generated will be combined with any issues identified by EQM project chemists during the course of the manual verification into one report and submitted to the USACE.

6.6 Nonconformance and Corrective Action

6.6.1 Nonconformance Control

Items that do not conform to specified requirements are controlled to prevent inadvertent use. The controls include identification, documentation, evaluation, disposition, and notification. Any project individual may identify a nonconformance by initiating a nonconformance report.

6.6.2 Processing Nonconformance

Each nonconformance must be documented in a nonconformance report (Figure 6-2), that is initially reviewed, and evaluated by the QA Manager and Project Manager. The evaluation is augmented by personnel with demonstrated competence in the specific areas they are evaluating and with adequate understanding of the requirements. Where possible, the evaluation is also augmented by the group or organization that established the original requirements. If possible, resolution is obtained at the project level with notification communicated to the program level. If resolution cannot be obtained, the nonconformance report is elevated to the program level for further resolution. The disposition of the nonconformance is identified and documented.

6.6.3 Corrective Action

Controls are established to ensure that items and conditions adverse to quality will be promptly and effectively corrected. The underlying causes and the full extent of the potential impacts of unsatisfactory items and conditions are determined and corrected in order to prevent their recurrence. The adverse conditions, their cause, and the corrective action taken are documented and reported to responsible management. The area of concern is evaluated, assessed, or audited in a timely manner to ensure that the corrective action has been accomplished.

Clearly defined communication channels are established to keep appropriate personnel informed of potential problems by a feedback system of reports on significant and recurring problems encountered on other projects and by review of selected government and industry documents. A corrective action report (Figure 6-3) is used to document and report all deficiencies and corrective actions.

NONCONFORMANCE REPORT	
Date: _____	Project No.: _____
Project Name: _____	
Description of Nonconformance:	
_____ _____ _____ _____	
Inspector: _____	Date: _____
Corrective Action(s) Required:	
_____ _____ _____ _____	
Prepared by: _____ (Name)	Date: _____
To be verified by: _____ (Name)	Date: _____
Corrective Action Executed:	
_____ _____ _____ _____	
Executed by: _____ (Name)	Date: _____
Inspected by: _____ (Name)	Date: _____
Approved by: _____ (Name)	Date: _____

cc: Project Mgr, QA/QC Mgr, Site Mgr

Figure 6-2. Nonconformance Report

6.6.4 Trend Analysis

When sufficient data is available from such sources as audit reports, surveillance reports, quality deficiency reports, and related documents, these data are analyzed to identify significant quality trends. Trend analysis is performed in a manner and at a frequency that ensures significant quality trends are identified and evaluated for appropriate corrective and preventive action.

6.6.5 Responsibilities

The Program Quality Assurance Manager is responsible for the verification that all nonconformances have been closed and applicable corrective action has been taken.

SECTION 7

SCHEDULE

7.1 Project Schedule

A resource load schedule is included in Appendix A. The schedule shows major activities leading to the milestones identified in the PWS as well as interim milestones. The Project Schedule milestones are summarized in Table 7-1. This schedule includes the assumption that the various document reviewers will take the maximum amount of time to complete their actions. The project schedule may be compressed if the reviews take less time.

7.2 Cost, Performance, and Schedule Evaluation

The PM will review the project status on a weekly basis. The review will include evaluation of daily reports and weekly summaries, and evaluation of cost data from EQM's DELTEK[®] cost tracking system. The analysis will include planned versus actual performance measures and impacts to schedule. If corrective actions are needed to mitigate schedule impacts these will be developed and discussed with the USACE. The performance analysis will be discussed at the biweekly status meeting and be included in the monthly status report.

7.3 Schedule Update Process

The project schedule will be maintained and updated as needed. Updates will be made to the schedule on a monthly basis showing planned versus actual. The schedule provided with the PMP will be the baseline schedule and the baseline will only be changed as authorized by the COR.

7.4 Payment Milestones

The project milestones are presented on the Resource Loaded Schedule in Appendix A. Additionally the milestone payment plan is presented in Appendix B. As presented in the RFP EQM understands that the Milestone payment schedule must equate to the CLINs provided in our price proposal. EQM further understands that the final 20% payment for each milestone will be payable upon successful completion (final deliverable of the milestone).

