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Remedial Design/Remedial Action Handbook

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Acronyms and Abbreviations

A, B

A/E	Architect/Engineer
ARARs	Applicable or Relevant and Appropriate Requirements
ARCS	Alternative Remedial Contracting Strategy
BAFO	Best and Final Offer

C

CA	Cooperative Agreement
CBD	*Commerce Business Daily*
CCE	Construction Cost Estimate
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	CERCLA Information System
CFR	*Code of Federal Regulations*
CM	Construction Manager
CO	Contracting Officer
CPAF	Cost-Plus-Award-Fee
CPM	Critical Path Method
CQAP	Construction Quality Assurance Plan
CRC	Community Relations Coordinator
CRP	Community Relations Plan
CSI	Construction Specification Institute
CWE	Current Working Estimate

D

D&CA	Design and Construction Advisor
D&F	Determination and Finding
DBA	Davis-Bacon Act
DQO	Data Quality Objective

E

EL	Expenditure Limit
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Emergency Response Plan
ESD	Explanation of Significant Differences

F

FAR	*Federal Acquisition Regulation*
FCOR	Final Closeout Report
FR	*Federal Register*
FRP	Federal Response Plan
FS	Feasibility Study
FSP	Field Sampling Plan
FY	Fiscal Year

G, H

GAO	General Accounting Office
HASP	Health and Safety Plan
HTRW	Harzardous, Toxic, and Radioactive Waste

I

IAG	Interagency Agreement
IDT	Indefinite Delivery
IFB	Invitation for Bids
IGCE	Independent Government Cost Estimate

L

LAN	Local Area Network
LEPC	Local Emergency Planning Committee
LOE	Level-of-Effort

LTCS	Long-Term Contracting Strategy
LTRA	Long-Term Response Action

M

MOU	Memorandum of Understanding
MSW	Municipal Solid Waste

N

NCP	National Contingency Plan
NOID	Notice of Intent to Delete
NPL	National Priorities List
NRC	National Response Center
NTCRA	Non-Time-Critical Removal Action

O

O&M	Operations and Maintenance
OERR	Office of Emergency and Remedial Response
OGC	Office of General Counsel
OIG	Office of Inspector General
OMB	Office of Management and Budget
ORC	Office of Regional Counsel
ORD	Office of Research and Development
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit

P

P&ID	Piping and Instrumentation Diagram
PCOR	Preliminary Closeout Report
PFD	Process Flow Diagram

PPE	Personal Protective Equipment
PO	Project Officer
PR	Procurement Request
PRP	Potentially Responsible Party

Q

QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control

R

RA	Remedial Action
RAC	Response Action Contract
RACS	Response Action Contracting Strategy
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RE	Resident Engineer
REPR	Real Estate Planning Report
RFP	Request for Proposal
RI	Remedial Investigation
ROC	Regional Off-Site Contract
ROD	Record of Decision
RPM	Remedial Project Manager

S

S/RPOD	Superfund/RCRA Procurement Operations Division
SACM	Superfund Accelerated Clean-Up Model
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SAVE	Society of American Value Engineers
SCA	Service Contract Act
SF	Standard Form
SMOA	State Memorandum of Agreement

SMP	Site Management Plan
SOP	Standard Operating Procedure
SOW	Statement of Work
SSC	Superfund State Contract

T

TA	Technical Assistance
TAG	Technical Assistance Grant
TD	Technical Direction
TERC	Total Environmental Restoration Contract
TQM	Total Quality Management
TRT	Technical Review Team

U

UAO	Unilateral Administrative Order
USACE	United States Army Corps of Engineers

V

VE	Value Engineering
VECP	Value Engineering Change Proposal
VEP	Value Engineering Proposal

W, X, Y, Z

WA	Work Assignment
WACN	Work Assignment Closeout Notification
WACR	Work Assignment Completion Report
WAF	Work Assignment Form
WAM	Work Assignment Manager
WAP	Work Assignment Package
WBS	Work Breakdown Structure
WP	Work Plan

Chapter 1 Introduction

1.1 Purpose of the Handbook

The purpose of this handbook is to provide Remedial Project Managers (RPMs) with an overview of the remedial design (RD) and remedial action (RA) processes. The handbook may be used by the entire range of RPMs—from those who have had little experience with RD or RA projects to those who have managed several. It should be most useful for Federal-lead sites where the Superfund is used to finance the RD or RA. The management principles outlined herein, however, apply generally to all lead sites.

The *RD/RA Handbook* focuses on how an RPM can use project management principles to implement effectively a selected remedy in accordance with the Record of Decision (ROD). It is not a conventional engineering manual, but rather a general reference document for issues that arise during the RD/RA process. Where additional EPA guidance exists on a topic, it is referenced at the end of the applicable section.

1.2 Overview of the Handbook

Chapter 2, "Project Management," and Chapter 3, "RD/RA Project Planning," introduce an RPM to basic engineering project management principles. Chapter 4, "Federal-Lead Remedial Design," and Chapter 5, "Federal-Lead Remedial Action," provide an overview of the RD and RA processes respectively, as they should occur in Federal-lead, Fund-financed sites. Chapters 4 and 5 also document procedures and suggest RPM actions for Federal-lead, Fund-financed sites. The appendices, an integral part of the *RD/RA Handbook*, contain additional reference material in support of the chapters.

Every effort has been made to make the *RD/RA Handbook* a user-friendly reference guide. The handbook is in notebook format with tabbed dividers so that revisions or updates to the chapters or appendices may be added or pages may be removed where appropriate. Tabbed dividers for state- and enforcement-lead and operations and maintenance guidance are included so that those documents may be added as developed.

The *RD/RA Handbook* will assist the RPM in negotiating and managing the challenges that arise during an RD or RA. It contains detailed information about the activities that RPMs perform and the tools that are available to make their job easier. One of the most important functions that any RPM must perform, however, is managing the complex professional relationships that are part of all RD/RA projects. A typical RPM works with EPA Regional staff, EPA Headquarters staff, United States Army Corps of Engineers (USACE) staff, Alternative Remedial Contracting Strategy (ARCS) or Response Action Contract (RAC) contractor staff, local community members, and representatives from the states. Although the *RD/RA Handbook* defines these relationships and provides guidance on encouraging communication among those who will influence the outcome of an RD/RA project, the RPM ultimately must decide how to manage the multiple individual and organizational relationships involved.

Chapter 2 Project Management

2.1 Introduction

Managing a remedial design (RD) or a remedial action (RA) presents a number of challenges to the Remedial Project Manager (RPM). While RD/RA projects are similar to other design and construction projects in many respects, there are unique challenges that RPMs face due to the sensitized regulatory environment under which these projects are conducted. For example, managing an RD/RA project under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), requires that the RPM balance the sometimes conflicting objectives and needs of individuals and organizations whose cooperation is required for successful project completion. This chapter provides the RPM with the definition of project management and covers the skills required of and the activities performed by a successful project manager, quality principles to be applied to projects, and other general responsibilities. The RPM should be familiar with the project management concepts presented in this chapter and should periodically evaluate his or her management approach for effectively directing an RD or an RA.

2.2 Definition of Project Management

Project management is the process of creating, monitoring, and controlling the scope of work, schedule, and budget of an RD/RA project. The project manager creates and manages the project team, which is composed of all project participants. The RPM as project manager acts as the focal point of communications and coordinates project team efforts, ensuring that project participants work together to accomplish the RD/RA project. The project manager maintains a clear vision of the final objective—successful completion of the RD/RA project on time and within the budget—while coordinating the individuals, organizations, technology, money, equipment, time, and other resources to bring it about.

2.2.1 Scope of Work

The RD/RA scope of work must be based on the Record of Decision (ROD), which defines the selected remedy to be applied at the site. The elements of the ROD are contained within the following documents:

- Work assignments (WAs) issued to the EPA contractor for Federal/EPA-managed sites
- Interagency agreements (IAGs) for Federal/ United States Army Corps of Engineers (USACE)-managed sites
- Cooperative agreements (CAs) for State-lead sites
- Consent decrees (CDs) or unilateral administrative orders (UAOs) for enforcement-lead sites

As the focus of the *RD/RA Handbook* is Federal-lead sites, CAs, CDs, and UAOs are not discussed in detail.

2.2.2 Project Budget, Funding, and Costs

Project budget, funding, and costs for Federal- and state-lead sites are maintained and tracked in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). One of the RPM's most important functions is updating RD/RA budget information in CERCLIS as the project progresses.

