APPENDIX D

PROJECT QUALITY ASSURANCE SUMMARY

D. PROJECT QUALITY ASSURANCE SUMMARY

This appendix presents the actions and methodologies undertaken to meet the quality assurance (QA) goals for the project. These goals were established in the Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant (USACE, 1996) and the Phase II Remedial Investigation (RI) Sampling and Analysis Plan Addendum for Winklepeck Burning Ground (USACE 1998). These were implemented through project-specific procedures and requirements, the Science Applications International Corporation (SAIC) QA Program, and the U.S. Army Corps of Engineers - Louisville District QA requirements. A large proportion of project QA was focused on field and analytical laboratory activities and project administration.

D. 1 FIELD QUALITY ASSURANCE

D.1.1 Readiness Review

Field QA was initiated at the Ravenna Army Ammunition Plant (RVAAP) WBG Phase II RI readiness review held at the SAIC Oak Ridge offices on April 15, 1998. The purpose of the readiness review was to ensure that (1) all project documents and procedures were approved, controlled, and properly distributed; (2) all assigned personnel were trained or a schedule was established to conduct training; (3) the mobilization and site logistics were established; (4) the laboratories were ready to accept samples; (5) all other subcontractors were ready to begin work; and (6) the QA system was implemented. All elements of the readiness review were completed prior to initiating field activities.

D.1.2 Procedures

Standard operating methods for field activities performed during the Phase II RI at WBG are incorporated into the governing documents for the project. The Facility-Wide Sampling and Analysis Plan (USACE 1996) describes the overall approach and methodologies to be used for projects at RVAAP, and the Phase II Remedial Investigation Sampling and Analysis Plan Addendum for WBG (USACE 1998) details project-specific requirements for field implementation. These documents were reviewed and approved by USACE - Louisville District, and reviewed and commented on by the Ohio EPA prior to implementation. Clarifications and/or planned deviations from these methods have been documented as field change orders (FCOs), and variances have been documented as non-conformance reports (NCRs). Copies of the FCOs are attached to this Appendix.

D.1.3 Training

Field team personnel were trained in all procedures applicable to their assigned tasks. Training was accomplished by combinations of classroom lectures, reading assignments, and on-the-job training. Surveillance performed by an SAIC QA specialist provided assessments of worker proficiency and training effectiveness.

Training was documented by the completion of training records. Performance documentation was completed in the field by the QA specialist 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 and/or in the SAIC Central Records Facility (CRF). Copies of training records required for OSHA and DOT compliance also were maintained in the field.

D.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 manufacture'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.

D.1.5 Quality Control Samples

Field quality control (QC) samples, including trip blanks, equipment rinsate blanks, source water, field duplicates, and field QA splits were collected as specified in the Phase II Remedial Investigation Sampling and Analysis Plan Addendum for WBG (USACE 1998) pertaining to contractor chemical quality control. Implementation of the Contractor Chemical Quality Control program was observed by the SAIC QA specialist. Field QC data and analysis of QC results are presented in Appendix F.

D.1.6 Field Records

Field data, observations, activities, and information were recorded in pre-formatted, bound field logbooks. 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.

D.1.7 Surveillance and Audits

Surveillance of operations at RVAAP during the Phase II RI at WBG was conducted by SAIC. This surveillance assessed technical and quality-related activities including surface soil/sediment sampling, monitoring well installation, purging, and sampling, equipment decontamination, training and health & safety practices, and field record review. The WBG Phase II RI was also the subject of an internal QA audit, which reviewed records management and conformance with project document review practices and personnel training/qualification. The results of the surveillance and audit are documented as a QA Surveillance Report and QA Audit Report, copies of which are included in the project file. Discrepancies identified during these reviews are documented as NCRs.

D.2 ANALYTICAL LABORATORY QUALITY ASSURANCE

SAIC subcontracted an analytical laboratory, Quanterra, to perform chemical analysis for the WBG Phase II RI. The selected laboratory was qualified by the USACE - Missouri River Division (MRD). In addition, this laboratory was technically audited by SAIC prior to contract award.

D.2.1 Readiness Review

Laboratory QA 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.

D.2.2 Procedures

Prior to initiation of analytical support for the WBG Phase II RI, Quanterra and SAIC reviewed and negotiated a contract based on a comprehensive Statement of Work (laboratory SOW). The laboratory SOW represented and referenced project-specific requirements, including the parameters to be measured, the analytical methods to implement, adherence to USEPA SW-846 protocol, project quantitation goals (sensitivity), and data deliverables required. All laboratory comments and questions were resolved before analytical work proceeded.