Table 7-1. Proposed Milestones and Rationale

MILESTONE	DESCRIPTION
Milestone 1. Approval of the Final PMP and QASP by 31 December 2011.	Tasks completed under this milestone include the preparation and submittal of preliminary draft, draft, and final versions of both documents as well as preparation of response to comments from all stakeholders. It is understood that a preliminary draft of both documents is due within 30 days of contract award.
Milestone 2.1 & 2.2. Modification to FWGWMP to Install New Wells	Tasks to be completed under this milestone include the preparation of an amendment to the FWGWMP Plan for the installation of new wells followed by the installation and development of the wells. The schedule presents an aggressive schedule for this milestone, resulting in installation and development of the wells by March 2012, and is on a separate track from the RI Work Plan. Additionally, this milestone includes the preparation of an amendment to the FWGWMP Plan to revise the groundwater monitoring schedule, wells to be sampled, and analytes.
Milestone 2.3 Complete 4 Quarters of Sampling for the New Wells	As required by the USACE, the new wells will require 4 consecutive quarters of sampling and analysis for the full suite of constituents presented in the FWGWMP. The four quarters will be in April, July, and October 2012; and January 2013 with associated reporting.
Milestone 2.4. Approval of Final Remedial Investigation Report by 30 September 2013.	Tasks to be completed under this milestone include <ul style="list-style-type: none"> • Includes preparation and submittal of preliminary draft, draft and final versions of the Remedial Investigation Work Plan (WP) by 30 April 2012 as well as preparation of response to comments from all stakeholders. The WP will be prepared in accordance with CERCLA requirements as well as the DFFO. • Implementation of the remedial investigation • Preparation and submittal of preliminary draft, draft and final versions of the RI Report as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO.
Milestone 2.5. Approval of Final Feasibility Study Report by 30 April 2014.	Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the FS Report as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO.
Milestone 2.6. Approval of Final Proposed Plan by 30 November 2014.	Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the Proposed Plan (PP) as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO
Milestone 2.7. Approval/Signature of final ROD by 31 December 2015.	Tasks to be completed under this milestone include the preparation and submittal of preliminary draft, draft and final versions of the ROD as well as preparation of response to comments from all stakeholders. The report will be prepared in accordance with CERCLA requirements as well as the DFFO.
Milestone 3.1 . Submittal of Draft 2012 Annual FWGWMP report by 15 December 2012 (per DFFOs).	Tasks associated with this milestone will be the completion of the groundwater monitoring activities conducted in support of the annual report. It is anticipated that sampling events from October 2011, January 2012, April 2012, and July 2012 will be included in this report. As described in this proposal EQM is proposing to change the sampling schedule from quarterly to semi-annual beginning in January 2012. EQM understands the critical nature of meeting the December 15 deadline for submittal of the Draft report to the Ohio EPA (since 2007 EQM has consistently submitted the draft Annual FWGWMP prior to this deadline). This task includes the preparation and submittal of preliminary draft, draft and final versions of all reports as well as preparation of response to comments from all stakeholders.
Milestone 3.2. Submittal of Draft 2013 Annual FWGWMP Report by 15 December 2013 (per DFFOs)	Tasks associated with this milestone include the completion of the groundwater monitoring activities conducted in support of the annual report. It is anticipated that sampling events from January 2013 and July 2013 will be included in this report. This task will include the preparation and submittal of preliminary draft, draft and final versions of all reports as well as preparation of response to comments from all stakeholders.
Milestone 3.3. Submittal of Draft 2014 Annual FWGWMP Report by 15 December 2014 (per DFFOs)	Tasks associated with this milestone will be the completion of the groundwater monitoring activities conducted in support of the annual report. It is anticipated that sampling events January 2014 and July 2014 will be included in this report. This task will include the preparation and submittal of preliminary draft, draft and final versions of all reports as well as preparation of response to comments from all stakeholders.
Milestone 3.4. Completion of Groundwater Monitoring conducted in July 2015.	This milestone has been added to include the completion and costs associated with groundwater monitoring conducted for the 2015 sampling event.

SECTION 8

REFERENCES

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APPENDIX A
RESOURCE LOADED SCHEDULE