2.2.3 RD/RA Schedule

The project schedule, developed and managed by the RPM, is also tracked in CERCLIS. It is specified in the WA, IAG, CA, CD, or UAO, depending on the site-lead status. Scheduling is necessary to anticipate when project resources or participation by others will be needed. The RPM updates the schedule as the RD/RA project progresses.

2.2.4 Project Team

Creating and managing an RD/RA project team from all the participants in an RD/RA project is a challenge. The RPM must rely on his or her ability to communicate among, direct, and coordinate

project participants. The RPM should use the project management plan, the Technical Review Team (TRT), a communications strategy, and other tools at his or her disposal to accomplish this task (see sections 3.2, 3.4, and 3.5).

2.3 Skills of a Successful Project Manager

Successfully managing an RD/RA project requires the RPM to blend a number of skills. Four of the most important, as listed in **Figure 2-1**, are knowledge of project management principles, competency as a manager in a project environment, leadership, and technical competence.

Figure 2-1

Skills of a Successful Project Manager

- Knowledge of project management principles
- Competency as a manager in a project environment
- Leadership
- Technical competence

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2.3.1 Knowledge of Project Management Principles

Each RPM should understand basic project management principles and the application of these principles for the successful completion of an RD/RA project. Technical competence alone is insufficient because a large portion of the RPM's job is comprised of non-technical components. The project manager must perform his or her management functions with a foundation of basic project management principles, supplemented by a common-sense approach based on experience and effective use of scheduling and budgeting systems.

2.3.2 Competency as a Manager in a Project Environment

A successful RPM exhibits certain characteristics, such as having a concern about quality and performance, leadership ability, anticipating possible project constraints, staffing the project with quality people, communicating frequently and effectively, having effective work systems, documenting the project decision-making process, delegating authority when possible, being enthusiastic, and being sensitive to interpersonal and interorganizational relationships.

2.3.3 Leadership

The RPM must lead, motivate, and inspire project personnel to give their best efforts to the project. Completing an RD or RA brings people together who do not routinely work together. The RPM must develop a project team to perform satisfactorily; an RPM's personal attributes are as important as project management systems and procedures for this skill. Leadership includes setting a project's direction, establishing a vision, and developing and implementing strategies to achieve the project goals.

2.3.4 Technical Competence

Ideally, the RPM should be competent in a discipline suitable to the project. This allows the RPM to feel comfortable with, and contribute to, the highly technical aspects of the RD/RA and enhance his or her ability to communicate effectively with technical participants in the project. An RPM familiar with the technical aspects of a project is better equipped to make decisions regarding the project scope, schedule, and budget issues, thus reinforcing his or her leadership position and gaining respect from project team members. RPMs lacking the applicable technical abilities for their projects should select others with these skills to assist in RD/RA activities. One of the best training methods for an inexperienced RPM is to seek an apprentice relationship with an experienced RPM, particularly before assuming first-time responsibility for an RD/RA.

2.4 Project Management

This section presents approaches to routine activities for monitoring and managing RD/RA projects. These methods are extremely important in producing a successful project and have their roots in traditional project management.

Effective management at the onset of and throughout a project minimizes the obstacles that develop as the project progresses. During initial project stages, it is easier to effect change and to take corrective action. Changes during later project stages usually take significantly more effort to achieve, cost more, and extend the schedule.

2.4.1 Monitoring the RD/RA

The RPM monitors actual site progress, adherence to the project schedule, and budget and work

performance throughout the project, using a number of techniques at his or her disposal.

Site Progress

The primary method for gauging site progress is to compare actual events with the schedule and budget developed in the planning phase; this is accomplished by holding review meetings in conjunction with obtaining regular status reports. Both USACE and EPA contractors should produce monthly progress reports for RPM use. More frequent reports may be needed during RA construction (i.e., the RA statement of work [SOW] could be written to require weekly reports). The Alternative Remedial Contracting Strategy (ARCS)/ Response Action Contract (RAC) contractors are required by contract to provide specific types of progress reports that the RPM uses to compare the actual schedule and budget with the planned targets. To facilitate this comparison, the regular progress reports must:

- Determine the status and progress of each task towards its objective
- Report progress for the current period and estimate progress for the succeeding period
- Report expenditures for the current period and estimate expenditures for the succeeding period
- Review total expenditures
- Review the overall schedule and budget status
- Identify issues affecting work progress, especially ones that may cause delay or necessitate additional funding

Schedule and Budget

Monitoring and reporting of project schedules are conducted using the techniques discussed in section 3.8. The RPM uses this information in the short-term to ensure that critical milestones such as design reviews are met. These techniques also are used for long-term project management decisions to avoid delays that could affect the schedule and budget.

Budget reports are monitored by the RPM to ensure that a particular activity is being accomplished according to its overall schedule and within the budget ceiling, to ascertain that funding is spent appropriately, and to obtain cost information for invoice approval. The RPM also reviews budget reports to assess the underutilization or overutilization of funds and labor hours (burn rate) as compared to the expected burn rate.

Work Performance

In addition to routine monitoring of the schedule and budget, the RPM evaluates work performance. Where deficiencies are noted, the RPM must be proactive and correct the deficiencies as soon as possible. Early corrections allow a project to get back on course without additional expenditures and schedule delays.

An RPM may receive a seemingly overwhelming number of submittals (deliverables) because of his or her monitoring function. A register, like the one in **Appendix B**, can be used by the RPM as a valuable tool to track submittals, due dates, and required EPA action. The RPM should decide which submittals he or she will review and which submittals the Technical Review Team (see section 3.4) will review.

Implementation of effective quality assurance and quality control (QA/QC) activities to support RD/ RA work is critical to work performance. The RPM is responsible for planning, implementing, and assessing the effectiveness of required and appropriate QA/QC activities that support all phases of the RD/RA process. Part C of the ANSI/ASQC guidelines should be used as the basis for QA/QC for RD/RA projects.

ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," Part C, provides the minimum quality systems requirements for the design, construction, and operation of technology used for RD/RAs.

2.4.2 Managing the RD/RA

Although a project manager is held accountable for all aspects of a project, a Superfund RPM seldom has the authority or the control of all external factors to ensure that a project proceeds according to plan. Thus, the RPM must develop a proactive approach to project management.

For example, routine progress meetings help the RPM identify potential deviations from the project strategy. RPM response to a particular project management issue varies depending on the problem and its immediacy—some deviations will be long-term trends rather than immediate events. Deviations from project strategy are avoided or controlled by initiating preventive or corrective actions. The proactive approach emphasizes anticipating potential problems and developing pre-emptive solutions, devising work-around strategies when problems do arise, and modifying the project with minimum disruptions to handle surprise situations that inevitably arise.

Anticipatory Actions

Anticipatory actions are preventive strategies for avoiding potential schedule disruptions. Possible actions include:

- Requesting USACE assistance in EPA contractor oversight
- Maintaining strict submittal schedules
- Increasing direct observation of office or field activities
- Maintaining awareness of upcoming project milestones and associated EPA reviews
- Identification and resolution of property access issues
- Early and continued interaction with the community
- Early state involvement

Work-Around Strategies

Work-around strategies respond to negative deviations (usually in schedule, budget, or personnel resources) to accommodate changes and minimize the effects on overall completion of the project. Examples include:

- Streamlining requirements for work products to avoid repetition of data in multiple deliverables
- Conducting in-progress reviews to eliminate interim deliverable requirements

Modifications to Project Strategy

Modifications are used to accommodate deviations only as a last resort. Modifications alter the project budget, schedule, or scope and may require:

- Additional funding (if available)
- ROD changes
- Superfund state contract (SSC) changes

2.5 General RPM Responsibilities During RD/RA

This section provides an overview of the RPM's responsibilities during the performance of the RD/RA. As a professional project manager responsible for the successful completion of a technically complex, multi-million dollar design and construction project, the RPM has an instrumental role in the planning, execution, control, and closeout of the RD/RA. As such, the RPM is a guardian of the taxpayer's money, imbued with upholding the public trust in executing a ROD as promised.