D.2.3 Laboratory Quality Control

To document laboratory data quality and to measure the quality of the analytical process, laboratory quality control samples and data verification/validation were employed. The results of laboratory QC are discussed in the project data quality assessment (Appendix F). Analytical results of laboratory QC samples are included in the project file and form the basis of the data validation and verification process.

D.2.4 Laboratory Documentation

The laboratory 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.

D.2.5 Data Verification/Validation

Analytical data generated during this project have been subjected to a rigorous process of data validation and verification. Criteria were established against which the analytical were compared and from which a judgment was rendered regarding the acceptability and qualification of the data. 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. All deficiencies in the data were documented through the Analytical Data Nonconformance Report (ADNCR) program.

D.3 QUALITY ASSURANCE DOCUMENTATION

Primary methods for documenting QA during the WBG Phase II RI include the completion of Field Change Orders (FCOs) and Nonconformance Reports (NCRs). Copies of FCOs completed during the investigation are included at the back of this appendix. Copies of NCRs are on record in the SAIC RVAAP project file.

D.3.1 Field Change Control

Field changes were implemented during the RI to address changes to the approved Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant (USACE 1996) and the Phase II Remedial Investigation (RI) Sampling and Analysis Plan Addendum for Winklepeck Burning Ground (USACE 1998) necessitated by field conditions. Field changes implemented were all minor in scope, providing clarification or refinement in the procedural approach to a specific field activity. All FCOs were reviewed and approved by designated 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 eleven approved FCOs are included in Attachment D.1.

The purpose of most of the FCOs was to request and document changes to the approved plans. There were eleven issues not anticipated or not identified during project planning. Five of these were clarifications or corrections to planned methodologies. For example, FCO-004 provides clarification of SAP Addendum requirements for the number and placement of geotechnical soil samples in Section 4.2.2.4. The remaining six FCOs represented revisions to a planned method or to a strategy for locating samples. For example, FCO-007 and -011 amended the SAP Addendum, Section 4.2.2.1, to allow analysis of several soil samples for propellants nitrocellulose, nitroglycerine, and nitroguanidine.

D.3.2 Nonconformance Reports

To identify and correct conditions adverse to quality as described in the field and laboratory QA plans, NCRs, ADNCRs, and corrective action reports (CARs) were completed, as necessary. Between project initiation and December, 1998, 2 NCRs, 1 ADNCR, and 0 CARs were completed. During the WBG Phase II RI, NCRs were initiated both during the QA surveillance and by the laboratory coordinator when a nonconformance occurred. The ADNCR and both NCRs initiated during the project have been corrected and/or closed.

A summary of the actions or items that warranted the initiation of ADNCRs and NCRs included:

- Six samples were collected for metals and explosives analysis, but based on field observations indicating organics contamination, the USACE PM requested the samples be analyzed for VOCs and SVOCs instead. As the samples were not originally planned for organic analyses, the samples were collected from composited material and the sample jars subsequently taped. This is in conflict with standard requirements for the collection of VOC samples, and the tape was removed from the jars. The subject samples were sent to the lab for VOC analyses as requested by the client. The analytical data went through the standard validation process. While compositing of samples may have allowed some organic compounds to volatize, the results would have been flagged "J" (estimated). The taping of the sample jars would not have impacted the results other than elevated toluene readings. As such, it was determined that the data was usable and did not need to be rejected.

- An inconsistency was noted between the EDD and Form 1 for sample WB0750 (2,4-DNT). EDD was correct, and corrected Form I's were prepared.

- Thallium values reported for Phase II WBG soils and sediments were inaccurate. The MDL used to report the data was 0.5 mg/kg wet weight; it should have been 0.65 mg/kg dry weight. The lab needs to correct all affected data and re-report this data to the project. The

lab must also document that the other metal data has not been impacted due to any similar systematic causes. The laboratory has resubmitted corrected values on a dry weight basis. There is no impact to the report discussion or conclusion based on this change.