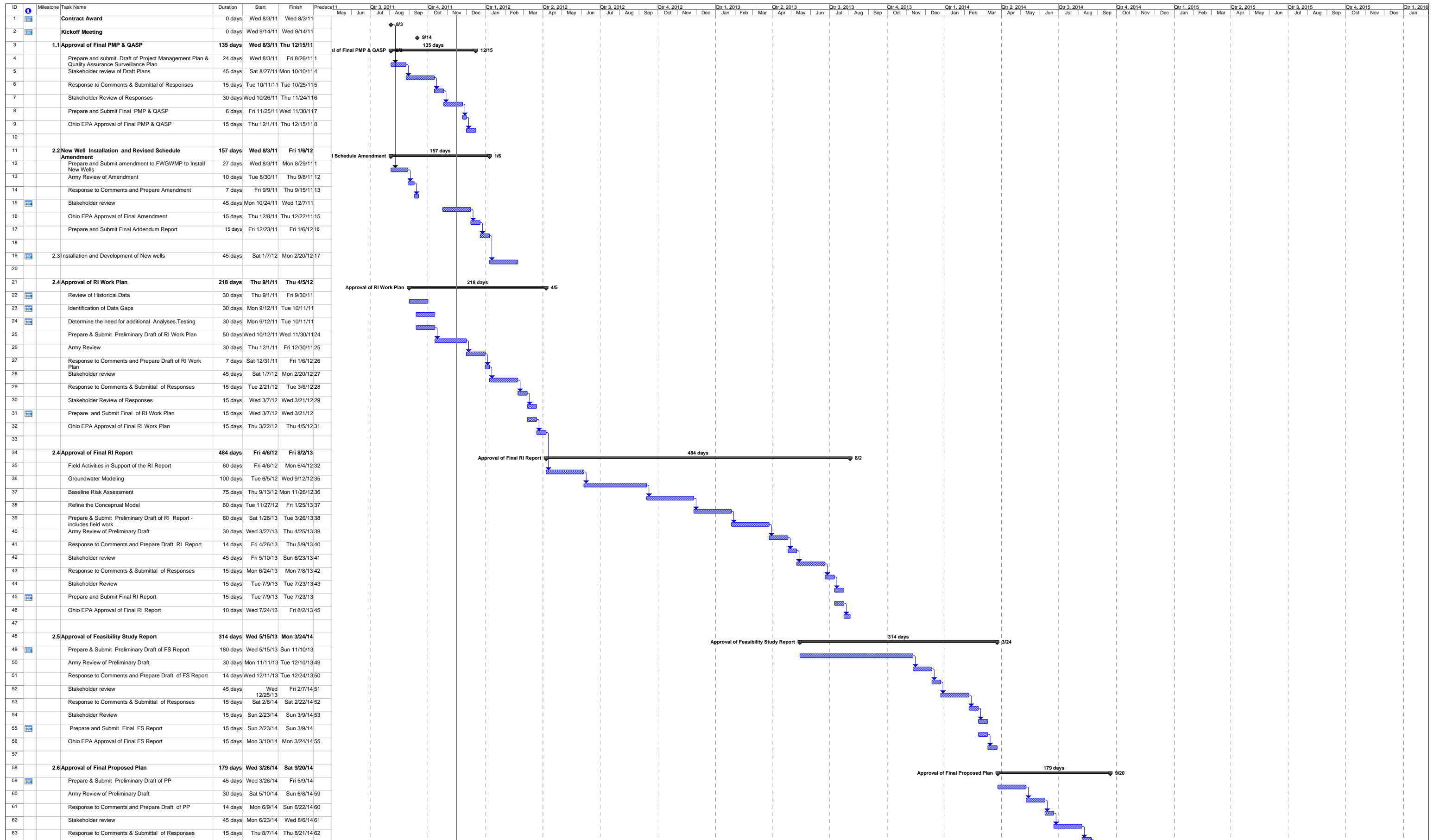


Figure II-1 Facility-Wide Groundwater Schedule - RVAAP

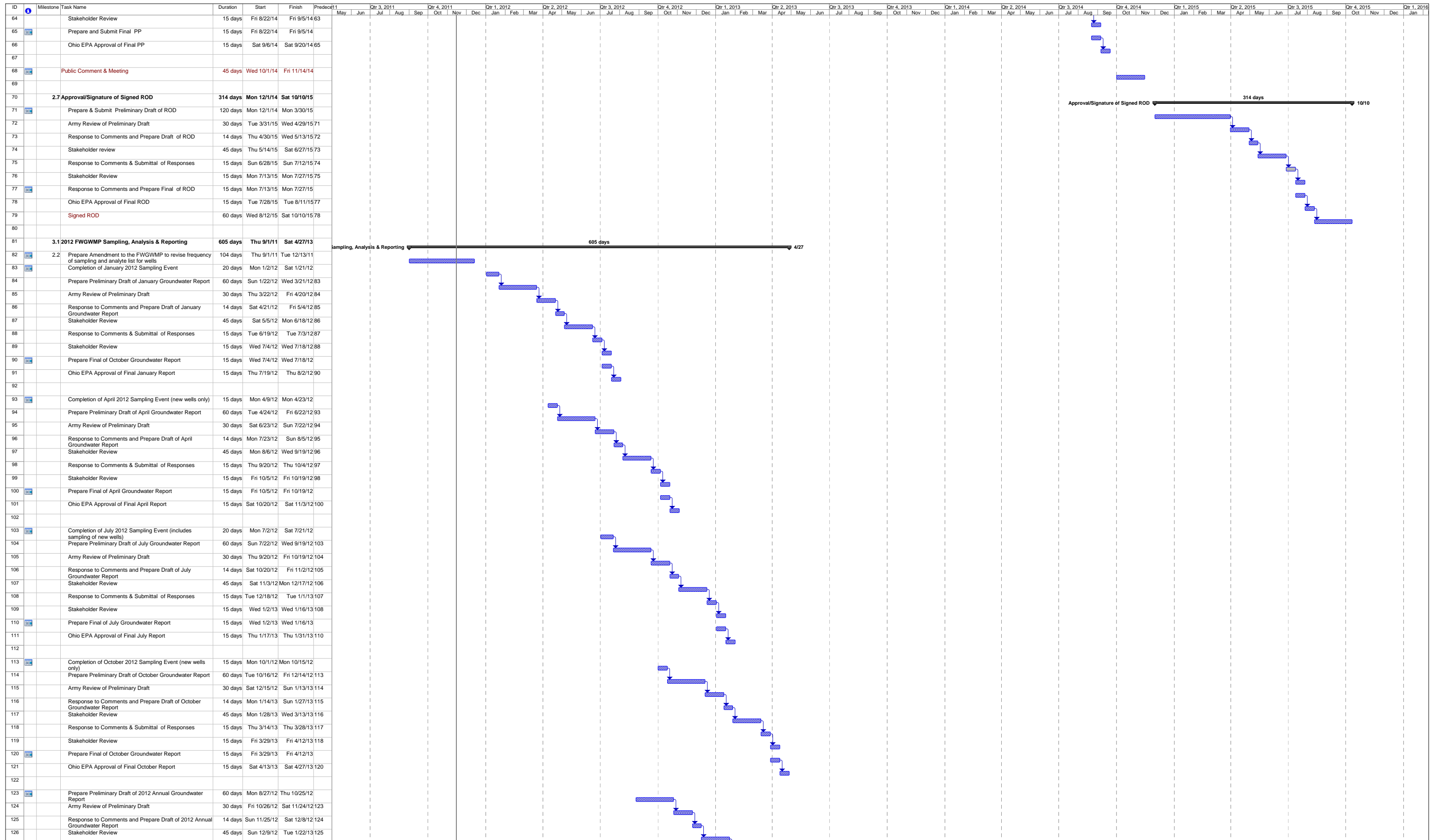


Figure II-1 Facility-Wide Groundwater Schedule - RVAAP

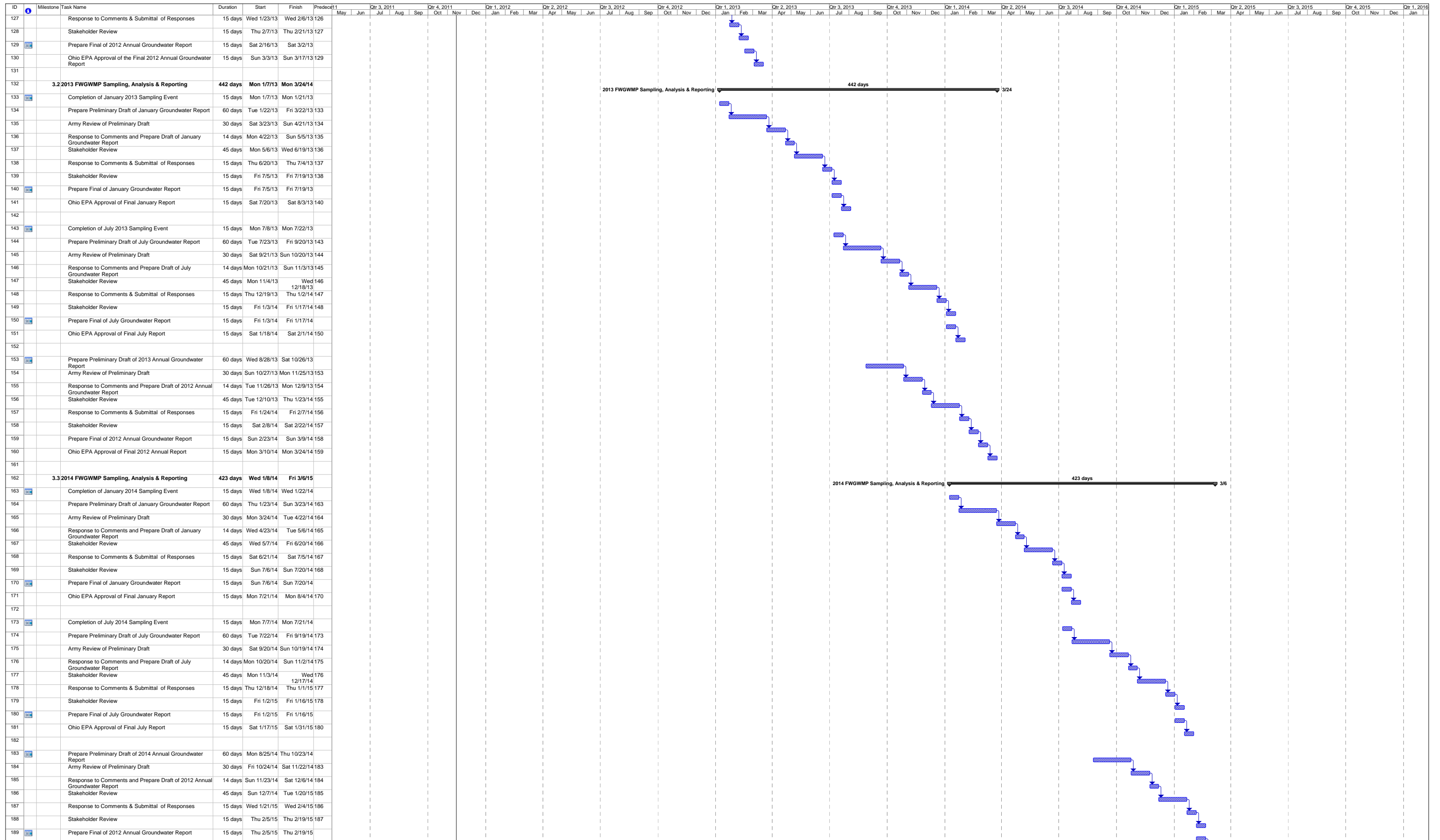


Figure II-1 Facility-Wide Groundwater Schedule - RVAAP

APPENDIX B
PAYMENT MILESTONES

Payment milestones have been provided to the Army only. Reference Table 7-1 and Appendix A for project milestones and schedule.

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APPENDIX C
CORRESPONDENCE & COMMENT/RESPONSE TABLE



**Environmental
Protection Agency**

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

November 21, 2011

RE: RAVENNA ARMY AMMUNITION PLANT,
PORTAGE/TRUMBULL COUNTIES,
FWGWMP, FINAL RVAAP-66 FACILITY-WIDE
GROUNDWATER PROJECT MANAGEMENT
PLAN, DATED NOV. 17, 2011
267000859036

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

CERTIFIED MAIL
7010 3090 0000 3936 6498

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Final, Facility-Wide Groundwater Monitoring Program, RVAAP-66 Facility-Wide Groundwater Project Management Plan" document. The document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on November 18, 2011. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under contract No. GS-10F-0293K.