To carry out his or her responsibilities, the RPM must oversee the successful completion of the RD/RA, regardless of lead, and ensure that the completed remedy meets all goals and objectives described in the ROD. The RPM's involvement in ensuring that the objectives and goals are achieved varies depending on the designated lead agency or party. In attempting to achieve the end results of the RA, the RPM should manage the big picture and not micro-manage all aspects of the project. Micro-management can result in the RPM becoming overwhelmed as the project progresses. The RPM must use appropriate team members to help manage the RD/RA and delegate responsibility to those individuals or organizations so that he or she can effectively manage the entire project.

Specific details on RPM responsibilities are presented throughout Chapters 3, 4, and 5.

Figure 2-2 lists the RPM's general responsibilities during each of the RD/RA phases. RPM responsibilities can be divided into the following categories, each described below, which provide a

Figure 2-2

Remedial Project Management Responsibilities

Overall	• Ensures completed remedy meets all goals and objectives in the ROD • Focuses on the overall management ("big picture") versus micro-management of RD/RA
RD/RA Planning	• Develops project management plan • Organizes Technical Review Team • Establishes communications strategy • Understands requirements and procedures of EPA support contracts • Prepares SOW, schedule, budget/independent government cost estimate • Revises budget and schedule based on review of the contractor's/USACE's work plan and subsequent negotiations • Coordinates with the state/potentially responsible parties (PRPs) regarding site access • Ensures public awareness of RD/RA activities • Ensures all applicable or relevant and appropriate requirements (ARARs) are identified for the site • Plans necessary QA/QC activities
RD/RA Execution	• Monitors, controls, and revises schedule on regular basis • Monitors, controls, and revises budget on regular basis • Audits project execution • Reviews key deliverables and ensures quality products • Manages WAs, IAGs, CAs, CDs, and other agreements • Facilitates communications between parties • Updates CERCLIS/WasteLAN Systems • Maintains administrative record/site files
RD/RA Closeout	• Conducts final inspection • Reviews RA reports • Prepares WA closeout report or formal closeout request for the IAG, reviews and approves invoices, and deobligates any remaining funds in WA, IAG, or CA

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framework for understanding the general and varied nature of the position:

- Responsibilities during RD/RA planning
- Responsibilities during RD/RA execution
- Responsibilities during RD/RA closeout
- Limits of authority
- Potential liability

2.5.1 Responsibilities During RD/RA Planning

The RPM is the key to successful project planning and should devote considerable time and energy to the planning and startup phases of the project. The majority of funds in the Superfund program are spent on RDs and RAs; consequently, it is important that each RD/RA project be successful. Although even the most carefully planned and administered project can develop serious implementation problems, the chances of this occurring are greatly reduced by adequately scoping the project and developing a strategy for project implementation. When planning the RD/RA, the RPM must be aware of his or her role, responsibilities, and level of authority to ensure that the best plan for accomplishing the objectives is produced.

Initially, the RPM should develop a project management plan (section 3.1) to serve as a framework for defining the RPM's approach to project execution. This enables the RPM to visualize the specifics of the project, make key decisions regarding execution, consider constraints, and plan accordingly. The project management plan is an evolving document that is updated periodically as more information is gathered and circumstances change. The purpose of the project management plan is to develop a strategy to complete the RD/RA successfully. It is a particularly useful tool for the less experienced RPM who has not yet managed an RD/RA project. Less experienced RPMs should obtain assistance in preparing a project management plan from a more experienced manager. Experienced RPMs may find that they already perform a similar planning exercise when scoping the project.

OSWER Directive 9355.0-43, "Guidance for Scoping the Remedial Design," (Publication No. PB95-963306), March 1995, provides more information on scoping an RD project.

2.5.2 Responsibilities During RD/RA Execution

After the initial planning is completed and the RD/RA begins, the RPM is responsible for ensuring that the project progresses on schedule and within budget. To do so, the RPM manages the EPA contractor, USACE, state, or potentially responsible parties (PRPs) by:

- Initiating and maintaining frequent communications with project participants via conference calls
- Conducting regular meetings to discuss RD/RA progress, identify problems, and take corrective actions as necessary
- Developing complete documentation of all meetings and conference calls
- Ensuring timely review of key deliverables by the TRT (section 3.4)

2.5.3 Responsibilities During RD/RA Closeout

Upon completion of the RD/RA, the RPM must ensure that the appropriate procedures are followed for closing out the EPA contractor WA, the USACE IAG, the state CA, or the PRP-lead activities. The RPM also ensures that the proper transfer of sites to parties responsible for operation and maintenance (O&M) of the remedy takes place. For Federal-lead, Fund-financed sites, the state generally is responsible for O&M and its responsibilities are outlined in the SSC. Chapter 5 and section 3.11 contain additional information on these responsibilities.

2.5.4 Limits of Authority

During project execution, EPA enters into agreements with a state, USACE, a contractor, or PRPs to accomplish all or part of the remedial activities at the site. Even though the successful completion of the RD/RA is the RPM's responsibility, he or she often does not have the authority or ability to control all external influences that can impede the project's successful completion.

For Federal-lead/EPA-managed RDs and RAs, the RPM must know the contracting structure of the project; the RPM cannot direct or assign work not specified in contract documents (e.g., the SOW or a WA) or enforcement documents. The Contracting Officer (CO) is the only government official who can authorize work beyond the original scope of the WA. To prevent this from happening, the RPM must develop a thorough SOW for the WA while being familiar with the terms and organization of all agreements with all the parties involved. For Superfund sites, the RPM usually functions as a Work Assignment Manager (WAM). When functioning as a WAM, the RPM should be aware of his or her limits of authority in directing and authorizing work. As the CO is the only government official authorized to commit government funds in a WA, the RPM must not direct a contractor to initiate work before receiving authorization from the CO.

When USACE is the contracting party and manages the RD or RA, personnel from USACE authorize the work. The RPM should understand his or her role and limits of authority and work within the limits of the particular contractual agreement (the IAG).

In addition to knowing his or her limit of authority under each type of agreement, the RPM must administer the necessary paperwork for the agreement. For all types of agreements into which

EPA enters with third parties to implement Superfund remedial activities, the RPM usually initiates, monitors, revises (as necessary), and closes out the agreements.

2.5.5 Potential RPM Liability

The RPM should understand his or her own liability and the liability of others during the performance of the RD/RA.

Remedial Design

Although the RPM approves the design and deliverables before they are implemented, EPA's review and approval does not imply an assumption of responsibility for design deficiencies, errors, or omissions. Whenever the RPM submits review comments or approves a design, the correspondence should include a clause that emphasizes that the responsibility for the effectiveness of the design rests with the designer and that RPM "approval" constitutes only an authorization to proceed. Likewise, the RPM does not approve, although he or she may appear to do so, other design-related deliverables such as the health and safety plan (HASP) and the quality assurance project plan.

The RPM also must guard against directing the design contractor toward an unsound design. If the RPM does so and the implemented design fails, and the contractor was not negligent in implementing the design, then the design contractor's liability is reduced or eliminated, regardless of whether the RD/RA is a Federal-, state-, or enforcement-lead project. However, the RPM, as a federal employee, would not be personally liable for government damages resulting from directing the design contractor because government employees are protected from personal liability incurred from performance of their job duties under the Federal Torts Claims Act. *An RPM could incur personal liability for damages, however, if the damages are the result of an action the RPM knowingly performed outside the scope of his or her job duties or area of competence.*

To avoid those situations, the RPM should assemble a complete and competent TRT to review thoroughly the design (see section 3.4). The RPM also should verify that the design contractor is complying with its own design QA/QC plan.

Remedial Action

The RPM must respect the privity of contract between the contracting party and the constructor. Unless EPA has a contract directly with a constructor, EPA must not direct the work of the constructor. Only the party contracting directly with the constructor has the authority to do so. For example, during remediation activities, the RPM must be cautious to ensure conformance with the specifications without assuming responsibility for the direction of the work of the constructor. To accomplish that, the RPM works with the EPA contractor or USACE, which then directs the work of the constructor.

As with RD deliverables, EPA review and approval of RA deliverables such as the HASP does not constitute legal "approval." For more specific information on legal liability, consult the Office of General Counsel or Regional Counsel.

If an RA contract modification is required because of an error or deficiency in the design, the party that contracted for the design should examine the designer's possible liability. If sufficient liability appears to exist, the designer may be held liable.

Chapter 3 RD/RA Project Planning

3.1 Introduction

Any successful project begins with thorough and sound project planning. This chapter and the remainder of the *RD/RA Handbook* focuses specifically on Federal-lead, Fund-financed sites. Tabbed dividers have been provided so that individual documents on state- and enforcement-lead sites may be added.