FIELD CHANGE ORDERS

Field Change Request (FCR)

FCR NO. 001 DATE INITIATED 4.14.98

PROJECT RVAAP PHASE II RI - WINKLEPECK BURNING GROUND

CONTRACT NO. DACA62-94-D-0029

REQUESTOR IDENTIFICATION

NAME S. SELECMAN ORGANIZATION SAIC PHONE 423.481.8761
TITLE PROJECT MGR - SAIC SIGNATURE

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED ○ Cost ○ Scope ○ Milestone ✓ Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION) PHASE II R.I. SAMPLING & ANALYSIS PLAN & QUALITY ASSURANCE PROGRAM PLAN (QAPP)
DESCRIPTION OF CHANGE:
IN TABLE 1-1 OF QAPP, THE NUMBER OF "USACE QA SPLIT SAMPLES" FOR GROUNDWATER/SURFACE WATER SHOULD BE ZERO (Ø) ON EVERY LINE, EXCEPT FOR PCBs/PESTICIDES (1) AND CYANIDE (1). TABLE 1-2: "USACE QA SPLIT SAMPLES" FOR GROUNDWATER SHOULD BE CHANGED FROM ZERO TO ONE (1) EACH FOR THE ANALYTES SHOWN, PER ATTACHED MARK-UP.

JUSTIFICATION: CORRECTS AN OVERLOOKED ERROR IN THE QAPP TABLES.

IMPACT OF NOT IMPLEMENTING REQUEST: INCORRECT NUMBERS & TYPES OF QA SAMPLES WOULD BE COLLECTED AND ANALYZED.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST: USACE SPLIT LABORATORY, SAMPLING TEAM, SAMPLE MGR.

COST ESTIMATE ($) NA ESTIMATOR SIGNATURE
PHONE DATE

PREVIOUS FCR AFFECTED ○ YES ✓ NO: IF YES, FCR NO.

CLIENT PROJECT MANAGER JOHN JENT DATE 4-21-98
CLIENT QA SPECIALIST DATE
SAIC H&S MANAGER SIGNATURE (IF APPLICABLE) NA DATE

Table 1-1. Phase II RI Site Background, RVAAP - Sampling and Analytical Requirements

Parameter	Methods	Field Samples	Field Duplicate Samples	Site Source Water[1]	Sampler Rinsates	Trip Blanks	Total A-E Samples	USACE QA Split Samples	OEPA QA Split Samples
Soils/Sediments									
Volatile Organics, TCL	SW-846, 8260A	10	1	-	-	-	11	1	-
Semivolatile Organics, TCL	SW-846, 8270B	44	5	-	-	-	49	3	-
Pesticides/PCBs, TCL	SW-846, 8081	10	1	-	-	-	10	1	-
Metals, TAL	SW-846, 6010A/7471	59	6	-	-	-	65	3	-
Cyanide	SW-846, 9013	59	6	-	-	-	65	3	-
Explosives	SW-846, 8330	0	0	-	-	-	0	0	-
Total Organic Carbon (TOC)		15	2	-	-	-	17	1	-
Grain Size, Moisture Content, Atterburg Limits	ASTM D422, D2216, D4310	42	-	-	-	-	42	-	-
Bulk Density, Porosity	ASTM D453, EM1110-2-1906	8	-	-	-	-	8	-	-
Groundwater/Surface Water									
Volatile Organics, TCL	SW-846, 8260A	2	1	2	-	1	6	~~1~~ 0	-
Semivolatile Organics, TCL	SW-846, 8270B	2	1	2	-	-	5	~~1~~ 0	-
Pesticides/PCBs, TCL	SW-846, 8081	2	1	2	-	-	5	1	-
Metals (total), TAL	SW-846, 6010A/7470	22	2	2	1	-	27	~~1~~ 0	-
Metals (dissolved), TAL	SW-846, 6010A/7470	15	1	2	-	-	18	~~1~~ 0	-
Cyanide	SW-846, 9013	37	3	4	1	-	45	~~1~~ 1	-
Explosives	SW-846, 8330	15	1	2	1	-	19	~~1~~ 0	-

[1] Site source waters = one potable water source and one ASTM water supply lot for the project.

Table 1-2. Phase II RI Winkelpeck Burning Ground, RVAAP - Sampling and Analytical Requirements

Parameter	Methods	Field Samples	Field Duplicate Samples	Site Source Water	Sampler Rinsates	Trip Blanks	Total A-E Samples	USACE Split Samples	Ohio EPA Split Samples
Soils/Sediments									
Semivolatile Organics, TCL	SW-846, 8270B	8	1	-	-	-	9	1	-
Metals, TAL	SW-846, 6010A/7471	116	12	-	-	-	128	7	-
Cyanide	SW-846, 9013	116	12	-	-	-	128	7	-
Explosives	SW-846, 8330	112	12	-	-	-	124	6	-
Groundwater									
Volatile Organics, TCL	SW-846, 8260A	9	1	-	-	3	13	1	-
Semivolatile Organics, TCL	SW-846, 8270B	9	1	-	-	-	10	1	-
Metals (total), TAL	SW-846, 6010A/7470	9	1	-	-	-	10	1	-
Metals (dissolved), TAL	SW-846, 6010A/7470	9	1	-	-	-	10	1	-
Cyanide	SW-846, 9013	18	2	-	-	-	-	1	-
Explosives	SW-846, 8330	9	1	-	-	-	10	1	-

