APPENDIX G
PROJECT QUALITY ASSURANCE SUMMARY

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G. 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 Load Line 2 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 2001a) and the *SAP Addendum No. 1 for the Load Line 2, 3, and 4 Phase II Remedial Investigation* (USACE 2001b). The field investigation was conducted under one mobilization; this appendix addresses QA/QC goals for the entire project (Load Lines 2, 3, and 4). 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.

G.1 FIELD QUALITY ASSURANCE

G.1.1 Readiness Review

Field QA was initiated for the Ravenna Load Lines 2, 3, 4 Phase II RI in the readiness review held at the SAIC Oak Ridge offices on July 19, 2001. 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.

G.1.2 Procedures

Standard operating methods for field activities performed during the Load Line 2, 3, and 4 Phase II RI are incorporated into the governing documents for the project. The Facility-wide SAP describes the overall approach and methodologies to be used for projects at RVAAP, and the *Phase II RI SAP Addendum* details project-specific requirements for field implementation. These documents were reviewed by the 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.

G.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.

G.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.

G.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 Contractor CQC program in the field was done by the SAIC CQC representative. Appendix H 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 I.

G.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™).

G.1.7 Surveillance and Audits

A comprehensive surveillance of field operations during the Load Lines 2, 3, and 4 Phase II RI was conducted on July 28 and 29, 2001, by the SAIC Engineering and Environmental Management Group (EEMG) QA Program in order to evaluate the implementation of project-specific QA requirements and EEMG QA procedures. This surveillance assessed the following field and administrative items:

- readiness review and project kickoff checklists;
- use of personal protective equipment (PPE);
- adherence to the SAP;
- well installation and field documentation;
- training records;
- health and safety requirements;
- preparation of logbooks;

- field and laboratory chain of custody (COC) forms generated through July 29, 2001;
- disposition of FCOs;
- field explosives laboratory operations;
- decontamination of sampling equipment; and
- management of investigation derived waste (IDW).

The surveillance found that the personnel and experience present during field work ensured adherence to, and implementation of, the SAP, the Phase II RI Addendum to the Facility-wide Health and Safety Plan, and QA procedures for this project. Readiness review and project kickoff checklists conducted by project management clearly defined and organized the completion of project goals. PPE was used appropriately. Soil sampling, monitoring well installation, and documentation were accomplished per the SAP. Training records were reviewed and found to be complete. Logbooks were found to be detailed and complete. Field and laboratory COC forms generated through July 29, 2001, were found to be complete. All FCOs were approved by the USACE technical representative or designee. Observation of the field laboratory demonstrated that a good system had been established for the colorimetric analyses. Decontamination was observed and found to be in compliance with the Facility-wide SAP and Phase II RI SAP addendum. IDW generated during the Phase II RI was observed and was handled in compliance with the site-specific waste management plan, as detailed in the Facility-wide SAP and Phase II RI SAP Addendum. One NCR resulted from the surveillance and is documented in Section G.3.2 of this appendix.

G.1.8 Standby Directive

A standby directive was issued on all fieldwork activities due to the terrorist attacks of September 11, 2001, which increased security measures implemented at RVAAP. Field operations were placed in a secure and compliant state on the morning of September 12, 2001, and all samples collected to that point had to be shipped by ground due to the grounding of all air travel. All project field records were stored in a secure building during standby. All rented field equipment was returned to vendors and field staff returned to home offices. Worked resumed on September 18, 2001, under increased security requirements.

G.2 ANALYTICAL LABORATORY QUALITY ASSURANCE

SAIC subcontracted Severn Trent Laboratories Inc. (STL) 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, GP Environmental, Inc., located in Gaithersburg, Maryland.

G.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.

G.2.2 Procedures

Prior to initiation of analytical support for the Phase II RI, STL 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.

G.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 project Quality Control Summary Report (Appendix H). Analytical results of laboratory QC samples are included in the project file and form the basis of the data verification and evaluation process (Section G.2.5).

G.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.

G.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 H). 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.

Independent third party data validation and evaluation of QA sample data was performed by a USACE data validation contractor (Lee A. Knuppel and Associates), as further discussed in Appendix H.

G.3 QUALITY ASSURANCE DOCUMENTATION

Primary methods for documenting QA during the Load Lines 2, 3, and 4 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.

G.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 Load Lines 2, 3, and 4 Phase II RI Addendum. 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 the 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. A summary of FCOs generated during the Phase II RI includes

- FCO No. 001 initiated analysis of hexavalent chromium (Cr^{+6}) for four sample locations around Load Line 2 Building DB-802.