The Remedial Project Manager (RPM), acting on EPA's behalf, is responsible for the quality of the remedial design (RD) or remedial action (RA) project. To implement a successful RD/RA project, the RPM must devote substantial time and effort to the planning process. The RPM who does so will face fewer unanticipated management demands as the project progresses. Although RD/RA project planning may appear to start after remedy selection and the signing of the Record of Decision (ROD), it should commence before the ROD is signed whenever possible. The earlier the planning begins, the greater the RPM's ability to direct the RD/RA to its successful completion.

3.2 Developing the Project Management Plan

After the RPM is familiar with remedy details and pertinent site information and history, he or she can begin making key planning decisions. To facilitate the planning and eventual implementation of the RD/RA, the RPM should develop a project management plan that documents project management goals and operational procedures. The project management plan is the RPM's tool to devise and document a strategy for successfully completing the project on time and within budget. The project management plan is a "living" document that is updated when new information becomes available as the design proceeds or as site circumstances change.

The RPM is responsible for the quality of the project, establishing project requirements and communicating these requirements to the other project participants, including the designer and the constructor. To summarize the requirements of the project fully, the RPM should consider carefully all aspects of the RD/RA project. A project management plan enables the RPM to do this effectively.

Figure 3-1 outlines the major managerial decisions addressed in project management plan development.

Figure 3-1

Project Management Plan

1. Definition of project objectives
2. Organizational structure
   - Identifying the lead
   - Assembling a Technical Review Team (TRT)
3. Communications structure
   - Developing the communications strategy
4. Project constraints
   - Analyzing effect on schedule/scope/budget
5. RD/RA contracting strategy
   - Identifying opportunities to accelerate the schedule
     - Phasing
     - Fast-tracking
     - Use of preplaced and prequalified contracts
   - Selecting the design approach
     - Detailed design specifications and drawings
     - Performance-based specifications and drawings
   - Identifying the RA contract type
     - Fixed price
     - Cost-plus-reimbursement
     - Time and materials
     - Indefinite delivery orders
     - Service or construction contracts
   - Choosing an RA procurement strategy
     - Competitive procurement
     - Non-competitive procurement
6. Schedule development
7. Budget preparation
   - Independent government cost estimates (IGCEs)
8. Superfund state contract (SSC) timing
9. Property access issues
10. Community relations

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Plan content will depend on the complexity of the RD or RA; fewer requirements need to be addressed for simple projects. The RPM determines plan contents and the level of detail. Some questions cannot be addressed until the design is underway; thus, the project management plan must be periodically revisited and updated. An inexperienced RPM should seek technical assistance from experienced Regional staff or the U.S. Army Corps of Engineers (USACE) when developing the plan. Specific elements of the project management plan are discussed in the following sections and in Chapters 4 and 5.

3.3 Establishing the RD/RA Lead for Federal-Lead Projects

Before an RD/RA project commences, the lead is established. For Federal-lead sites, the RPM must select the appropriate means of performing the RD and the RA. RD responsibilities may be assigned to an EPA contractor or USACE, at the Region's discretion, regardless of cost. An Office of Solid Waste and Emergency Response (OSWER) Directive mandated a maximum RA ceiling of $15 million for issuing RA assignments to an EPA contractor. RAs estimated to exceed $15 million should be assigned to USACE for construction management.

If an EPA contractor will be selected for the RD or RA or for both, the RPM, with assistance from the Project Officer (PO), should evaluate the contractor's success on other projects. Although it may appear to be desirable to maintain continuity from the remedial investigation/feasibility study (RI/FS) through the RA by using the same contractor for the RD and the RA, the RPM must consider carefully all options in light of project requirements and available contract capacity. In some instances, an EPA contractor will be selected to design the remedy and USACE to manage the construction. In these situations, it is strongly recommended that USACE serve as a technical advisor during the RD and be permitted to participate fully in the review of drawings and specifications.

OSWER Directive 9242.3-03, December 10, 1991, mandated a maximum RA ceiling of $15 million for issuing RA assignments to an EPA contractor.

3.4 Assembling a Technical Review Team

The complexity of a typical RD or RA project requires in-depth knowledge of a variety of engineering and geological fields, including chemical, civil, mechanical, and electrical engineering, and hydrogeology. Since a single RPM rarely possesses such a broad knowledge base, the RPM should assemble and coordinate a project team of career professionals with knowledge in the applicable fields. Before initiating an RD, the RPM should review the nature of the project and select the appropriate technical assistance. The project team approach, which requires the creation of a Technical Review Team (TRT) comprised of representatives from many disciplines, is used by federal agencies engaged in design and construction management, including USACE, and results in higher technical quality and improved project efficiency.

The TRT may include Superfund technical support staff, other experienced RPMs, representatives from USACE, the state, the Office of Research and Development (ORD), other EPA programs such as the Offices of Air, Water, and Solid Waste, or Technical Assistance Grant (TAG) technical representative. The RPM should also involve the state or other agencies with the expertise to assist in regulatory interpretation for compliance with permit or substantive requirements.

USACE uses the project team approach when managing an RD or RA and taps its own in-house resources to create a TRT. When issuing work assignments (WAs) to Alternative Remedial Contracting Strategy (ARCS) contractors and Response Action Contract (RAC) contractors, the RPM must identify additional resources, both internal and external, that could be used as part of the TRT to ensure success. For example, the RPM should consider using USACE in a technical assistance capacity. Other agencies have excellent technical resources and may provide a wide variety of engineering and project management services unavailable within EPA. These services can be obtained by preparing a technical assistance interagency agreement (IAG) that will explain and authorize the services needed. An IAG is an agreement between governmental agencies that outlines the responsibilities of each agency in a cooperative project. An RPM will encounter three

types of IAGs with USACE on RD/RA projects: RD IAGs; RA IAGs; and technical assistance IAGs. The titles of the IAGs reflect their purposes; technical assistance IAGs typically are used to facilitate USACE provision of technical assistance on a project. See section 4.4.2 and **Appendix D** for additional information.

Once the TRT is formed, team members assist the RPM in scoping the work and reviewing the work plan and other crucial deliverables. Document review is a very common bottleneck in project management. Some EPA Regional offices have adopted an intra-agency approach involving the creation of peer review groups from EPA staff to assist RPMs. Peer review groups tend to be most useful on simple or small-scale projects or as a component of the TRT. **Figure 3-2** lists potential representative members of the TRT.

Large, diverse TRTs, with members from EPA and other organizations located in different areas, present

Figure 3-2

Potential Technical Review Team Members

EPA Regional Personnel	Experience Added to Project Team
Technical Suppport Team	• Specialized technical services
Groundwater Technical Support Unit	• Specialized technical services
Other experienced RPMs	• RD/RA management experience
ORD personnel	• Technology experts
Office of Water	• Media experts
Office of Solid Waste	• Media experts
Office of Air	• Media experts
RCRA representative	• Applicable or relevant and appropriate requirements (ARARs), regulatory specialists
Health and Safety Officer	• Health and safety specialists
Community Relations Coordinator	• Experience in communicating with the public
Environmental Services Division	• Quality assurance/sampling experts
Regional IGCE Coordinator	• Costing specialist
Contracting Officer/Project Officer	• Contract/WA administration
Staff attorney	• Legal expertise
Quality Assurance Manager/Coordinator	• Quality assurance/quality control experts
State Personnel	
State Environmental Departments	• State ARARs, procedures, concerns
State Natural Resources Trustees	• Environmental impact/management
Federal Agencies	
U.S. Army Corps of Engineers	• Design, construction, & management experience
U.S. Bureau of Reclamation	• Management and oversight experience
U.S. Department of Interior	• Management and oversight experience
U.S. Geological Survey	• Management and oversight experience
Occupational Safety and Health Administration	• Safety and health expertise
National Oceanic and Atmospheric Administration	• Media and weather expertise
EPA Contractors	
ARCS/RACs	• Engineering and scientific expertise; RD and construction management
Local Government Agencies	
Building inspectors	• Design review plan-checks for compliance with building codes
Community members (TAG representatives)	• Technical expertise

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the RPM with a resource management challenge. When creating the TRT, the RPM should delegate responsibilities up front to team members and clearly establish project and individual requirements for each team member.