Field Change Request (FCR)

FCR NO. 002 DATE INITIATED 4.14.98

PROJECT RVAAP PHASE II R.I. - WINKLEPECK BURNING GROUND

CONTRACT NO. DACA 62-94-D-0029

REQUESTOR IDENTIFICATION

NAME S. SELECMAN ORGANIZATION SAIC PHONE 423.481.8761
TITLE PROJECT MGR. SIGNATURE

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED ○ Cost ○ Scope ○ Milestone ◉ Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION) PHASE II R.I. SAMPLING AND ANALYSIS PLAN Section 4
DESCRIPTION OF CHANGE:
1. On page 4-1, text should read, "Fourteen monitoring wells will be installed...." - not four.
2. On page 4-32, text should read, "In addition, two samples of slag used throughout RVAAP...." not
3. Comments on human & health & ecological risk assessment approach & methodologies will be incorporated into the Phase II R.I. report.

JUSTIFICATION: Conditions for initiating field work reviewed by N.E. District office of Ohio EPA - corrects & clarifies existing Final SAP.

IMPACT OF NOT IMPLEMENTING REQUEST: Potential for field errors.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:

COST ESTIMATE ($) N/A ESTIMATOR SIGNATURE
PHONE DATE

PREVIOUS FCR AFFECTED ○ YES ◉ NO; IF YES, FCR NO.

CLIENT PROJECT MANAGER DATE 4-21-98
CLIENT QA SPECIALIST DATE
SAIC H&S MANAGER SIGNATURE (IF APPLICABLE) DATE

FCR NO. 003 DATE INITIATED 4.14.98

PROJECT RVAAP Phase II R.I. - WINKLEPECK BURNING GROUND

CONTRACT NO. DACA62-94-D-0029

REQUESTOR IDENTIFICATION

NAME S. SELECMAN ORGANIZATION SAIC PHONE 423.481.8761
TITLE PROJ. MANAGER SIGNATURE

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED ○ Cost ● Scope ○ Milestone ● Method of Accomplishment
AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION) Phase II R.I. SAMPLING AND ANALYSIS PLAN SECTION 4.
DESCRIPTION OF CHANGE:
SECTION 4 SPECIFIES WELL PURGING WILL BE ACCOMPLISHED VIA MICRO-PURGING ACCORDING TO OEPA GUIDANCE. INSTEAD, WELLS WILL BE PURGED PRIOR TO SAMPLING USING CONVENTIONAL PURGING METHODS (e.g., SUBMERSIBLE, NON-DEDICATED, MEDIUM-CAPACITY PUMPS).

JUSTIFICATION: COSTS FOR MICRO-PURGE EQUIPMENT NOT BUDGETED IN ORIGINAL COST PROPOSAL

IMPACT OF NOT IMPLEMENTING REQUEST: ADDITIONAL COST OF ~ $30,000 TO ACQUIRE LOW-FLOW PUMPING EQUIPMENT, TUBING, FITTINGS, AND CONTROLLERS.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST: FIELD SAMPLING TEAM.

COST ESTIMATE ($) SEE ATTACHMENT ESTIMATOR SIGNATURE
PHONE DATE

PREVIOUS FCR AFFECTED ○ YES ● NO: IF YES, FCR NO.

CLIENT PROJECT MANAGER DATE 4-21-98
CLIENT QA SPECIALIST DATE
SAIC H&S MANAGER SIGNATURE (IF APPLICABLE) DATE

FCO NO 004

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 4.24.98 WORK AUTHORIZATION _____

TYPE OF CHANGE Clarification PRIORITY O EMERGENCY O URGENT ~~O~~ ROUTINE

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

REQUESTER IDENTIFICATION

NAME K. DOMINIC ORGANIZATION SAIC PHONE 9374312239

TITLE FIELD MANAGER SIGNATURE K. Dominic

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE TABLE 4-3 AND SECTION 4.2.2.4 PHONE _____

Call for the following BACKGROUND geotechnical sampling: { Grab samples – 0-1' – 6; grab + shelby tubes – 1-3' – 6; grab + shelby tubes – 3-12' – 8

Errors are present in the text and tables, and are clarified, corrected, and modified as follows: Grab samples – 0-1' – 5; 1-3' – 5; 3-12' – 10.

shelby tubes – 8 total, taken in representative permeable & impermeable lithologies.