- FCO No. 002 documented the sampling of LL2-182, which was previously scheduled as a contingency sampling point.

- FCO No. 003 reassigned the depth at which LL2-183 was sampled.

- FCO No. 004 documented the change of sample LL2-185 from a soil sample to a sediment sample.

- FCO No. 005 documented the move of sample LL2-212 from a ballast to a ditch location.

- FCO No. 006 documented the addition of Cr(VI) to the laboratory analyses of LL2-186, -187, and -188.

- FCO No. 007 reassigned sediment sample locations for storm sewers at LL2.

- FCO No. 008 called for re-sampling of LL3-051 at a different depth.

- FCO No. 009 documented the addition of laboratory analyses to samples LL2-248 and -177, and the addition of a sediment sample from a sewer line near DB-3.

- FCO No. 010 documented the need for rewording in the sampling and analysis plan.

G.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. Between project initiation and October 2001, one NCR was initiated and closed. A summary of the actions or items that warranted the initiation of the NCR included the following:

- NCR-2001-RVAAP-008 noted that sample tables in Chapter 5 of the SAP did not indicate that geotechnical samples were required for Load Lines 2, 3, and 4, but the SOW required collection of 20 disturbed surface soil samples for geotechnical analysis from each load line. There were no pre-printed labels for these samples so blank labels were prepared to collect the subject geotechnical samples. The sample point locations were recorded in the Sample Manager's project logbooks. Samples were collected and submitted for the requested analyses, and implementation of future internal technical reviews should be effective in preventing discrepancies by cross-checking written and tabulated sampling requirements. The NCR was closed at the time this report was written.

G.4 REFERENCES

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

USACE 2001b. *Sampling and Analysis Plan Addendum No. 1 for the Load Lines 2, 3, and 4 Phase II Remedial Investigation, Ravenna Army Ammunition Plant, Ravenna, Ohio*, F44650-99-D-0007, ECAS 186, July.

ATTACHMENTS

FIELD CHANGE ORDERS

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Field Change Order (FCO)

FCO NO 01

MODIFICATION NO. _____ DATE 7/25/01 WORK AUTHORIZATION _____

TYPE OF CHANGE Addition. PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE _____

TITLE Field Ops Manager SIGNATURE C Brad Richardson

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

The 4 sample locations proposed around LL2-building DB-802, (LL2-177, 178, 175, 176) were not scoped to have Cr+6 analysis conducted. John Jent request these 4 sample locations include ~~sample~~ MJB 7/25/01 Cr+6 analysis. Initially just the top sample (0-1').

JUSTIFICATION

These sample locations are around the Load Line 2 Building DB-802. This building contained activities which used chromic acid rinse for de-milling purposes

Therefore, these sample locations should be tested for Cr+6

IMPACT OF NOT IMPLEMENTING REQUEST

May miss any potential Cr+6 contamination in the DB-802 building area.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample crews, Sample manager, Analytical Lab.

COST ESTIMATE $ 140.00 ESTIMATOR SIGNATURE C Brad Richardson

PHONE 619-793-7600 DATE 7-25-01

PREVIOUS FC AFFECTED O YES ⊗ NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE John F. Jent DATE 7-25-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 02

MODIFICATION NO. _____ DATE 7/26/01 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 A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Mgr. SIGNATURE A Brad Richardson

BASELINE IDENTIFICATION Change : RVAAP Phase II RI. Table

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

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

DESCRIPTION OF CHANGE : Per John Jent (Client) PHONE _____
LL2-182 ~~added~~ as ditch sample near Kelly's Pond. This is a schedule "contingency" sample. But additional lab analysis will include SVOCs/PCBs/Pest. and VOCs and forced explosives

JUSTIFICATION
Client requests additional lab analysis because This is an important outfall location. ~~AMR~~ 7/26/01 Additional Results may be useful for risk purposes

IMPACT OF NOT IMPLEMENTING REQUEST
incomplete characterization of south outfall of LL2 This location is where storm water from LL 2's eastern tributary area exits site.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST
Sample Management
" Crew
Laboratory(s)

COST ESTIMATE $ ~~AMR 7/26/00 $670.00~~ ~~$944.00~~ ~~$1483.00~~ ESTIMATOR SIGNATURE A Brad Richardson
210 SVOC = ~~159~~ VOC = ~~150~~ 115
85 PCB = ~~522~~ Expl. = ~~339~~ 145
15 Pest = ~~104~~ PHONE 614-793-7600 DATE 7/26/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE J L P Jent DATE 7-26-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 03