3.5 Developing a Communications Strategy

Once a TRT is formed, the RPM must develop an effective communications strategy. The strategy should provide a framework for communication among a diverse team of individuals, usually working within different organizational boundaries, and facilitates efficient exchange of technical, financial, schedule, and procedural information. As a general rule, the more information a project manager passes along to TRT members, the more likely that they will generate good ideas for the project and communicate them to the project manager.

Since the RPM acts as the conduit for RD/RA project information, he or she should ensure that appropriate information is communicated to the appropriate people at the right time. The project management plan should document a strategy, in written or graphical form, that:

- Sets up communication procedures
- Outlines frequency of communication patterns
- Provides clear channels for communication
- Establishes controls to identify communication breakdowns

The RPM should strike a balance between the frequency of communication among the various parties and the appropriate level of communications. The opportunity for miscommunication and misunderstanding increases with the number of people involved and the complexity of the project. The following communications mechanisms should be included in the project management plan:

- Kickoff meeting involving all team players
- Formal meetings to review progress (e.g., design reviews)
- Conference calls
- Periodic status reports
- Informal meetings/interpersonal communication

An RPM can structure a communications strategy in many different ways. One suggested method involves preparing a communications matrix identifying key team members and how information (including submittals, memoranda, documents, and approvals) is distributed among the members. The RPM should use whichever matrix format(s) best serves his or her purposes. A generic example of a matrix format is illustrated in **Figure 3-3**.

The communications matrix should reflect the agreement of the entire team and be designed so that everyone clearly understands his or her role in the flow of communication before the RD commences. The roles in the communications matrix should provide open channels of communication without inundating team members with too much information, thereby discouraging a value-added review. An important aspect of effective communications is providing TRT members with advance notice regarding submittals for their review.

3.6 Collecting Predesign Information

During the planning process and before the RD begins, the RPM must be as thorough as possible in providing all relevant information (sampling reports, etc.) to the designer. Predesign information collection is an essential step in facilitating the smooth transition from the ROD to the RD and ensuring that the designer has a clear understanding of the technical objectives of the ROD. The RPM must be as thorough as possible in providing relevant information, but the designer is responsible for ensuring the completeness of the information provided. This collection of information, along with the project management plan, serves as the initial building block for the RPM to develop the RD statement of work (SOW) (see section 4.3).

Primary information sources for predesign information collection include the RI/FS, the ROD, and other available documents. In addition, much of the information for Federal-lead RDs may be obtained through a predesign discussion session, which should be held soon after the ROD is signed, involving the RPM, the RI/FS contractor, in-house

Figure 3-3

Example of a Communications Matrix

	RPM	PO	CO	State	ARCS/RAC Contractor	TRT
Invoice/ Monthly Reports						
Internal Memoranda						
RD Submittals (List)						
RA Submittals (List)						

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technical experts, and other Regional personnel experienced in RD/RA project work. Representatives from the designer, the TRT, the state, and other federal agencies also may attend.

A listing of collected information serves as a current inventory of information pertinent to the RD and should be attached as an appendix to the RD SOW so that both the RPM and designer may identify design information needs. **Figure 3-4** lists information to be collected.

OSWER Directive 9355.0-43, "Guidance for Scoping the Remedial Design," March 1995, provides more information on predesign information collection.

3.7 Analyzing Project Constraints

Although the RPM faces several project constraints that can jeopardize timely project completion, they can be minimized through effective planning. This section describes a list of issues an RPM generally encounters that can affect the project schedule and costs. By recognizing potential constraints, the RPM can develop the most effective RD/RA contracting strategy to avoid late changes to the budget and schedule.

Figure 3-4

Typical Collection of Predesign Information

- Initial site conditions (e.g., characteristics, availability of utilities, restrictions on road use)
- Availability of site access (any known restrictions or issues)
- Technology/design approach
- Performance standards, ARARs, permits
- Summary of all available technical information (listing of the source and description of the data)
- Volume of materials to be treated and the accuracy of the data
- Unresolved issues (including undecided or unknown performance standards)
- Health and safety concerns
- Operation and maintenance (O&M) issues
- Historical property boundary and ownership information

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3.7.1 General Constraints

The following major types of constraints should be considered for most RD/RA projects:

- Funding
- Schedule
- Health and safety
- Equipment
- Weather
- Change in RPM
- Community relations
- Permits
- Off-site disposal

Funding

All funding constraints must be identified so that the project may be scoped adequately. The RPM should know the availability of funds for the RD, RA, technical assistance, and O&M costs. The RPM also should be aware of the state cost share.

Incomplete RA funding for the project (only partial funding available) may result in the need to phase certain portions of the RA (see section 3.10.1). A phased RA would alter the design approach. Additionally, a state's inability to fund expensive RAs or O&M activities may affect design decisions (see section 3.11).

Schedule

The RPM, with help from the TRT, prepares a master project schedule containing major milestones throughout the RD/RA process. The RPM must identify any schedule commitments to factor them into the contracting decision-making process. The schedule must be updated as the project develops.

Health and Safety

The RPM should be aware of worker and public health and safety issues because they might affect project completion. For example, the use of levels A or B personal protective equipment (PPE) for workers may affect productivity and, subsequently, the budget and schedule. There also may be periods when construction is halted at a site to protect the public against safety threats such as a potential increase in air emissions.

Equipment

Although the RPM is not responsible for procuring equipment, he or she should know if the ROD specifies a process or remedy that requires special or proprietary (unique) equipment. Equipment that needs to be procured under a separate contract or has a delayed delivery schedule may affect the RD/RA schedule.

Weather

Geographic location and seasonal weather variances should be evaluated for the project site. Extreme temperatures, excessive rainfall, or high winds may delay RA execution; winter construction shutdowns are common in the northern United States. Weather patterns affect design decisions such as whether to use fast tracking. It may not make sense to fast-track an RD/RA only to be shut down during the winter.

Change in RPM

An RPM may not be the project manager for the entire process due to the length of time required for project completion. To minimize project disruption, records should be organized and current so that the replacement RPM can trace the history of the project and the rationale for earlier decisions.

Community Relations

The RA schedule should accommodate community concerns. Responding to the community takes much more of the RPM's time while a site is being remediated because of the increase in construction activity (e.g., the community may be affected by truck traffic or noise levels). The community may propose a desired hauling route, work hours, etc. These constraints must be identified to allow the designer an opportunity to address them.

Permits

Permitting requirements may delay an RD/RA if not addressed in a timely fashion. Section 121(e)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) exempts EPA from having to obtain permits (local, state, or federal) for any RA conducted entirely on site; however, the "substantive requirements" of such permits must still be met. This applies to *all* permits, including environmental and building permits. The formal permitting process must be completed for any

off-site activities, because off-site activities are *not* exempt from having to obtain permits.

The designer is responsible for applying for all off-site permits and identifying substantive requirements, but the RPM must ensure that permitting requirements for the project are met. As part of the basis of design report, the designer must submit a permits plan that lists the permits required and the strategy for complying with permit requirements, including how to address the substantive requirements for the on-site RA. In addition, the permits plan should include a schedule for obtaining all required permits before the RA begins. To prevent RA delays, this process must be started as early in the design effort as possible.

The expertise to evaluate the substantive requirements often resides with the appropriate permitting agency. The RPM must identify the agencies responsible for setting permit requirements so that agency personnel may provide assistance with interpreting the regulations and setting permit conditions. Arrangements should be made with the permitting authorities for assistance in reviewing submittals for compliance both for on-site work where permits are not required and for off-site work where permits are required.

The same approach should be used to work with local authorities to ensure that all national and local building codes are met. If necessary, an RPM may request assistance from local permitting authorities to review pertinent design specifications to ensure substantive requirements are met. Local authorities, however, may lack the health and safety training to be allowed access to certain areas of the site.

OSWER Directive 9355.7-03, "Permits and Permit Equivalency Processes for CERCLA On-Site Remedial Actions," February 1992, provides guidance on permits for CERCLA.

Off-Site Disposal

Section 121(d)(3) of CERCLA requires EPA to dispose of hazardous waste only at those facilities operating in compliance with the Solid Waste Disposal Act. The RPM plays a critical role in ensuring effective implementation of the off-site rule. The RPM must determine if the facility permit or interim status authorizes receipt of waste, pretreated as required, from the RA site.

The RPM is responsible for contacting the Regional Off-Site Contact (ROC) in the Region where the wastes will be shipped. The ROC reports on whether the facility can currently receive the waste. Often, determining whether a facility can accept waste is specific to particular units within a facility, rather than to the entire facility. Because of the dynamic nature of compliance conditions at these units or facilities, status should be verified before each waste shipment.