JUSTIFICATION Allows a greater number of characterization samples at depth, where variations in lithologies are likely to be greatest. Corrects redundancies in Table 4-3 and uncertainties in Sec. 4.2.2.4.

NOTE: These samples will be collected in the bedrock borings ONLY.

IMPACT OF NOT IMPLEMENTING REQUEST Incomplete geotechnical characterization of the deeper subsurface (aquifer + aquitard) lithologies.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST Well site sampling team.

COST ESTIMATE $ NA ESTIMATOR SIGNATURE _____

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES ~~O~~ NO

APPROVAL

PROJECT MANAGER SIGNATURE _____ DATE 4-25-98

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

FCO NO 005

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 4.27.98 WORK AUTHORIZATION _____

TYPE OF CHANGE Clarification PRIORITY O EMERGENCY O URGENT ✓ ROUTINE

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

REQUESTER IDENTIFICATION

NAME K DOMINIC ORGANIZATION SAIC PHONE 937.431.2239

TITLE Field Ops Mgr SIGNATURE Kelly L Dominic

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE Sections 4.4.1 and 4.4.2.1 PHONE _____
Surface water samples collected from WBG (Mac's Pond) will be analyzed as follows — filtered samples for TAL metals, cyanide; also unfiltered VOC, SVOC, and explosive samples. Background surface water samples will not be filtered prior to analyses — and unfiltered TAL metals, cyanide.

JUSTIFICATION Alleviates ambiguities in section 4.4 about which samples of surface water are to be filtered prior to analyses.

IMPACT OF NOT IMPLEMENTING REQUEST Sending filtered and unfiltered samples for metals + cyanide for every surface water sample will cause cost growth and is unnecessary for meeting project objectives.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST Field sampling team; sample manager.

COST ESTIMATE $ ✓ ESTIMATOR SIGNATURE _____

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES ✓ NO

APPROVAL

PROJECT MANAGER SIGNATURE _____ DATE _____

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

FCO NO 006

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 4/29/98 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT ⊘ ROUTINE

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

REQUESTER IDENTIFICATION

NAME KATHRYN DOMINIC ORGANIZATION SAIC PHONE 937-431-2239

TITLE FIELD OPS. MANAGER SIGNATURE Kathy L Dominic

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE OWING TO THE SMALLER-THAN-EXPECTED NUMBER OF WBG SOIL SAMPLES BEING SENT OFF SITE FOR LAB ANALYSIS OF EXPLOSIVES, CAPACITY EXISTS TO MAKE SURE THERE IS AT LEAST ONE CLP-QUALITY ANALYSIS OF A SURFACE SOIL SAMPLE FOR EACH PAD WHERE THERE WERE NO DETECTS OF EXPLOSIVES W/ THE FIELD METHOD. THIS ADDS 6 ANALYSES OF SURFACE SOILS TO THE 10 ALREADY SUBMITTED BECAUSE OF HITS + 15% NON-DETECTS = 16. PHONE _____

JUSTIFICATION # IMPROVES CHARACTERIZATION OF EACH PAD, EVEN THE ONES WHERE THE FIELD METHOD INDICATES NON-DETECTS (e.g. pads 5, 40, 61, & Decon. Furnace), WITH VALIDATABLE LABORATORY DATA. ALLOWS CHARACTERIZATION OF

IMPACT OF NOT IMPLEMENTING REQUEST INABILITY TO CHARACTERIZE RISK FOR EXPLOSIVES THAT ARE NOT DETECTED BY FIELD METHOD. POTENTIAL DATA GAPS IN NATURE + EXTENT DETERMINATIONS.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST FIELD TEAMS, SAMPLE MGR, OFF-SITE ANALYTICAL LAB.