The document is approved. If you have any questions, please call me at (330) 963-1207.

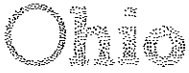
Sincerely,

Vicki Deppisch
Hydrogeologist/Project Coordinator
Division of Environmental Response and Revitalization

VD/kss

cc: Eileen Mohr, Ohio EPA, DERR, NEDO

ec: Katie Tait, OHARNG RTLS
Maj. Ed Meade, OHARNG RTLS
Glen Beckham, USACE Louisville
Mark Krivansky, AEC
John Miller, EQM
Mark Nichter, USACE Louisville
Conni McCambridge, Ohio EPA, DDAGW, NEDO
Mike Eberle, Ohio EPA, DERR, NEDO
Nancy Zikmanis, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, NEDO



**Environmental
Protection Agency**

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

October 5, 2011

RE: RAVENNA ARMY AMMUNITION PLANT,
PORTAGE/TRUMBULL COUNTIES,
FWGWMP, DRAFT RVAAP-66 FACILITY
-WIDE GROUNDWATER PROJECT
MANAGEMENT PLAN, DATED
AUGUST 30, 2011, # 267000859036

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

CERTIFIED MAIL
7010 1060 0000 0089 7155

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft, Facility-Wide Groundwater Monitoring Program, RVAAP-66 Facility-Wide Groundwater Project Management Plan" document. The document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on August 31, 2011. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under contract No. GS-10F-0293K.

EQM has been contracted by USACE to obtain a signed Record of Decision (ROD) for the FWGWMP. Associated tasks include completion of a Remedial Investigation/Feasibility Study (RI/FS), Proposed Plan and continued groundwater monitoring and associated reporting.

The purpose of the Draft Project Management Plan (PMP) is to:

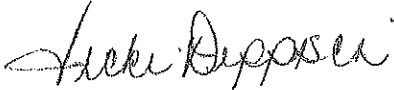
- Document EQM's technical approach for conducting environmental investigations and obtaining a signed ROD;
- Identify the project deliverables and stakeholder distribution;
- Present a detailed base-line schedule that includes milestones and costs associated with each milestone; and
- Identify the project organization, members of the project team, and their roles and responsibilities.

Ohio EPA noted that although the project objectives are identified, some of the components are conceptual and will require separate time for reviews, discussions, and perhaps conference calls. These include, but are not limited to, groundwater modeling, risk assessment, changes to sampling frequency and parameters, location of new wells, use of background wells, bis(2ethylhexyl)phthalate, arsenic, possible use of Geochemical Evaluation of Metals in Groundwater study, work plans, etc.

MR. MARK PATTERSON
RAVENNA ARMY AMMUNITION PLANT
OCTOBER 5, 2011
PAGE 2

Enclosed are Ohio EPA's comments. If you have any questions, please call me at (330) 963-1207.

Sincerely,



Vicki Deppisch
Hydrogeologist/Project Coordinator
Division of Environmental Response and Revitalization

VD/kss

enclosure

ec: Eileen Mohr, Ohio EPA, DERR, NEDO
Katie Tait, OHARNG RTLS
Maj. Ed Meade, OHARNG RTLS
Glen Beckham, USACE Louisville
Mark Krivansky, AEC
John Miller, EQM
Mark Nichter, USACE Louisville
Conni McCambridge, Ohio EPA, DDAGW, NEDO
Mike Eberle, Ohio EPA, DERR, NEDO
Todd Fisher, Ohio EPA, DERR, NEDO

Comment Response Table
RVAAAP – FWGWMP
Draft, Project Management Plan, Dated August 30, 2011
Reviewers: Conni McCambridge and Vicki Deppisch, Ohio EPA
(October 5, 2011)

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
Ohio EPA (V. Deppisch/C. McCambridge)					
1.	Pg. 7, Section 2.3.2		Regarding Bedrock: Ohio EPA could not locate a discussion regarding the rationale of why bedrock wells were installed in the Homewood Sandstone on the western portion of the site and in the Sharon Sandstone/Conglomerate to the east. Is the Homewood missing where the Sharon wells were installed?	Please discuss the bedrock and bedrock wells in more detail.	A separate submittal (an addendum to the FWGWMP Plan) will be prepared for Ohio EPA review and comment to address the locations and geologic units (e.g., unconsolidated, Sharon, Homewood, etc.) for proposed new wells. Several of these new wells will be installed into "first bedrock unit" encountered to establish the hydraulic relationship between the unconsolidated and bedrock units. In general terms, the Homewood is the shallowest bedrock to the west and Sharon is the shallowest bedrock to the east of RVAAAP (i.e., the Homewood is missing in the eastern half of the site). There is a small potential that the shallowest bedrock unit may be the Mercer Member or the Connoquenessing Sandstone, which are exposed on the flanks of pre-glacial valley walls. These two units are depositionally between the Homewood and Sharon.
2.	General		There is no discussion regarding residential well use in the area, which aquifer(s), or a map with the locations of the wells.	Is this information available? Please discuss.	A separate submittal will be prepared for Ohio EPA review and comment to address the groundwater modeling effort. That document will address both on-site and off-site groundwater usage, to the extent that information is available. These data are critical to establishing the water balance for RVAAAP.
3.	Pg. 14, 17, 21, etc.		Regarding proposed conceptual changes, tasks, etc., such as additional well installations, modeling, risk assessment,	Please provide the appropriate detailed document(s) for Ohio EPA review as each of these	EQM and the USACE are in agreement that all documents prepared as a part of this contract will be provided to the OEPA for review and

