

**Quality Control Plan
Proposed Plan and Decision Document
PBOW Groundwater
Former Plum Brook Ordnance Works, Sandusky, Ohio**

Prepared By:

**Shaw E&I, Inc.
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Knoxville, Tennessee 139788**

Submitted to:

**U.S. Army Corps of Engineers, Nashville District
Post Office Box 1070
Nashville, Tennessee 37202-1070**

Revision 0

**Delivery Order DX16
IDIQ Contract W912QR-08-D-0013
Shaw Project Number 139788**

April 5, 2010

SIGNATURE PAGE

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Submitted By:



4/5/2011

**Steven T. Downey, P.E., PMP, RME, LEED AP
Project Manager
Shaw Environmental & Infrastructure, Inc.**

Date

Accepted By:



5-25-2011

**Kathy McClanahan
Technical Coordinator,
Environmental Management Branch
U.S. Army Engineer District, Nashville**

Date



5-25-2011

**Doug Mullendore
Chief, Environmental Restoration Branch
U.S. Army Engineer District, Nashville**

Date

Quality Control Plan
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Former Plum Brook Ordnance Works, Sandusky, Ohio
April, 2010

PROJECT OBJECTIVE AND TASKS

This Quality Control Plan (QCP) was prepared by Shaw Environmental and Infrastructure, Inc. (Shaw) in support of a Proposed Plan and Decision Document for the TNT and RWP Areas at the former Plum Brook Ordnance Works (PBOW) in Sandusky, Ohio, under Delivery Order (DO) DX16, IDIQ Contract W912QR-08-D-0013, for the Louisville A/E Environmental Services.

The purpose of this task order is to prepare a Proposed Plan and Decision Document for Groundwater at the TNT and Red Water Ponds (RWP) Areas of PBOW. The Proposed Plan will provide background information and rationale for the public and identify the preferred alternative for addressing groundwater contamination. Public review comments on all alternatives will also be solicited. The Decision Document will present the selected final remedy for groundwater and address public comments and concerns on the Proposed Plan and communicate how the public's comments and concerns are being addressed.

The scope of this task order includes 1) Preparation of a Quality Control Plan (QCP), 2) Preparation of a Proposed Plan and Decision Document, 3) Project Management, and 4) participation in two meetings.

The tasks required to complete this work include the following:

- Task 1: Preparation and Submittal of QCP
- Task 2: Preparation and Submittal of Draft Proposed Plan
- Task 3: Preparation and Submittal of Final Proposed Plan
- Task 4: Preparation and Submittal of Draft Decision Document
- Task 5: Preparation and Submittal of Final Decision Document
- Task 8: Project Management
- Task 9: Meetings.

Specific tasks identified in this scope modification include the following:

Task 1.0 – Preparation and Submittal of an Updated Quality Control Plan.

Shaw prepared this QCP based on requirements described in ER 1110-1-12, Quality Management and CEORD 1110-1-9, Quality Control. As part of the QCP development, Shaw incorporated a criteria management process to ensure standard details appropriate for the USACE requirements are developed, updated, and made available to all project stake holders and reviewers involved in this project. This QCP is an addendum to the Site-Wide Sample and Analysis Plan (SWSAP, prepared under contract No. W912DR-05-0026, DX10) which defines the quality verification activities for specific professional disciplines. This verification process will be implemented to ensure that the work output is acceptable and meets all requirements detailed in the SOW.

An independent review of documents and submittals, as well as other tasks presented in this QCP, shall be performed to verify that work is conducted in an acceptable manner and meets all the requirements detailed in the SOW and presented in Shaw’s proposal.

A verification statement shall be included with all products submitted to the Government under this project. The statement will be signed by the independent reviewers identified in the QCP, stating that they have reviewed the applicable document or product and that all internal comments have been resolved, thus completing the product for release to the Government. All comments generated by reviewers of a product or document, along with their resolution, shall be submitted with the verification statement. Should the independent review be conducted by individuals not identified for that activity by the QCP, an explanation of the variance and how quality was maintained despite the variation from the approved QCP will be provided with the verification statement.

Task 2.0 – Preparation and Submittal of the Draft Proposed Plan

Shaw will prepare a Proposed Plan for PBOW groundwater at the TNT and RWP Areas based on the final PBOW Groundwater FS, including FS Addendum. This Proposed Plan will be prepared in accordance with *A Guide to Preparing Superfund Proposed Plans, Record of Decision, and Other Remedy Selection Decision Documents* (EPA, 1999) and will be consistent with all applicable federal, state and local guidance and policy.