COST ESTIMATE $ 880 ESTIMATOR SIGNATURE K Dominic
6 analyses x 145** = 880

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES ⊘ NO

APPROVAL

PROJECT MANAGER SIGNATURE John R Grant DATE 4 MAY 98

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

FCO NO 007

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 05/05/98 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME Mike Kludezjs ORGANIZATION SAIC PHONE _____

TITLE Field Ops. Manager SIGNATURE [signature]

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE PHONE _____

IN MODIFICATION TO SECT. 4.2.1.1 OF THE SAP ADDENDUM, 25 SOIL SAMPLES WILL BE ANALYZED FOR NITRO-GUANIDINE, NITRO CELLULOSE, AND NITROGLYCERIN AS SHOWN IN THE ATTACHED TABLE. IN ADDITION, 10 GROUNDWATER SAMPLES FROM WBG WILL BE SUBMITTED FOR THESE ANALYTES. THESE ARE IN ADDITION TO ALREADY PLANNED ANALYSES. (ALSO SEE ATTACHED NOTE)

JUSTIFICATION

ANALYSES TO BE ADDED WERE INADVERTENTLY OMITTED FROM FR THE PROJECT SOW AND SAMPLING AND ANALYSIS PLAN. ADDITION OF THESE HAS BEEN REQUESTED BY JOHN JENT.

IMPACT OF NOT IMPLEMENTING REQUEST

SAMPLES WOULD NOT BE CHARACTERIZED AS INTENDED.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

FIELD TEAM, LABORATORY, VALIDATORS, DATA USERS

MK 5/5/98

COST ESTIMATE $ ~~$625.00~~ $625.00* ESTIMATOR SIGNATURE [signature]

*ANALYTICAL COST ONLY 35 @ $295/SAMPLE MK 5/5/98

PHONE (615) 867-3548 DATE 5/6/98

PREVIOUS FC AFFECTED O YES ✓ NO

APPROVAL

PROJECT MANAGER SIGNATURE [signature] DATE MAY 6, 1998

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Site ID	SAIC Sample ID	Sample Location	Site Type	Depth	Date	Time	Matrix	Field EXP.	Explosives	TAL Metals	CN	SVOCs	VOCs	PCB/Pesticides	TOC	Geotech	TNT	RDX	Lab COC
WBG	WB0691	Pad 5	SURF	0-1'	4/23/98	1112	SO	x	x	x	x								Q006
WBG	WB0693	Pad 6	SURF	0-1'	4/23/98	1023	SO	x	x	x	x	x							Q006 Q007
WBG	WB0696	Pad 37	SURF	0-1'	4/23/98	0858	SO	x	x	x	x					x		o	Q006 Q007
WBG	WB0697	Pad 38	SURF	0-1'	4/23/98	0918	SO	x	x	x	x								Q006 Q007
WBG	WB0702	Pad 40	SURF	0-1'	4/23/98	1356	SO	x	x	x	x								Q006 Q007
WBG	WB0705	Pad 58	SURF	0-1'	4/23/98	1315	SO	x	x	x	x								Q006 Q007
WBG	WB0706	Pad 59	SURF	0-1'	4/22/98	1541	SO	x	x	x	x								Q005
WBG	WB0711	Pad 60	SURF	0-1'	4/22/98	1450	SO	x	x	x	x	x					o		Q005
WBG	WB0715	Pad 61	SURF	0-1'	4/22/98	1344	SO	x	x	x	x								Q005
WBG	WB0718	Pad 62	SURF	0-1'	4/22/98	1245	SO	x	x	x	x								Q005 Q007
WBG	WB0723	Pad 66	SURF	0-1'	4/21/98	1358	SO	x	x	x	x					x			Q005 Q007
WBG	WB0729	Pad 67	SURF	0-1'	4/22/98	0957	SO	x	x	x	x						o		Q005
WBG	WB0730	Pad 68	SURF	0-1'	4/22/98	1021	SO	x	x	x	x					x	o		Q005
WBG	WB0731	Pad 68	SURF	0-1'	4/22/98	1035	SO	x	x	x	x						o		Q005
WBG	WB0733	Deac. Furnace	SURF	0-1'	4/23/98	1446	SO	x	x	x	x								Q006
WBG	WB0750	Pad 66	BORE	2-4'	4/24/98	1035	SO	x	x	x	x						o		Q006
WBG	WB0751	Pad 66	BORE	4-5'	4/24/98	1057	SO	x	x	x	x						o		Q006
WBG	WB0768	Pad 66	SURF	0-1'	4/29/98	0824	SO	x	x	x	x						o	o	Q008
WBG	WB0770	Pad 67	BORE	2-4'	4/28/98	1218	SO	x	x	x	x						o		Q008
WBG	WB0869	Pad 60	SURF	0-1'	4/22/98	1450	SO		x	x	x	x							Q005
WBG	WB0868	Pad 68	SURF	0-1'	4/22/98	1035	SO		x										Q005

PROCEDURES FOR ASSESSING RESIDUAL PROPELLANT (NITROGLYCERIN, NITROCELLULOSE + NITROGUANIDINE)