MODIFICATION NO. _____ DATE 7/26/01 WORK AUTHORIZATION _____

TYPE OF CHANGE switch/change PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

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 "RVAAP Phase II RI" Table 5.1 PHONE _____

Contingency sample LL2-183 located in south culvert (south of DB802) inlet; depth change from 0-1' to 0-6". Add sample 1002 at this location from 6"-1.5'. Delete LL2-184 to pay for LL2-183-1002; added Cr+6 to 1002 ($35)

JUSTIFICATION

Added Cr+6 to LL2-183-1002 (0.5'-1.5') due to proximity of drainage inlet to Building DB-802 (chromic acid bath location).

IMPACT OF NOT IMPLEMENTING REQUEST

incomplete characterization of Cr+6 in sediments drained from DB-802

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management
Sediment Sampling Crew

COST ESTIMATE $ $35.00 ESTIMATOR SIGNATURE A Brad Richardson

PHONE 614-793-7600 DATE 7/26/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 7-26-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 04

MODIFICATION NO. _____ DATE 7/26/01 WORK AUTHORIZATION _____

TYPE OF CHANGE change/addition PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

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 RVAAP Phase II RI ; Table 5-1 PHONE _____

Contingency sample sample LL2-185 ; changed from soil sample To sediment sample. Added Cr +6.

JUSTIFICATION

Location of Contingency sample LL2-185 is culvert south and down stream of DB-802 (former chromic acid bath location). Added Cr +6 due to it's proximity to DB-802

IMPACT OF NOT IMPLEMENTING REQUEST

Possible incomplete characterization of Cr +6 in sediments drained from DB-802

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management.
Sediment Sampling Crew(s)

COST ESTIMATE $ 35,00 ESTIMATOR SIGNATURE A Brad Richardson

PHONE 614-793-7600 DATE 7/28/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE J W P Jr DATE 7-26-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 05

MODIFICATION NO. _____ DATE 7/26/01 WORK AUTHORIZATION _____

TYPE OF CHANGE change PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richards ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richards

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 RVAAP Phase II RI; Table 5-1 PHONE _____

RR Track DH (Ballast) sample (LL2-212) location moved to ditch west of SW corner of DB-802 and in now a sediment sample. Therefore sample #1157 will not be collected (ballast simple) and #1152 will be collected as 0'-1' sediment - Analytes unchanged

JUSTIFICATION

Client descided LL2-212 location (south of road) would be less applicable for Cr+6 characterization than the ditch sediment adjacet to DB-802 (chronic acid bath activities) : cost offsets $35.00 expense applyed to FCO #4

IMPACT OF NOT IMPLEMENTING REQUEST

Possibly incomplete characterization of Cr+6 in ditch adjacent to DB-802

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Manager
Soil/Sediment Samples

COST ESTIMATE $ ~~-$35.00~~ -$180.00 ESTIMATOR SIGNATURE A Brad Richards

PHONE 614-793-7600 DATE 7/26/01

PREVIOUS FC AFFECTED ☒ YES O NO This FCO (-35.00) offsets 35.00's for FCO #4

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE _____

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 06

MODIFICATION NO. _____ DATE 7/27/01 WORK AUTHORIZATION _____

TYPE OF CHANGE Addition PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED O COST O SCOPE O MILESTONES O METHOD OF ACCOMPLISHMENT vjb 8/23/01

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

DESCRIPTION OF CHANGE RVAAP Phase II RI; Table 5-1 PHONE _____

Contingency Samples LL2-186, 187 and 188 added Cr+6 to lab. analysis since they are located very near Building DB-802 which formerly had chromic acid bath activities.

JUSTIFICATION

Added Cr+6 due to proximity to DB-802 (former chromic acid bath activities).

