APPENDIX F

PROJECT QUALITY ASSURANCE SUMMARY REPORT

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CONTENTS

ACRONYMS

CQC	contractor quality control
EBG	Erie Burning Grounds
EPA	U. S. Environmental Protection Agency
FCO	field change order
GPL	GPL Environmental, Inc.
ID	identifier
IDW	investigation-derived waste
M&TE	materials and testing equipment
NCR	Nonconformance Report
QA	quality assurance
QC	quality control
RI	remedial investigation
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SOW	Statement of Work
USACE	U. S. Army Corps of Engineers

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F. PROJECT QUALITY ASSURANCE SUMMARY

This appendix presents the actions and methodologies undertaken to meet the quality assurance/quality control (QA/QC) goals for the Phase II remedial investigation (RI) at Erie Burning Grounds (EBG) at the Ravenna Army Ammunition Plant (RVAAP). These goals were established in the *Facility-wide Sampling and Analysis Plan (SAP) for the Ravenna Army Ammunition Plant* (USACE 2001) and the *Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Erie Burning Grounds* (USACE 2003). The field investigation was conducted under one mobilization; this appendix addresses QA/QC goals for the entire project. These goals were implemented through project-specific procedures and requirements, the Science Applications International Corporation (SAIC) QA Program, and the U. S. Army Corps of Engineers (USACE), Louisville District QA requirements. A large portion of project QA was focused on field and analytical laboratory activities and project administration.

F.1 FIELD QUALITY ASSURANCE

F.1.1 Readiness Review

Field QA was initiated for the EBG Phase II RI in the readiness review held at the SAIC Oak Ridge office on October 17, 2003. The purpose of the readiness review was to ensure that

- project documents and procedures were approved, controlled, and properly distributed;
- assigned personnel were trained or a schedule was established to conduct training;
- mobilization and site logistics were established;
- laboratories were ready to accept samples;
- subcontractors were ready to begin work; and
- QA systems were implemented.

All elements of the readiness review were completed prior to initiating field activities and were approved by the SAIC QA/QC Officer. Readiness review and project kickoff checklists provide documentation of this QA element and are maintained in the project file.

F.1.2 Procedures

Standard operating methods for field activities performed during the EBG Phase II RI are incorporated into the governing documents for the project. The Facility-wide SAP (USACE 2001) describes the overall approach and methodologies to be used for projects at RVAAP, and the Phase II RI SAP Addendum (USACE 2003) details project-specific requirements for field implementation. These documents were reviewed by USACE, Louisville District and by the Ohio Environmental Protection Agency prior to implementation. Clarifications and/or planned deviations from these methods were documented as field change orders (FCOs), and variances were documented as Nonconformance Reports (NCRs). Copies of the FCOs issued during the Phase II RI are attached to this appendix.

F.1.3 Training

Field team personnel were trained in all procedures applicable to their assigned tasks. Training was accomplished through a combination of classroom lectures, reading assignments, and on-the-job training. Surveillance performed by the project SAIC contractor quality control (CQC) representative provided assessments of worker proficiency and training effectiveness.

Training was documented by the completion of training records. The CQC representative completed performance documentation in the field after observing successful implementation of a procedure by a field team member. Copies of training records and surveillance reports were maintained in the project file. Copies of training records required for Occupational Safety and Health Administration and U. S. Department of Transportation compliance also were maintained in the field.

F.1.4 Equipment Calibration

Various types of measuring and testing equipment (M&TE) were used during the field investigation. All M&TE was categorized, assigned unique identifiers, and listed in an inventory in the M&TE logbook. Last and next calibration recall dates were also recorded. As appropriate, instruments were calibrated daily according to the manufacturer's instructions. Only equipment and standards having verifiable traceability to nationally recognized standards were used for calibration. Daily calibration activities and results were recorded in the M&TE logbook, as well as source information for all calibration standards and reagents.

F.1.5 Quality Control Samples

Field QC samples collected included trip blanks, equipment rinsate blanks, source water, and field duplicates. Field QA splits were collected as specified in the Phase II RI SAP Addendum pertaining to contractor CQC. Implementation of the CQC program in the field was done by the SAIC CQC representative. Appendix G presents an evaluation of data quality and analytical performance with respect to field QC results. Field QC data and analyses of QC samples are presented in Appendix H.

F.1.6 Field Records

Field data, observations, activities, and information were recorded in pre-formatted, bound field logbooks, with the exception of hydraulic conductivity tests (slug tests). The use of structured logbooks ensured that all necessary data were entered consistently. Logbook entries were checked for accuracy and completeness by independent reviewers. Critical and/or contract-required original records (e.g., sampling forms) were recorded in duplicate using carbonless paper. Other field records, which were collected and likewise maintained, included equipment/material certifications, boring logs, and air-bill forms. Slug test data were collected using automated data loggers and computers utilizing commercial software packages to store and analyze these types of data (WinSitu™ and AqteSolve™).

F.2 ANALYTICAL LABORATORY QUALITY ASSURANCE

SAIC subcontracted GPL Environmental, Inc. (GPL) of Gaithersburg, Maryland, to perform chemical analysis of samples collected during the Phase II RI. The selected laboratory is certified by the USACE, Missouri River Division, Mandatory Center of Expertise in Omaha, Nebraska. In addition, this laboratory was technically audited by SAIC prior to contract award. QA split samples were collected and submitted to an independent USACE QA laboratory, Severn Trent Laboratories Inc., located in North Canton, Ohio.