Task 3.0 - Preparation and Submittal of the Final Proposed Plan

Shaw will prepare response to comments concerning the Draft PBOW Groundwater Proposed Plan. The responses will be submitted to the USACE and OEPA for review prior to revising the document. Shaw will revise the draft Proposed Plan based on the

final response to comments and will prepare and submit the Final Proposed Plan. The Final Proposed Plan will be presented for Public Review.

Task 4.0 – Preparation and Submittal of the Draft Decision Document

Shaw will prepare a Decision Document for the PBOW groundwater at the TNT and RWP Areas. This Decision Document will be prepared in accordance with the current EPA (1999) Decision Document guidance and will be consistent with all applicable federal, state and local guidance and policy. This Decision Document will address and incorporate as appropriate all comments generated by the final version of the Proposed Plan, including those submitted during the public comment period and those specifically voiced during the public meeting. Comments received during the public meeting will be specifically included with responses in the Responsiveness Summary of the Decision Document.

Shaw will submit the Draft Decision Document in two versions: an internal draft and a subsequent external draft. The internal draft will be distributed for USACE review only and will be reviewed by CELRN, CELRH, and CEHNC-CX. Shaw will respond to USACE comments on the internal draft and submit responses to these comments. Once all comments on the internal Draft Decision Document are addressed to the satisfaction of CELRN, Shaw will incorporate the responses to comments into a revised Draft Decision Document which will be sent to the entire distribution list for review.

Task 5.0 – Preparation and Submittal of the Final Decision Document

Shaw will prepare responses to comments concerning the Draft PBOW Groundwater Decision Document. Shaw will submit these responses for review. The Draft Decision Document will be revised as necessary based on USACE review. Following resolution of the comments, Shaw will submit the Final PBOW Groundwater Decision Document.

Task 6.0 – Project Management

Project management includes labor necessary to manage the project and includes home office support services such as procurement, contracting, invoicing, and coordination.

Task 7.0 – Meetings

Shaw will attend two meetings tentatively scheduled to be held in Sandusky, Ohio.

PROJECT SCHEDULE AND MILESTONES

The project schedule and milestones are presented in Figure 1.

KEY SHAW PROJECT PERSONNEL

- **Project Manager** - Mr. Steven T. Downey will serve as Shaw's Project Manager.
- **Technical Lead** - Mr. Michael Gunderson will serve as the Technical Lead.
- **QA Manager** - Mr. Kenneth Martinez will serve as the Project QA Manager.
- **Project Chemist** - Mr. Eddie Weaver will serve as the Project Chemist.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) REVIEW

This section of the QCP summarizes the Shaw internal technical and external peer review. The Shaw QA program provides controls for the formal verification (checking) of documents such as calculations and the presentation of information in the form of drawings, logs, and tables. Review and necessary approvals are also cited for quality-related documents; however, during the course of a project or proposal, verification of technical decisions and concepts (such as interpretation of data and evaluation of results) is required in order that the project or proposal can proceed on a sound conceptual basis. The review will address the following questions where appropriate:

- During the project planning stage, have appropriate steps been implemented to satisfy the goals and objectives of the project?
- Are data of sufficient quality and properly interpreted so that conclusions can be justified and demonstrated?
- Are design parameters reasonable for the computations performed? What is the effect of variations of the assumptions upon the results?
- Do the results presented by Shaw in the form of a report, or other document, adequately represent the work performed and the conclusions reached? Do the results fulfill the objectives of the project?

The internal technical review process is used to verify these steps. Documents written during a project and indicated in the proposal will be subjected to peer review. The Shaw PM will complete a matrix of these documents on a delivery order basis and use it to obtain the required reviews.

A technical reviewer is selected based upon the following criteria:

- The reviewer must be independent of the project. The reviewer must be sufficiently informed regarding the project, but should not be making decisions that determine or affect the course of the project. The peer review process is an “outside” review of the project.
- The reviewer must be a person knowledgeable in the specific area of work, preferably a senior technical associate. Technical reviewers will be part of the Shaw organization.