Comment Response Table
RVAAP – FWGWMP
Draft, Project Management Plan, Dated August 30, 2011
Reviewers: Conni McCambridge and Vicki Deppisch, Ohio EPA
(October 5, 2011)

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
<i>Ohio EPA (V. Deppisch/C. McCambridge)</i>					
4.	Pg. 16		changes to sampling frequency and parameters, use of background wells, etc.: Specific detailed information, such as work plans, etc., was not provided in the PMP document. Document states EQM will assess the relevancy of the “Geochemical Evaluation of Metals in Groundwater” document. Many concerns still exist and have not been resolved by Ohio EPA and others. The final document was “approved” by Ohio EPA, but not accepted.	tasks/changes come up. May require a meeting or conference call, work plan, etc. All issues and concerns will have to be resolved before any part of this document can be used.	concurrency. EQM and the USACE are in agreement that information contained in the “Geochemical Evaluation of Metals in Groundwater” will be evaluated in conjunction with OEPA review and concurrence, and may not be used at all.
5.	Pg. 19, Milestone 8		Regarding early attainment of unrestricted groundwater use for the OHLARNG: there is no discussion regarding the role of MCLs of SMCLs.	Please discuss.	A separate submittal will be prepared for Ohio EPA review and comment to address early attainment unrestricted groundwater use areas. The document will address MCLs and SMCLs as part of the Ohio EPA screening process for cleanup levels.
6.	General-CUGS-TCE		U.S.EPA recently released the “Final Health Assessment” for TCE. Will the CUG for TCE be re-calculated?	Please discuss.	During the risk assessment phase of the Remedial Investigation the CUGs will be evaluated and possibly re-calculated based on the data collected.
7.	Pg. 21		Document proposes twice a year sampling in January and July. There is no discussion regarding seasonal fluctuations, etc., and why January and July were chosen.	Please discuss.	A separate submittal will be prepared for Ohio EPA review and comment to address the revisions of the temporal frequency of sampling. That document will indicate that all new wells will be sampled quarterly to address seasonal fluctuations and that a set of existing wells, which have been subject to quarterly

Comment Response Table
RVAAP – FWGWMP
Draft, Project Management Plan, Dated August 30, 2011
Reviewers: Conni McCambridge and Vicki Deppisch, Ohio EPA
(October 5, 2011)

Comment Number	Page or Sheet	New Page or Sheet	Comment	Recommendation	Response
				<i>Ohio EPA (V. Deppisch/C. McCambridge)</i>	
					<p>sampling for at least one year, will be sampled twice a year. EQM has identified winter (January) and summer (July) based on our review of the available seasonal trends in groundwater quality. We believe that the winter/summer period reflects "normal" or average groundwater quality conditions. This will be discussed in detail under a separate submittal.</p>



**Environmental
Protection Agency**

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

November 10, 2011

RE: RAVENNA ARMY AMMUNITION PLANT,
PORTAGE/TRUMBULL COUNTIES,
FWGWMP, DRAFT RVAAP-66 FACILITY -
WIDE GROUNDWATER PROJECT
MANAGEMENT PLAN, RESPONSE TO OHIO
EPA COMMENTS, DATED NOV. 1, 2011,
267000859036

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

CERTIFIED MAIL
7010 3090 0000 3936 6511

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft, Facility-Wide Groundwater Monitoring Program, RVAAP-66 Facility-Wide Groundwater Project Management Plan, Response to Ohio EPA Comments" document. The document was received at Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on November 2, 2011. The document was prepared for the U.S. Army Corps of Engineers (USACE) – Louisville District, by Environmental Quality Management, Inc. (EQM), under contract No. GS-10F-0293K.

All comments have been adequately addressed. Please forward all replacement pages, covers, etc. If you have any questions, please call me at (330) 963-1207.

Sincerely,

Vicki Deppisch
Hydrogeologist/Project Coordinator
Division of Environmental Response and Revitalization

VD/kss

cc: Eileen Mohr, Ohio EPA, NEDO, DERR

ec: Katie Tait, OHARNG RTLS
Glen Beckham, USACE Louisville
Mike Eberle, Ohio EPA, NEDO, DERR
Todd Fisher, Ohio EPA, NEDO, DERR
Nancy Zikmanis, Ohio EPA, NEDO, DERR
Conni McCambridge, Ohio EPA, NEDO, DDAGW

Maj. Ed Meade, OHARNG RTLS
John Miller, EQM
Mark Krivansky, AEC
Mark Nichter, USACE Louisville