WERE NOT INCLUDED IN THE DELIVERY ORDER SOW. SUCH CONTAMINATION IS DETECTED IN THE FIELD SCREENING TEST FOR RDX. ANALYTICAL TESTS, IN ADDITION TO CONVENTION EXPLOSIVE TESTS, ARE THUS TO BE CONDUCTED ON:

- ANY SURFACE OR SUBSURFACE SAMPLE THAT HAS A FIELD SCREEN DETECT FOR TNT OR RDX (FOR NATURE + EXTENT PURPOSES);
- AT LEAST ONE (1) SURFACE SAMPLE FROM EACH OF 14 PADS (FOR QA + RISK ASSESSMENT PURPOSES), AND
- ON EACH GROUNDWATER SAMPLE FROM THE WITHCLEFICK FIVE(5) NEW WELLS + FOUR(4) EXISTING RCRA WELLS + ONE(1) QA (FOR EXTENT + RISK ASSESSMENT PURPOSES).

FCO NO 008

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 5/6/98 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME Mike Knidrejs ORGANIZATION SAIC PHONE _____

TITLE Field Ops Manager SIGNATURE [signature]

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE PHONE _____

2 PROPOSED SLAG SAMPLES FOR METALS & CYANIDE ANALYSIS ADJACENT ~~TO~~ PADS 65 AND 70 WILL INSTEAD BE COLLECTED FROM SLAG FOUND AT PAD 37.

JUSTIFICATION

SAMPLING AT PADS 65 AND 70 IS IMPRACTICAL DUE TO THE PRESENCE OF DENSE ~~SE~~ AGGREGATE COVERING THE SAMPLE LOCATIONS.

IMPACT OF NOT IMPLEMENTING REQUEST

SAMPLES MAY NOT BE COLLECTED

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

SAMPLE TEAM, DATA USERS

COST ESTIMATE $ None ESTIMATOR SIGNATURE [signature]

PHONE (415)867-3548 DATE 5/6/98

PREVIOUS FC AFFECTED O YES O NO

APPROVAL

PROJECT MANAGER SIGNATURE [signature] DATE 5/6/98

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 009

MODIFICATION NO. ______ DATE 5/6/98 WORK AUTHORIZATION ______

TYPE OF CHANGE ______ PRIORITY O EMERGENCY O URGENT O ROUTINE

ADS NO. ______ CYWP NO. ______ CWBS NO. ______ O MINOR O MAJOR O OTHER

REQUESTER IDENTIFICATION

NAME MIKE KLUDZEJS ORGANIZATION SAIC PHONE ______

TITLE FIELD OPS MANAGER SIGNATURE [signature]

BASELINE IDENTIFICATION

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

PROGRAM SERVICE ORDER NO. ------------ REVISION NO. ______ CAM SIGNATURE ______

DESCRIPTION OF CHANGE PHONE ______

12 ~~18~~ CONTINGENCY ~~SAMPLES~~ SURFACE AND SUBSURFACE SOIL SAMPLES SCOPED FOR WBG PADS ~~INCLUDED IN~~ (AS DESCRIBED IN THE SAP ADDENDUM) WILL INSTEAD BE COLLECTED FROM WBG PAD 70. AT 2 SAMPLING LOCATIONS AT PAD 70 SAMPLES WILL BE COLLECTED FROM 0-1 AND 2-4 FT AND ANALYZED FOR METALS & EXPLOSIVES. AT 3 OTHER LOCATIONS, SAMPLES WILL BE COLLECTED FROM 0-1 AND 2-4 AND ANALYZED FOR VOCS INSTEAD OF TAL AND SVOCS INSTEAD OF EXP. AT 2 OF THESE SAME 3 LOCATIONS, SAMPLES WILL ADDITIONALLY BE COLLECTED FROM 4-6 AND LIKEWISE BE ANALYZED FOR VOCS AND SVOC INSTEAD OF TAL & EXP.

JUSTIFICATION

JUSTIFICATION: 13 CONTINGENCY SAMPLES WERE NOT USED AT OTHER PADS BECAUSE OF QUANTITY OF SCREENING NON-DETECTS. SAMPLES ARE TO BE COLLECTED AT PAD 70 DUE TO THE PRESENCE OF SUSPECT MATERIALS OBSERVED AT PAD 70. VOCS + SVOCS ARE TO BE ANALYZED INSTEAD OF TAL & EXP IN SELECT SAMPLES DUE TO THE OBSERVANCE OF HYDROCARBON ODORS.