At the conclusion of a technical peer review, the reviewer(s) will prepare written review comments, sign off on the Discipline Sign-Off Review form (Figure 2) and forward to the PM; a copy of these review documents will also be placed in the project files. Technical review comments will be responded to in writing by the preparer of the document, incorporated into the document as appropriate, and submitted with the document to the USACE.

External peer review will be performed on all draft project deliverables prior to issuance as final documents. It is anticipated that the external peer review will be performed, as a minimum, by the USACE and the OEPA. A formal response to peer review comments will be issued to all reviewing parties, documenting revisions made where appropriate to the draft deliverables; this does NOT apply to the Report of Finding prepared under this delivery order. All responses to the peer review comments will be coordinated with the USACE for their concurrence prior to incorporation. Final deliverables will be submitted after incorporating any pertinent comments that arise from peer review of the draft documents. Table 1 summarizes the preparation and review process for the required project deliverables.

FIELD ACTIVITY QA REQUIREMENTS

Field investigation activities will follow the procedures specified in the SSAP to ensure that project quality requirements are satisfied. Field activity QA will be implemented by performing project-specific training; properly preparing for field work before mobilization; issuing variances, nonconformance reports, and corrective action reports; and documenting field quality control in the investigation reports.

Field team members, including Shaw personnel and subcontractor personnel, will receive project-specific training before mobilization to the job site by reading the applicable work plans and procedures. Upon mobilization to the site, but prior to commencing field activities, all site personnel will attend the project kickoff meeting, which will consist of a review of all project requirements and objectives to ensure that the project team is fully aware of the goals of the PBOW investigations. Before initiating each days field work, all team members will participate

in a tailgate safety meeting (TSM) conducted by the Shaw Field Coordinator to address safety and quality issues pertinent to the activities to be performed. The TSM will be documented and all personnel will sign the attendance record. Worker training will follow the requirements specified in Shaw SOPs.

Prior to mobilization to the site, the Shaw PM, assisted by the Shaw Field Coordinator and the Shaw Analytical Coordinator, will examine project field work preparation requirements to ensure that all necessary arrangements, including personnel assignments, work plans, site entry/drilling permits, training, schedule, equipment rentals, supplies, subcontractors, have been accomplished for execution of the field effort in an efficient and effective manner. The Shaw PM and QAO must approve the project preparation prior to mobilization.

Changes or variances to the SAP, SSHP, QAPP, and/or site-specific work plans may be initiated either in the office or in the field as may be necessary. All variances will be noted on the Field Activity Daily Log (FADL) and will be formally recorded on the Variance Log. Variances will be approved by the Shaw QAO and the Shaw PM prior to implementation of the change. Variances that will affect the project scope, cost, or schedule will be submitted to the USACE for approval prior to implementation.

Nonconforming equipment, items, activities, conditions, and unusual incidents that could affect compliance with project requirements will be identified, controlled, and reported in a timely manner. A nonconformance is defined as a malfunction, failure, deficiency, or deviation that renders the quality of any item unacceptable or indeterminate. The originator (any Shaw employee) of a nonconformance report will describe the finding on the Nonconformance Report provided for this purpose and will notify the Shaw PM and QAO. Each nonconformance will be reviewed and a disposition will be issued for the item, activity, or condition. The disposition of a nonconformance will be documented and approved by the Shaw organization responsible for issuing the nonconformance. The QAO will concur with the disposition of the nonconformance prior to closure of the Nonconformance Report.

In addition, the Shaw PM will notify the USACE Technical Coordinator within 48 hours of significant nonconformances that could impact the project cost, schedule, or scope of work and will indicate the corrective action taken or planned.

SUBCONTRACTOR QA/QC REVIEW

Shaw has assigned personnel to monitor and review work performed by subcontractors in conjunction with this investigation. Mr. Steven T. Downey will serve as the principal point-of-contact (POC).

The selection of qualified subcontractors, as required, will be accomplished in accordance with Shaw procurement and quality assurance (QA) procedures. Subcontractors such as drillers, geophysical specialists, surveyors, and environmental monitoring specialists, must satisfy predefined qualifications developed by the PM and Shaw that are defined in the procurement bid packages. Each subcontractor bid submittal is reviewed by technical personnel, purchasing, and QA personnel to verify that the bidders are technically qualified and can satisfy the project objectives. Before starting work, Shaw will perform a quality check to ensure that the subcontractor(s) has fulfilled the procurement requirements necessary to begin activities. Subcontractors involved in environmental measurements will be monitored by the Shaw Field Coordinator to verify the use of calibrated equipment and qualified operators.