John Miller

From: Nichter, Mark W LRL <Mark.W.Nichter@usace.army.mil>
Sent: Monday, October 31, 2011 9:38 AM
To: John Miller
Cc: Patterson, Mark C Mr CIV USA OSA; Harriz, Kim Ms CIV NG NGB ARNG; Tait, Kathryn S Ms CIV NG OHARNG; Beckham, Glen LRL
Subject: RE: USACE Review Comments - PBA-11 Groundwater (RVAAP-66) Semi-Annual Monitoring Addendum (Ravenna) (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

John - I have reviewed EQM's responses and they look fine. Thanks - Mark

Mark W. Nichter, P.G. | Environmental Compliance (CELRL-ED-E-C) | Louisville District USACE | 600 Dr. Martin Luther King Jr. Place, Rm 351 | Louisville, KY 40202-2232 | T: 502.315.6375 | M: 502.418.8449 | F: 502.315.6309 | mark.w.nichter@usace.army.mil

-----Original Message-----

From: John Miller [<mailto:jmiller@eqm.com>]
Sent: Friday, October 28, 2011 8:29 AM
To: Nichter, Mark W LRL
Cc: Patterson, Mark C Mr CIV USA OSA; Harriz, Kim Ms CIV NG NGB ARNG; Tait, Kathryn S Ms CIV NG OHARNG; Beckham, Glen LRL
Subject: Re: USACE Review Comments - PBA-11 Groundwater (RVAAP-66) Semi-Annual Monitoring Addendum (Ravenna) (UNCLASSIFIED)

Mark: attached are EQM's responses to the comments on the referenced document.
Thanks, John

On 10/24/2011 3:44 PM, Nichter, Mark W LRL wrote:

> Classification: UNCLASSIFIED
> Caveats: NONE
>
> John - The USACE has completed its review of the above-referenced
> preliminary-draft document. Our Comment Response Table is attached
> for your review and comment. Should you have any questions, please
> contact me at your convenience. - Mark

>
> _____
> Mark W. Nichter, P.G. | Environmental Compliance (CELRL-ED-E-C) |
> Louisville District USACE | 600 Dr. Martin Luther King Jr. Place, Rm
> 351 | Louisville, KY 40202-2232 | T: 502.315.6375 | M: 502.418.8449 |
> F: 502.315.6309 | mark.w.nichter@usace.army.mil

>
>

>
>
> Classification: UNCLASSIFIED
> Caveats: NONE
>

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

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Classification: UNCLASSIFIED
Caveats: NONE

FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RV AAP-66 FACILITY-WIDE GROUNDWATER
PROJECT MANAGEMENT PLAN (PMP)
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE
 EQM PMP - Submitted 30 August 2011
 USACE CRT – Submitted 16 October 2011

Comment Number	Page No. / Line No.	New Page or Sheet	Comment	Recommendation	Response
<i>Army (Mark Nichter)</i>					
1	ii / 22-23		The Table of Contents is incorrect.	Please add section "7.4 Payable Milestones" to the Table of Contents.	Agreed. Please clarify if this section is to be included in the Ohio EPA submittal.
2	Entire Document		The use of both acronyms EQM and EQ for Environmental Quality Management is improper and confusing.	Revise accordingly to use either EQM or EQ consistently throughout the document.	The typographical error will be corrected to indicate EQM throughout the plan
3	iv and v		The Acronyms and Abbreviations list is incomplete.	Please add the following acronyms that appear in the subject document; however, do not appear on the Acronyms and Abbreviations list: FWGWMPP, RI, FFP, DoD, EPA, QASP, POP, SSHP, PVC, RFI, PP, ID, SOW, QSM, SAIC, CEC, GIS, EQ.	Agreed. The acronyms will be added to the list.
4	2 / 7		The Acronym FWGWMP is incorrect.	Revise the acronym as follows, "Facility-Wide Groundwater Monitoring Program Plan (FWGWMPP)"	Agreed.
5	11 / 43		The acronym for USACE Contracting Officer is incorrect.	The USACE uses the acronym of "KO" for the Contracting Officer. Revise both locations on line 43, and elsewhere in the subject document.	Agreed.

**FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
 RVAAP-66 FACILITY-WIDE GROUNDWATER
 PROJECT MANAGEMENT PLAN (PMP)
 RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
 COMMENT RESPONSE TABLE
 EQM PMP - Submitted 30 August 2011
 USACE CRT – Submitted 16 October 2011**