A facility that has received a notice of unacceptability (issued by the ROC) has a 60-day period during which it may continue to receive CERCLA wastes while it addresses the violation cited. The ROC and RPM should communicate throughout the 60-day period. On the 60th day after issuance of the unacceptability notice, the RPM must stop waste transfer to the facility if the facility has not corrected the problem.

Because the off-site disposal rule can result in lengthy RA schedule delays, the RPM should be prepared with an alternative disposal site or other contingency in place such as requiring the designer/RA constructor to designate backup facilities.

For example, the disposal contract between the constructor and the company chosen to manage the disposal of CERCLA waste off site should specify the primary and alternate facilities that will receive the waste for ultimate treatment, storage, or disposal. The RPM should coordinate with the ROC regarding the facility permit status of all facilities to receive waste before a disposal contract is signed. The contracting party should require the constructor to provide copies of written agreements between the facilities and the constructor to document facility availability.

OSWER Directive 9834.11 and .11a, "Revised Procedures for Planning and Implementing Off-Site Response Actions," September 1993, and OSWER Directive 9834.11FS, "Overview of the Off-Site Rule for OSCs and RPMs," September 1993, provide guidance for EPA's off-site disposal policy.

3.7.2 Property Access Issues

Property access is a potential constraint for both RDs and RAs and obtaining site access for both will involve much more effort than an RPM may anticipate. Early planning is crucial because failure to obtain access in a timely manner results in schedule delays and increased costs.

Access for RD Data Collection Activities

The RPM, with assistance from the Office of Regional Counsel (ORC), should determine if existing RI/FS access agreements, obtained using the authority provided by CERCLA, allow EPA access to the site. If new access agreements are needed, they must be obtained before the designer goes onto the property. Generally, property access is not problematic during the design effort because of existing property access agreements or because the designer does not need to access the property. On a few occasions where sampling must occur off-site (e.g., the ground water in off-site areas must be sampled) and RI/FS agreements do not cover the access, property access must be established. At this stage, the RPM also should begin to explore obtaining access to utility connections. The RPM should work with USACE or the EPA contractor to establish responsibilities for doing so.

Access for RA Implementation

During RD development, the designer should identify all property access necessary to implement the RA and submit the information to the RPM as a design submittal. The RPM, with assistance from ORC, develops an approach to obtain site access to the property. The process by which property is acquired depends upon the parties involved in remedy implementation and the state where the site is located.

There are two ways to obtain access to a property to implement the RA:

- Access agreements
- Property acquisition

Access Agreements

Section 104(e) of CERCLA provides EPA with the authority to obtain access to property that is contaminated or threatened with contamination for implementing response actions. Any existing access agreements from previous site activities must be re-examined to ensure that the agreements are valid during construction. Because of the intrusive nature of construction, the access agreement should describe the activities that will occur and the planned restoration of the property upon completion. This approach may not be effective for ground water actions where the extraction well networks extend across adjacent properties and there is a requirement for guaranteed long-term access. Access agreements are valid only for the current landowner whose signature is on the agreement and do not transfer to future property owners. Access agreements usually are not tied to the property deed.

Property Acquisition

Section 104(j) of CERCLA allows EPA to acquire by purchase, lease, donation, condemnation, or otherwise any property necessary (generally EPA will only acquire property that is not contaminated) to conduct an RA. However, EPA may acquire property under CERCLA 104(j) only if the state where the property is located assures EPA before the property is acquired, through a contract or cooperative agreement or otherwise, that the state will accept transfer of the interest after RA completion. Property acquisition (includes purchase, easements, leases, etc.) allows EPA to record its interest onto the property deed. Property acquisition differs from property access agreements, which are subject to future access issues should property ownership change. Acquisition ensures long-term access for off-site actions. CERCLA 104(j) also allows EPA to acquire property for off-site staging areas, creation of new wetlands for ARARs compliance, or permanently relocating residents.

In addition, other types of property issues may arise during the RA that should be considered during the RD:

- Temporary relocations during construction—Residents may need to be relocated during construction activities. USACE has a relocation staff to carry out this effort. ARCS/RAC contractors must *not* perform this function for EPA.
- Replacing damaged property—It may be necessary for EPA to excavate in residential areas such as yards, driveways, or sidewalks. EPA can offer replacements (e.g., replacing

fencing and restoring landscaping). The RPM should consult with ORC in these instances.

Site access issues must be resolved before advertising the RA contract. Failure to obtain access may result in contractor delay claims.

USACE develops a Real Estate Planning Report (REPR) for all RDs that it manages. The REPR describes the property needs for the project based on information from the designer and associated costs should EPA choose to acquire property or interests in property. The RPM should consider requesting a similar report from an EPA contractor for EPA-managed RDs. The strategy for obtaining the property through the access provisions of 104(e) or acquisition through 104(j), however, is developed by the RPM and ORC.

Regardless of the RD lead, if property acquisition is necessary, USACE must perform that function. USACE acquires property (including acquisition of temporary construction easements) on EPA's behalf because EPA lacks the appropriate staff to carry out an acquisition program. EPA contractors can be tasked to provide real estate support but *cannot* determine any purchase price, make any offers, or negotiate with property owners.

The RPM enters into an IAG with USACE (if one does not already exist) for real estate assistance. When acquiring property, USACE follows Public Law 91-646, the *Uniform Relocation and Real Property Assistance Act*, which governs the means by which citizens are compensated and the procedures the government must follow when purchasing property. Although the law concerns permanent property acquisition, the procedures are used by USACE for all property acquisitions.

OSWER Directive 9355.5-01/FS, "Real Estate Acquisition Procedures for USACE Projects," February 1990, outlines USACE's role in real estate acquisition under CERCLA.

3.7.3 Record of Decision Changes

The RPM must ensure that the RD is consistent with the ROD. After a ROD is signed, information may be received or generated during the RD/RA process that could affect how EPA believes the selected remedy should be implemented. These changes may include a change in the remedy scope or performance standards or an increase in costs or treatment quantities. In case of a deviation from the ROD, the designer should immediately notify the RPM. The RPM then makes a determination whether the design results in one of the three categories of ROD changes described below. **Figure 3-5** illustrates examples of each type of ROD change.

Figure 3-5

Examples of ROD Changes

Minor - Testing during RD shows that soil volume requiring treatment is 75,000 cubic yards, not the 60,000 estimated in the ROD. The remedy cost, however, will increase only by five percent because of economies of scale.

Significant - Residuals from a treatment operation were unexpectedly hazardous and must be disposed of in a Subtitle C landfill, rather than a Subtitle D landfill.

Fundamental - The in-situ soil washing remedy selected in the ROD proves to be infeasible to implement after testing during the RD. A decision is made to excavate and thermally treat the waste instead.

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Minor Changes

Minor changes have little or no effect on the overall scope, performance, or cost and should be recorded in a memorandum in the post-decision document file.

Significant Changes

Significant changes have a profound effect on the scope, performance, or cost of the remedy and are documented in an *Explanation of Significant Differences (ESD)* as required by CERCLA Section 117(c). Depending on the significance of the change, a public comment period may be warranted. While the ESD is developed, EPA may continue with the design or construction activities.

Fundamental Changes

Fundamental changes occur when fundamental new information results in a change of the selected remedy and must be documented by a ROD amendment. The amendment must be prepared in accordance with procedures outlined in the *National Contingency Plan (NCP)*, 40 *Code of Federal Regulations (CFR)* Section 300.435(c)(2). If a ROD

amendment is necessary, affected site activities should be stopped until an amendment is issued. Work unaffected by the change may continue.

Documenting both minor and significant ROD differences is an *NCP* requirement that must be performed in a timely manner. Preparing the documentation for ROD changes *cannot* wait until site deletion. No site will be eligible for the *NCP's Construction Completion* category with outstanding memoranda on minor changes or outstanding ESDs on significant changes.

Significant or fundamental ROD changes must be reflected in the SSC. The RPM must ensure that the state is aware of the ROD changes and that they are incorporated into the SSC.

OSWER Directive 9355.3-02/FS, "Guide to Addressing Pre-ROD and Post-ROD Changes," April 1991, outlines how to address and document ROD changes.