CUSTOMER INVOLVEMENT

Customer involvement will be ongoing throughout the duration of this investigation, and Shaw personnel will be available as needed for question, consultation, etc. Project personnel may be reached at the following telephone numbers:

Mr. Steven T. Downey Project Manager	(865) 694-7496	Fax (225) 987-3034
Mr. Michael Gunderson Technical Lead	(865) 694-7446	Fax (865) 690-3626
Mr. Kenneth Martinez Quality Assurance Manager	(865) 670-2656	Fax (865) 690-3626
Mr. Eddie Weaver Project Chemist	(865) 560-5274	Fax (865) 693-4944

Each work plan or other deliverable to be prepared in more than draft form will be submitted to the USACE Nashville District as specified in the SOW for review and comment. All review comments will be addressed and incorporated into the final submittals, if appropriate.

DOCUMENTATION OF PROJECT DECISIONS AND RECORDS MANAGEMENT

The Shaw Project Records Clerk is responsible for maintaining control and retention for project-related records. Record control includes receipt from external and internal sources, transmittal, transfer to storage, and indication of record status. Retention includes receipt at storage areas, indexing and filing, storage and maintenance, and retrieval. Shaw will maintain the project repositories at 312 Directors Drive in Knoxville, Tennessee, for all project records, including correspondence. Records will be controlled and retained, as appropriate, in the office central files or laboratory files. The Project Records Clerk will assign control numbers to all outgoing documents and is responsible for properly filing the controlled records (except for those related to accounting, purchasing, and drafting, which are retained in the respective department files). Shaw will also provide the USACE Nashville District with a copy of all telephone memos, written correspondence, and meeting minutes regarding information related to the project within ten (10) days of the event. Copies of all records will be retained by Shaw for a minimum of seven (7) years after the end of the contract period. In addition, project records deemed to be of importance by the USACE will be turned over to the USACE at the time of project close-out.

PROJECT CLOSE-OUT

At the completion of this investigation, a project close-out meeting will be conducted. This will be at a time and place to be determined by Nashville District personnel, and may take the form of a teleconference. The purpose of this meeting will be to exchange feedback, discuss lessons learned, and conduct final product verification.



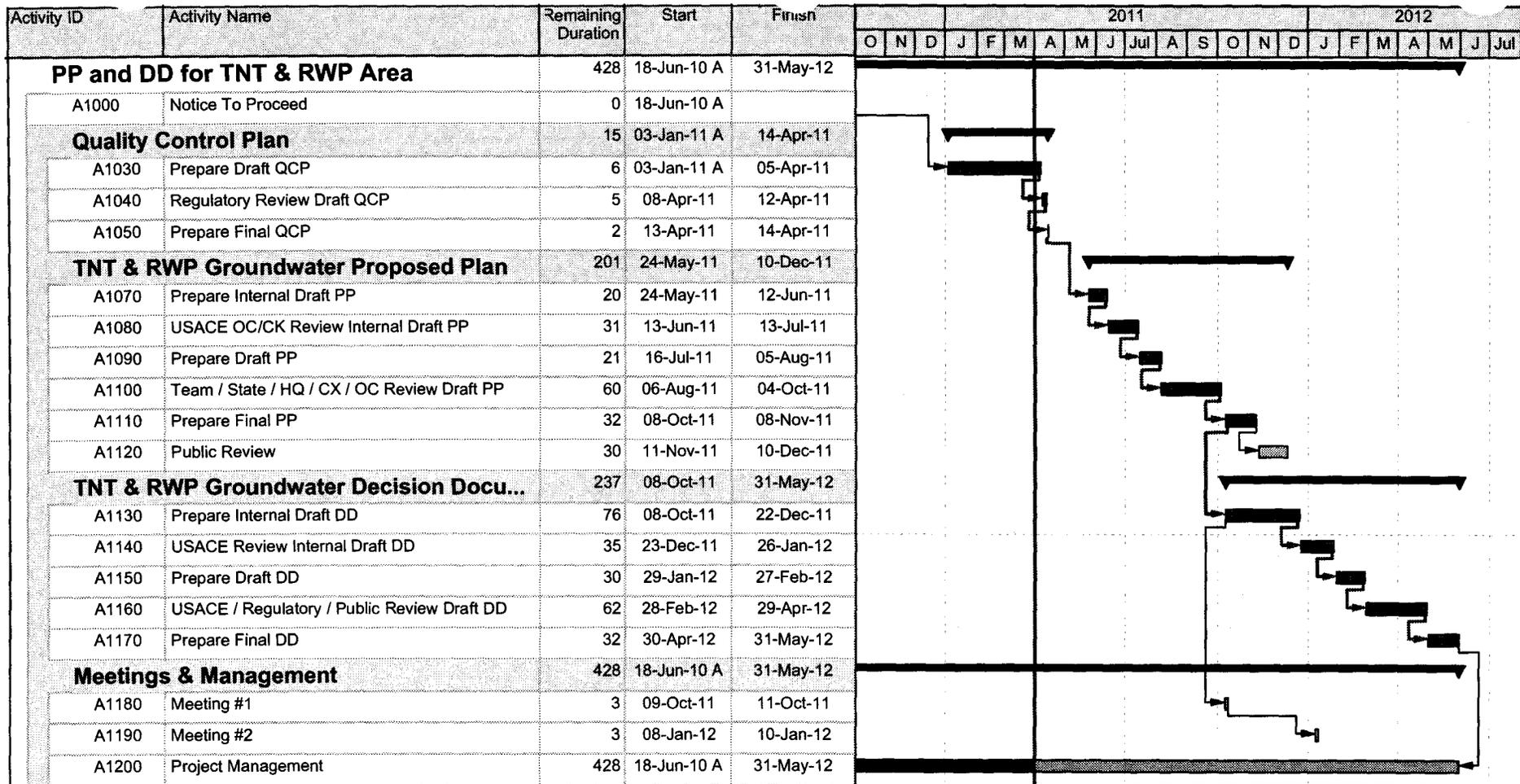
Shaw Environmental & Infrastructure, Inc.