F.2.1 Readiness Review

Laboratory QA/QC activities were initiated during the readiness review. The readiness review ensured that (1) governing documents and approved analytical methods were controlled and properly distributed, (2) the laboratory was scheduled and ready to conduct the analysis, (3) logistical coordination was established between the laboratory and the field team, and (4) laboratory QA programs were consistent and compatible with the project requirements.

F.2.2 Procedures

Prior to initiation of analytical support for the Phase II RI, GPL and SAIC reviewed and negotiated a contract based on a comprehensive laboratory Statement of Work (SOW). The laboratory SOW detailed project-specific requirements, including the parameters to be measured, analytical methods, adherence to U. S. Environmental Protection Agency (EPA) SW-846 protocols, project quantitation goals (sensitivity), and data deliverables requirements. All laboratory comments and questions were resolved before analytical work proceeded.

F.2.3 Laboratory Quality Control

To document laboratory data quality and to measure the quality of the analytical process, laboratory QC samples and data verification/validation were employed. The results of laboratory QC are discussed in the Data Quality Control Summary Report (Appendix G). Analytical results of laboratory QC samples are included in the project file and form the basis of the data verification and evaluation process (Section F.2.5).

F.2.4 Laboratory Documentation

STL maintains comprehensive information regarding the entire analytical process. The laboratory delivered summary data packages and electronic deliverables consistent with those identified in the EPA SW-846 protocol to SAIC for validation and verification. Laboratory QC sample analyses were cross-referenced to the appropriate environmental field sample analyses in the laboratory deliverables.

F.2.5 Data Verification/Validation

Analytical data generated during this project were subjected to a rigorous process of data verification by SAIC. For verification of data, criteria were established against which the analytical results were compared and from which a judgment was rendered regarding the acceptability and qualification of the data (Appendix G). Upon receipt of data packages from each laboratory, the information was subjected to a systematic examination following standardized checklists and procedures to ensure content, presentation, administrative validity, and technical validity. Routine data changes were documented through data change forms. Data deficiencies or formal laboratory-related nonconformances were documented through an NCR process, as required.

F.3 QUALITY ASSURANCE DOCUMENTATION

Primary methods for documenting QA during the EBG Phase II RI include the completion of FCOs requiring USACE concurrence and NCRs generated in accordance with SAIC QA procedures. Copies of FCOs completed during the investigation are included in this appendix. Copies of NCRs are on record in the SAIC RVAAP project file.

F.3.1 Field Change Control

The FCOs were completed during the RI to request and document the rationale and approval for any departures from protocols specified in the approved Facility-wide SAP and EBG Phase II RI Addendum No. 1. Field changes provide clarification to the scope or refinement in the procedural approach to a specific field activity. All FCOs were reviewed and approved by designated technical representatives of USACE, Louisville District prior to implementation. None of the FCOs resulted in an adverse impact to

project quality, schedule, or scope. Copies of the approved FCOs are included in this appendix. The one FCO generated during the Phase II RI is as follows:

- FCO No. 001 explains why no Shelby tubes for geotechnical samples were collected from borings drilled for wells EBGmw-123 and -126.

F.3.2 Nonconformance Reports

To identify and correct conditions adverse to quality, as described in the field and laboratory QA plans, NCRs and associated corrective action reports were completed, as necessary. One NCR was initiated and closed. A summary of the actions or items that warranted the initiation of the NCR included the following:

- NCR-2004-RVAAP-001 noted that sample identification numbers were duplicated for samples EBG291and EBG292 dated for both October 28 and December 4, 2003. The October 28, 2003, sample identifiers (IDs) were assigned to surface soil samples collected, and on December 4, 2003, the sample IDs were used for investigation-derived waste (IDW) water samples collected. Since these sample IDs were used twice for two different types of media, then these sample IDs had two sets of data. To avoid duplication in the analytical database, two new sample IDs were chosen for the IDW water samples: EBG291IDW and EBG292IDW, respectively. Reasoning for the duplication was the lack of pre-populated labels for IDW collection. Future sampling events will include pre-populated labels for all anticipated samples. The NCR was closed on March 21, 2004.

F.4 REFERENCES

USACE (U. S. Army Corps of Engineers) 2001. *Facility-wide Sampling and Analysis Plan (SAP) for the Ravenna Army Ammunition Plant, Ravenna, Ohio,* DACA62-00-D-0001, DO CY 02, March.

USACE (U. S. Army Corps of Engineers) 2003. *Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ravenna, Ohio*, F44650-99-D-0007, ECAS 186, October.

FIELD CHANGE ORDERS

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84

Field Change Order (FCO)

FCO NO 0001

MODIFICATION NO. _____ DATE 10/28/03 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT ☒ ROUTINE

ADS NO. _____ CYWP NO. _____ CWBS NO. _____ ☒ MINOR O MAJOR O OTHER

REQUESTER IDENTIFICATION

NAME Martha Clough ORGANIZATION SAIC PHONE 330-405-5804

TITLE FOM SIGNATURE Martha Clough

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED O COST O SCOPE O MILESTONES O METHOD OF ACCOMPLISHMENT

PROGRAM SERVICE ORDER NO. _____ REVISION NO. _____ CAM SIGNATURE _____

PHONE _____

DESCRIPTION OF CHANGE

No SHELBY TUBES for GEOTECH SAMPLES COLLECTED FROM EBG mw-123 and EBGmw-126.

JUSTIFICATION

First subsurface drilling at Erie Burning Grounds. Due to exploratory nature of these borings to determine if bedrock would be encountered, there was no opportunity to collect shelby tube.

IMPACT OF NOT IMPLEMENTING REQUEST

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

COST ESTIMATE $ _____ ESTIMATOR SIGNATURE _____

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES ☒ NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 28OCT03

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

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