IMPACT OF NOT IMPLEMENTING REQUEST

- CONTIGENCY SAMPLES WOULD GO UNUSED AND POTENTIAL CONTAMINATION AT PAD 70 WOULD REMAIN UNINVESTIGATED.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

FIELD TEAM, LABORATORY, DATA VALIDATORS, DATA USERS

COST ESTIMATE $ ~~300.00~~ 160.00* ESTIMATOR SIGNATURE [signature]

*EQUALS DIFF. BETWEEN COST OF SVOC ANALYSIS ($190) AND EXP. ANALYSIS ($145) + CYANIDE ($25) × 8; VOC $ = TAL $ MK 5/6/98

PHONE (615)867-3548 DATE 5/6/98

PREVIOUS FC AFFECTED O YES O NO

APPROVAL

PROJECT MANAGER SIGNATURE [signature] DATE 5/6/98

QAS REVIEW ______ DATE ______

TIME FROM INITIATION TO ACTION ______

FCO NO 010

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 05/07/98 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME MIKE KLIDEES ORGANIZATION SAIC PHONE (615)867-3548

TITLE FIELD OPS. MANAGER SIGNATURE [signature]

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE AND 2-4FT PHONE _____

THE 0-1 FT BGS ASOIL SAMPLES FROM STA. CONTINGENCY STA. WBGSSIGB WERE FIELD SCREENED AT FOR EXPLOSIVES AT X VALUES > 1PPM. AT THE DIRECTION OF THE USACE PROJECT MANAGER (JOHN IENT) A SAMPLE FROM 4-6 FT WILL NOT BE COLLECTED.

JUSTIFICATION

WATER LEVELS IN WELLS NEAR WBGSSIGB INDICATE THAT THE WATER TABLE MAY BE ENCOUNTERED W/IN THE 4-6 FT INTERVAL.

IMPACT OF NOT IMPLEMENTING REQUEST

SAMPLE MIGHT BE COLLECTED FROM THE SATURATED ZONE WHICH WOULD MAKE THE USEFULLNESS OF THE DATA QUESTIONABLE

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

FIELD SAMPLING TEAM, DATA USERS

COST ESTIMATE $ 180.00 ESTIMATOR SIGNATURE [signature]

COST OF TAL (10S) + CYANIDE (25) + EXP (145) ANALYSES. PHONE (615)867-3548 DATE 5/7/98

PREVIOUS FC AFFECTED O YES O NO

APPROVAL

PROJECT MANAGER SIGNATURE [signature] DATE 5/7/98

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

FCO NO -011

Field Change Order (FCO)

MODIFICATION NO. _____ DATE 05/08/98 WORK AUTHORIZATION _____

TYPE OF CHANGE _____ PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME MIKE KLIDZEJS ORGANIZATION JAIC PHONE (615)867-3548

TITLE FIELD OPS MANAGER SIGNATURE [signature]

BASELINE IDENTIFICATION

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

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

DESCRIPTION OF CHANGE PHONE _____

SAMPLE NUMBERS WB0927, WB0890, WB0935, WB0937, WB0773, WB0912, WB0918 WILL BE ANALYZED FOR NITROCELLULOSE, NITROGUANIDINE, AND NITROGLYCERYN IN ADDITION TO PLANNED ANALYSES PRESENTED IN SECT 4.2.1.1 OF THE SAP ADDENDUM. COST FOR FOUR (4) OF THESE EXTRA ANALYSES HAS BEEN INCORPORATED INTO THE COST ESTIMATE FOR FCC-007. THIS CHANGE ADDRESSES THE COST OF 3 ADDITIONAL ANALYSES.

JUSTIFICATION

PROPELLANT ANALYSES WERE INADVERTENTLY OMITTED FROM THE SOW AND SAMPLING AND ANALYSIS PLAN. ADDITION OF THESE HAS BEEN REQUESTED BY THE USACE PROJECT MANAGER (JOHN JENT).

IMPACT OF NOT IMPLEMENTING REQUEST

SAMPLES WOULD NOT BE CHARACTERIZED AS INTENDED

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

FIELD TEAM, LABORATORY, VALIDATORS, DATA USERS

COST ESTIMATE $ 825.00 ESTIMATOR SIGNATURE [signature]

*ANALYTICAL COST ONLY

$275 PER SAMPLE X 3 PHONE (615)867-3548 DATE 5/8/98

PREVIOUS FC AFFECTED X YES O NO

APPROVAL

PROJECT MANAGER SIGNATURE _____ DATE _____

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____