Table 1

**Proposed Plan and Decision Document,
PBOW Groundwater
Former Plum Brook Ordnance Works, Sandusky, Ohio**

Submittal Description/ Title	Document Preparation and Review Process					
	Principal Author(s)	Discipline	Peer Review	Discipline	Project Review	Discipline
Proposed Plans Decision Documents	Tom Siard	Risk Assessor	Bill Anderson David Kessler	Risk Assessor Geologist	Steven Downey Michael Gunderson Ken Martinez	Engineer Geologist QA Manager

NOTE: Where multiple authors are identified, one or more of those identified may be involved in the document preparation depending on availability. Should replacements be necessary, personnel of comparable experience and qualifications will be utilized.



Remaining Level of Effort
 Critical ...
 Actual Level of Effort
 Milestone
 Actual Work
 Start Mi...
 Remaining Work
 Summary

Figure 1

Louisville AE Contract #W912QR-08-D-0013

DX-16 - Proposed Pland and Decision Document for TNT & RWP Areas



Shaw Environmental & Infrastructure, Inc.

DISCIPLINE SIGN-OFF REVIEW

Client Name: U.S. Army Engineer District, Nashville; CELRN-EC-E

Project Description: Proposed Plan and Decision Document, for PBOW Groundwater Former Plum Brook Ordnance Works, Sandusky, Ohio

Contract No. W 9 1 2 Q R - 0 8 - D - 0 0 1 3

Delivery Order No. D X 1 6

Project No. 1 3 9 7 8 8

Task/Phase Number: [] [] [] [] [] [] [] [] [] []

Document Type

Identify specific section or segment covered by this checkprint

Document Origin

- Technical / Cost Proposal
RFP
Contract / Subcontract
SHP, SSAP, CDAP, or QAPP
Report
Risk Assessment / Evaluation
Specifications & Plans
Design Calculations
Tables
Drawings / Figures
Other:

- Originator Developed
Edited Standard
Client Furnished

Document Status

- Preliminary
Internal Draft
Draft
Draft Final
Final
Other:

Required Person

Signature

Date

Table with 3 columns: Required Person, Signature, Date. Rows include Originator, Checker, Peer Review (QC), Technical Review, Quality Assurance Mgr, Project Manager.

NOTICE: By signature above, parties certify that the subject document has been prepared by and/or reviewed by them (as appropriate), that all review comments have been resolved, and that the document is ready for submittal.

FIGURE 2