3.8 Scheduling the RD/RA

In the project management plan, the RPM, with the assistance of the TRT, develops a baseline schedule from start to completion of the RD and RA. The RPM creates an initial RD/RA schedule during the planning stage that builds upon the schedule information in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). An inexperienced RPM should communicate with experienced RPMs who have successfully managed an RD or RA to identify obstacles and factors that will affect the overall schedule (see section 3.7).

Project scheduling flows from the work breakdown structure (WBS), a standardized system for numbering each work element (see the statement of work [SOW] for a RAC). The schedule assigns dates, durations, and interconnections to the tasks and subtasks identified in the WBS. Start and end dates for each task and subtask in the WBS are based on the RPM's experience and knowledge of site conditions, on the advice of the TRT and more experienced RPMs, existing guidance for scheduling RDs and RAs, and the RPM's ability to balance priorities. Although some tasks are conducted concurrently, some depend on the successful completion of others. The interrelationships among tasks need to be identified and reflected in the scheduling technique used by the RPM.

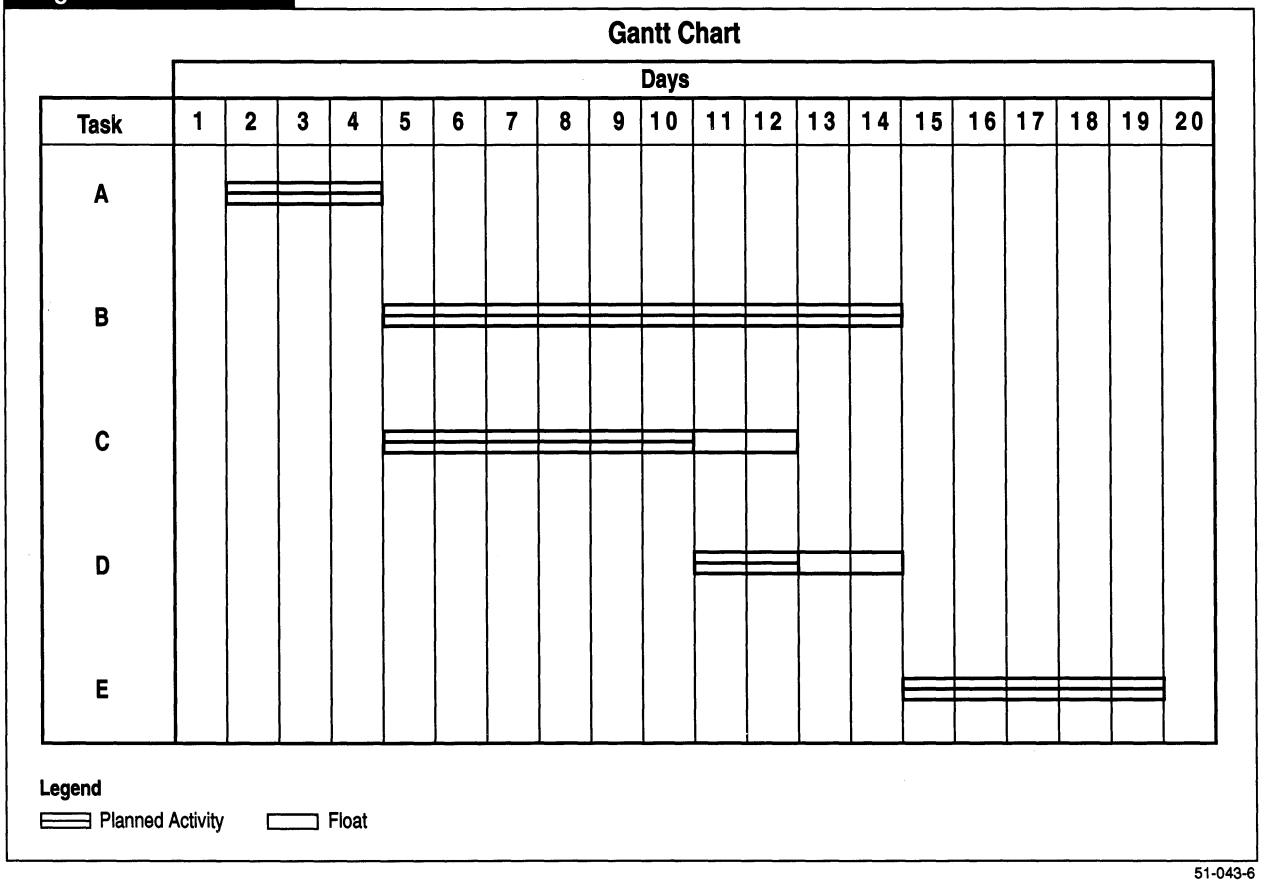
The RPM should evaluate the appropriateness of accelerating the schedule. For example, the RPM may want to consider acceleration options (e.g., phasing and fast-tracking) for RDs. Generally, more opportunities exist for schedule acceleration during the RD than the RA (see section 3.10.1).

The baseline project schedule is the basis for negotiations with the EPA contractor and is used to develop agreed-upon timeframes for USACE-managed projects. When the EPA contractor provides the RPM with a detailed RA or RA schedule (as part of the work plan submittals), it should be incorporated into the RPM's overall baseline project schedule. For USACE-managed projects, the schedule is maintained by USACE with a copy provided to the RPM. The approved project schedule must be established early in the RD or RA and must incorporate any scope changes as they occur to remain a valid benchmark for evaluating schedule performance. The RPM should review the schedule on a monthly or more frequent basis. Because the schedule is a tool for evaluating contractor or USACE performance, it may be changed only upon prior EPA approval. The RPM also should update schedule changes in CERCLIS and inform EPA management as necessary. Two scheduling techniques are suggested: the *Gantt chart method* and the *critical path method* (CPM). EPA predominately uses the former.

3.8.1 Gantt Chart Method

The Gantt chart is a bar chart presenting a list of tasks or activities required to meet an objective with estimates of time required to complete each task. Time is usually displayed as a horizontal bar with a dateline placed at the top. Tasks or activities are scaled to show expected durations—the length of each line represents the number of planned labor hours/days for a particular activity. For example, in **Figure 3-6**, Task A is scheduled for three days and a horizontal bar extends between day one and day four. Also, Tasks C and D are scheduled for six and two days, respectively, and each includes two floating days (note boxes spanning days 11 and 12 for Task C and days 13 and 14 for Task D). Depending on the RD/RA project, the time scale should be weekly or

Figure 3-6



monthly, covering as many years as is necessary for project completion. The Gantt chart is easy to read, the time scale is readily comprehensible, and it clearly identifies where resources are required. Its main disadvantage is that schedule logic (i.e., tasks critical to timely completion) is not always evident.

3.8.2 Critical Path Method

Crucial project elements are called critical tasks and are determined by a process called the critical path method (CPM.) The critical path is determined by considering each activity's duration, sequence, and constraints and may be identified by making the bars solid. For example, in **Figure 3-7**, Tasks A, B, and E are critical tasks; therefore, they are represented by solid horizontal bars. Noncritical tasks are displayed differently.