	<p>The Milestone/CLIN structure proposed by EQM appears to be well thought out, and has effectively included the major milestone dates presented in Section 4.3 of the USACE's Performance Work Statement for this project. However several modifications to the Milestone/CLIN structure are recommended to assist EQM in achieving timely payments for the subject work.</p>	<p>The USACE recommends that EQM modify "Milestone 2" to separate specific efforts. First, we recommend EQM develop a sub-CLIN for approval of the "FWGWMP to Install New Wells" document. Secondly, we recommend EQM develop another sub-CLIN for "completion of the new well installations and well development." Thirdly, we recommend another sub-CLIN be developed for completion and approval of a report documenting the installation of the new wells. The "Milestone 2" sub-CLINs should be paid to EQM under a 20/60/20 percent structure, respectively.</p> <p>Our other recommendation pertains to a more strategic breakdown of the payments under each Milestone/CLIN.</p> <p>The USACE recommends the payments be broke down (where possible) into a 60/20/20 structure to assist EQM in the receipt of more timely payments. The USACE recommends a payment of 60% be made upon the Army's approval of "preliminary draft" documents. An additional 20% payment can be made upon EQM's receipt of Army approval/Ohio EPA acceptance of "draft" documents, and the remaining 20% payment can be made upon the receipt of Army approval/Ohio EPA acceptance of "final" documents.</p>
		<p>EQM has revised the milestone payment structure as follows:</p> <ol style="list-style-type: none"> 1. Milestone 1 has been revised to reflect a payment schedule of 60% payment upon approval of the draft reports and 40% payment upon approval of the final reports. 2. Milestone 2 has been revised to include the suggested 20/60/20 percent payment structure. 3. Milestones 3, 4, 8, 9, and 11 have been revised to include the suggested 60/20/20 percent structure for payment upon approval of the preliminary draft, draft, and final documents respectively. 4. Milestone 6 has been revised to include a 30/30/20 percent structure for payment upon completion of the field work associated with the RI, and subsequent approval of the preliminary draft, draft, and final documents respectively. 5. Milestones 5, 7, and 10 have been revised to include a 10% structure for payment upon the submittal of the draft Annual groundwater report by December 15 of each calendar year of the contract and a 20% payment for approval of the final Annual groundwater report. The remaining 70% payment is divided between the submittal and approval of the preliminary draft, draft, and final semiannual groundwater reports. 6. Milestone 12 has been revised to divide the total price for Milestone 12 equally between the 2 proposed monitoring events with payment based on the suggested 60/20/20 percent structure upon approval of the preliminary draft, draft, and final documents respectively.
		<p>A copy of the revised, proposed payment schedule is attached to these responses.</p>

FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RVAAP-66 FACILITY-WIDE GROUNDWATER
PROJECT MANAGEMENT PLAN (PMP)
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE
EQM PMP - Submitted 30 August 2011
USACE CRT – Submitted 16 October 2011

7	12 / Table 3-1	<p>The Milestone/CLIN structure proposed by EQM for CLIN 0003 appears to be well thought out, and has effectively included the major milestone dates presented in Section 4.3 of the USACE's Performance Work Statement for this project. However several modifications to the Milestone/CLIN structure are recommended to assist EQM in achieving timely payments for the subject work.</p>	<p>An annual payment for annual groundwater monitoring events does not appear to be an efficient form of payment. [Note: Payments are made as presented and accepted on the approved milestone structure.]</p> <p>The USACE recommends that EQM consider further breakdown of the sub-CLINs (under CLIN 0003) in order to receive payments for individual groundwater monitoring events (where applicable and appropriate).</p>	See response to Comment No. 6.
8	27 / 11	<p>The acronym "RVAA-66" is incorrect or misspelled.</p>	<p>Revise this acronym to say "RVAAP-66."</p>	This typographical error will be corrected.
9	12 / Table 3-1	<p>The USACE's Technical Manager's last name is spelled incorrectly. The correct spelling is "Nichter."</p>	<p>Please correct this error.</p>	This typographical error will be corrected.
10	30 / Section 5	<p>As recommended in Comment No. 6, the USACE believes the development and completion of a simple letter report documenting the installation of new wells may be necessary under "Milestone 2." Various State agencies typically require notification of new well installations within 30 days of well completions.</p>	<p>Please include this report in your list of deliverables (as applicable).</p>	This letter report will be included on the list of deliverables.

FACILITY-WIDE GROUNDWATER MONITORING PROGRAM
RYAAP-66 FACILITY-WIDE GROUNDWATER
PROJECT MANAGEMENT PLAN (PMP)
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE
EQM PMP - Submitted 30 August 2011
USACE CRT – Submitted 16 October 2011

11	31 / Table 5-1		<p>The Preliminary-Draft documents are intended for review by all Army stake holders. As such, the OHARNG is typically copied on all Preliminary-Draft documents.</p>	<p>Unless otherwise specified by the OHARNG, please copy the OHARNG on all project-related preliminary-draft documents.</p>	<p>The OHARNG was inadvertently left off the list for preliminary draft distribution. This error will be corrected to include the OHARNG.</p>
12	Appendix A Project Schedule		<p>The proposed project schedule appears to be detailed and complete. However, it was noted that the Ohio EPA has been provided with less than 45 days to review and approve the “final” documents. Please note that the Ohio EPA has recently notified the Ravenna stake holders that all documents will now require the full 45 days for their review.</p>	<p>Please revise accordingly (as applicable and appropriate) or provide justification for the shorter review periods.</p>	<p>The requirement for a full 45 days approval of final documents does not appear to be consistent with the recent Ohio EPA requirement that all documents be finalized within 30 days of receipt of Ohio EPA comments on draft documents (i.e., the response to comments is due within 15 days and the revised final document within 30 days). Per E. Mohr’s comments in a recent telephone conference call (July 12, 2011) it was indicated that the approval of the response to comments would come from Ohio EPA within 30 days of the issuance of the comments from Ohio EPA on the draft. EQM is aware that if the initial response to comments is not acceptable to the Ohio EPA the approval time may be prolonged, however for scheduling purposes it was assumed that the initial responses would be approved by the Ohio EPA.</p> <p>Please note that this is EQM’s understanding from the July 12, 2011 telephone conference. If we are in error we will revise the schedule accordingly.</p>