IMPACT OF NOT IMPLEMENTING REQUEST

Possible incomplete characterization of Cr+6 in these soil samples

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management
Soil Sample crews)

COST ESTIMATE $ 105.00 ESTIMATOR SIGNATURE _____

Cr+6=35 PHONE 614-793-7600 DATE 7/27/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 7-27-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 07

MODIFICATION NO. _____ DATE 07/29/01 WORK AUTHORIZATION _____

TYPE OF CHANGE changes / Cr+6 add. PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

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 RVAAP Phase II RI Table 5-2 PHONE _____

D. ACR 5/29/01 Sediment Sample locations from Storm Sewers at LL2 changed as follows ① Inlet DB2 Replaced w/ Inlet C4 (this also has added Cr+6 analysis) LL2-235
② Inlet DB15 Replaced w/ Inlet DB14 (LL2-244)
③ MH 303 Replaced w/ MH 304 (LL2-254)

JUSTIFICATION These three (3) structures were collasped or otherwise inaccessable. Their replacements are similar structures. The additional Cr+6 for LL2-235 (Inlet C4) is due to its proximity to DB-802 (former chromic acid bath location)

IMPACT OF NOT IMPLEMENTING REQUEST

Incomplete characterization of LL2 storm sewers and Cr+6 impact near DB-802

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management & Laboratory
Sed. Sample Crew(s)

COST ESTIMATE $ 35,00 ESTIMATOR SIGNATURE A Brad Richardson

Cr+6 = 35 PHONE 614-793-7600 DATE 7/29/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE John P Jent DATE 07-29-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 08

MODIFICATION NO. _____ DATE 7/29/01 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 A Brad Richardson ORGANIZATION SAIC PHONE 614 793-7600

TITLE Field Manager SIGNATURE G Brad Richardson

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 RVAAP Phase II RI Table 5-6 PHONE _____

Resample Phase I location LL3-051 should be 0-1 ft instead of 0-0.5'.

JUSTIFICATION

The ~~7/29/01~~ Thicker sample should statistically be more representative. for characterization of COCs

IMPACT OF NOT IMPLEMENTING REQUEST

May have incomplete characterization at this location

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management,
Sed Sampling Crews.

COST ESTIMATE $ none ESTIMATOR SIGNATURE _____

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 7-29-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 09

MODIFICATION NO. _____ DATE 7/29/01 WORK AUTHORIZATION _____

TYPE OF CHANGE additions (3) PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

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 RVAAP Phase II RI SAP PHONE _____

(1) Sed sample LL2-248 will have Cr+6 added to its list of lab analyses.
(2) Soil sample LL2-177 will have VOCs & SVOC's added to list of lab analyses.
(3) Addition sample collected from storm sewer pipe (sediment only) near DB-3

JUSTIFICATION

(1) Outfall location is downgradient of DB 802 (former chromic acid bath)
(2) During sampling the PID indicated VOC at 100 ppm.
(3) Broken storm sewer pipe has 2-3 inch thickness of sediment. Most times the sample locations are scoured clear of sediments.

IMPACT OF NOT IMPLEMENTING REQUEST

(1) May result in incomplete characterization of COCs.
(2) " " " " " " " " "
(3) May miss good opertunity for good quality storm sewer sediment sample.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Sample Management.
Soil/Sed Sampling Crew(s)

Costing
Cr+6 = 35
VOC = 115
SVOC = 210
Add'l Sample = 475

COST ESTIMATE $ $ 835 ESTIMATOR SIGNATURE A Brad Richardson

PHONE 614-793-7600 DATE 7/29/01

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 7-29-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____

Field Change Order (FCO)

FCO NO 10

MODIFICATION NO. _____ DATE 07/30/01 WORK AUTHORIZATION _____

TYPE OF CHANGE change of U.P. PRIORITY O EMERGENCY O URGENT O ROUTINE

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

REQUESTER IDENTIFICATION

NAME A Brad Richardson ORGANIZATION SAIC PHONE 614-793-7600

TITLE Field Manager SIGNATURE A Brad Richardson

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: March 2001 Facility-Wide SAP PHONE _____

Section 4.3.2.3.11 Well Development: Change the time frame for developing Monitoring Well from "not sooner than 48 hours after (completion) ~~to 7/31/01~~ nor longer than 7days" to "not sooner than 48 hours".

JUSTIFICATION

No fluids are being injected or introduced to Monitoring Wells during their construction which would constitute the reasoning for starting development before longer than 7days.

IMPACT OF NOT IMPLEMENTING REQUEST

Would result in missing deadlines

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

Field Crew(s)

COST ESTIMATE $ NA ESTIMATOR SIGNATURE _____

PHONE _____ DATE _____

PREVIOUS FC AFFECTED O YES O NO

APPROVAL CLIENT PROJECT MANAGER SIGNATURE _____ DATE 7-30-01

QAS REVIEW _____ DATE _____

TIME FROM INITIATION TO ACTION _____