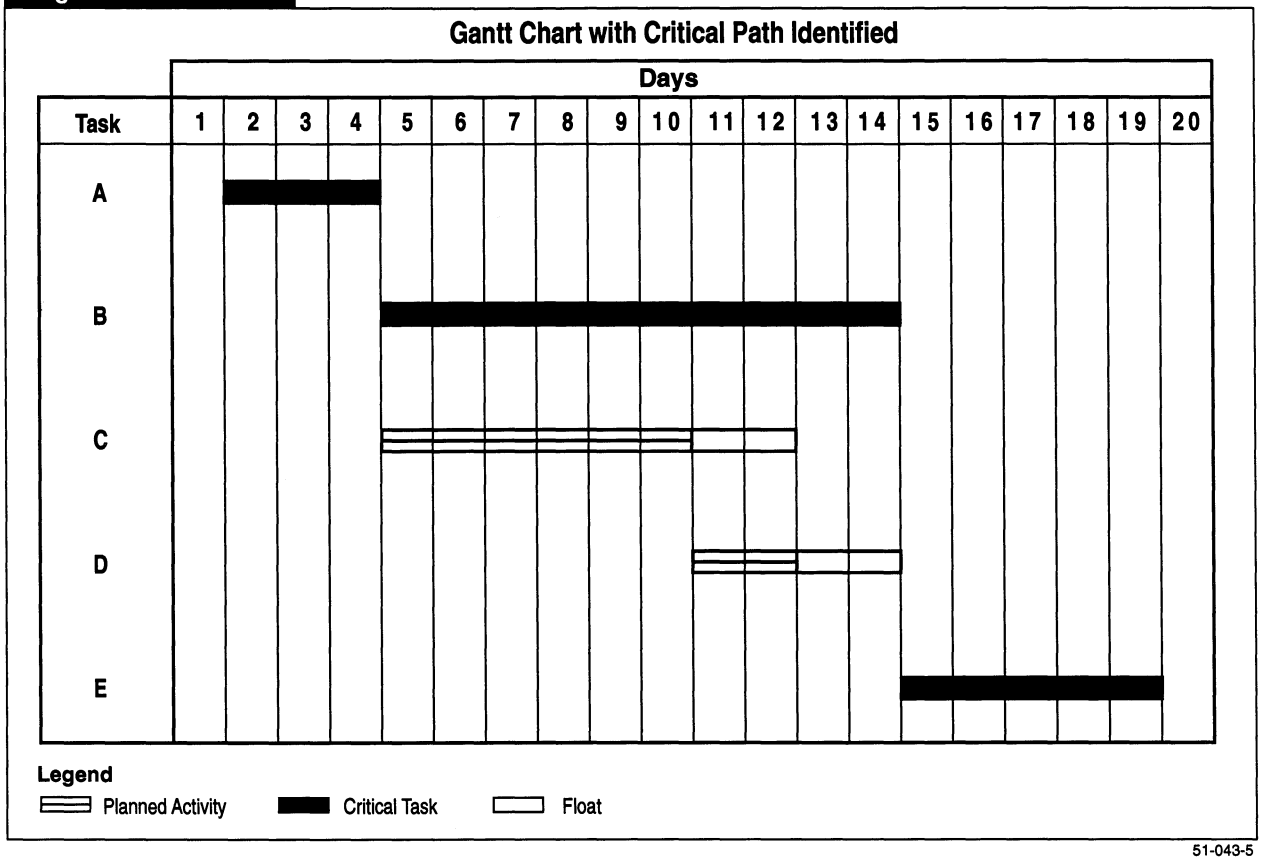
CPM uses precedence diagrams for a graphic display of tasks and subtasks. CPM should be used to determine the project length and to identify activities critical to project completion. The critical path of a project is the series of interdependent activities of a project that must occur in a specific sequence. The CPM illustrates schedule logic. Disadvantages of using the CPM are that the time scale is difficult to understand, since time is usually denoted above or below each task, and it is difficult to assess resource use, because resources are not depicted on the diagram.

3.9 Developing the RD/RA Budget

The RPM is responsible for controlling RD/RA cost when Superfund monies are used for cleanup activities. The RPM controls RD/RA costs by establishing a preliminary budget and periodically updating it. After the ROD is signed, the RD/RA budget and schedule developed during the RI/FS should be reviewed for accuracy and corrected, if necessary. The RPM consults with the IGCE coordinator, the information management coordinator, or other experienced staff within the Region to ensure consistency with available historical cost and schedule data.

The RPM incorporates budget information into CERCLIS to ensure funding availability upon

Figure 3-7



commencement of the design process and to facilitate other planning and project management activities. The estimated costs and dates serve as benchmarks; however, they should be refined and updated in CERCLIS periodically as they become more detailed and accurate. Failure to update CERCLIS hinders efforts to fund and schedule the project properly, potentially resulting in work stoppages, scheduling delays, cost overruns, and a general reduction in project quality.

3.10 Developing a Contracting Strategy for the RD and RA

When planning the RD/RA project, the RPM should develop a contracting strategy. The contracting strategy for RD/RA execution includes several interrelated decisions including choices for the following:

- Accelerated or traditional scheduling
- Design approach
- Designer
- RA contract types
- RA procurement strategy

Each decision affects other parts of the strategy. For example, an accelerated approach to start or complete a project more quickly affects all other contracting strategy decisions, which subsequently affect remediation costs. Project constraints (see section 3.7) also affect the contracting strategy. Examples of this include:

- Schedule requirements—Starting or completing a project quickly could require an accelerated strategy, which would affect all other contracting strategy decisions, including choice of designer, type of RA contract, RA procurement strategy, and cost.
- Project complexity and size—Project complexities range from simple earthwork projects to more complex projects to innovative technologies. Technical complexity also affects the type of design approach needed.

- Level of confidence—The degree of confidence in the site characterization data primarily will affect the contract type (e.g., a fixed-price contract may be inappropriate for a site where contaminant concentration or distribution is not well defined).

The following four sections of the chapter describe the major elements to consider when developing an RD/RA contracting strategy.

3.10.1 Schedule Acceleration

EPA is committed to expediting cleanups at Superfund sites. Therefore, the RPM must evaluate every project for opportunities to accelerate the schedule. Methods of developing an optimum schedule for an accelerated RA include phasing, fast-tracking, and using preplaced or prequalified contracts. The RPM should be aware, however, that ill-considered shortcuts or schedule acceleration during the RD process may result in problems during RA construction that require more financial resources to address at that stage of the RD/RA process.

Phasing

Phasing is the division of a project into smaller work elements that can be implemented on different schedules, thereby accelerating the RD and RA. It allows certain project elements to be started ahead of others to reduce the hazards present at the site or to complete simple prerequisite work elements ahead of more complex and hazardous ones. All elements may be in progress simultaneously, but each one has its own schedule and rate of progress. Phasing is advantageous because the initial RA start date can be accelerated. The following criteria can be used for grouping RD/RA activities into discrete work elements:

- Existing information
- Type of waste
- Funding availability

Existing Information

When sufficient information is available to design some RA components, these elements may be phased. Typically, these activities include road or fence construction, utilities installation, building demolition, tank removal, and site preparation. These activities can be completed and RA contracts procured while data on other aspects of the design are gathered.

Type Of Waste

Segregation of nonhazardous and hazardous work elements can be a simple criterion for project phasing. The engineering required for the nonhazardous components of a project is frequently more conventional and may lend itself readily to an accelerated schedule. Activities generally suitable for this approach include constructing roads and fences and installing utilities. Whenever possible, construction activities should be designated as nonhazardous to allow for more open competition, thereby resulting in lower government costs (29 *CFR* 1910.120 may not apply).

Funding Availability

As stated in section 3.7, funding constraints may create the need to phase an RA. For example, an incinerator project could be phased by mobilizing and constructing the incinerator as phase one and operating the incinerator as phase two.

Fast-Tracking

Fast-tracking is a procedure that is complementary to phasing. Whereas phasing is the process by which large complex projects are partitioned into smaller, more manageable work elements, fast-tracking accelerates the implementation of individual work elements. Fast-tracking techniques manipulate the internal steps required to complete each phased element, thereby optimizing the overall schedule. There are several ways in which the RD/RA process can be fast-tracked:

- Expediting the RD
- Optimizing the RD
- Fast-tracking the RA

Expediting the RD

In this method, steps in the RD process are eliminated or shortened. However, short-cutting involves the assumption of risks. The level of detail in an RD can be reduced, particularly for simple engineering efforts, such as soil excavation or tank dismantling. Several Regions also are developing standardized design specifications that can be used to shorten the design time. The designer would begin

with the standard specifications and modify them for the specific site. USACE, with funding assistance from EPA, developed a series of standard design specifications for certain types of remediation activities that are available to any designer involved in federal remediation (see section 4.3.1 and Figure 4-3 or USACE's Huntsville Construction Division should be contacted for additional information).

Optimizing the RD

Optimization is the rearrangement of the sequence in which RD elements are performed to enhance the overall schedule. Examples include:

- Completing the site preparation portion of a design (and other simple construction activities) and initiating construction while the rest of the design effort continues
- Scheduling all design reviews in parallel with ongoing design work so they are not on the critical path

Fast-Tracking the RA

Some projects can be divided into separate stages for construction by awarding contracts for each stage of construction work as soon as the design is completed (e.g., site preparation, procurement of long-lead equipment, utilities installation).

OSWER Directive 9355.5-2, "Guidance on Expediting RD and RA," contains additional information on phasing and fast-tracking.

Use of Preplaced or Prequalified Contracts

The use of preplaced or prequalified contracts is another means of expediting construction initiation. These contracting methods require approximately 30 to 60 days to initiate construction activities by eliminating the solicitation and audit requirements of site-specific contracts. Additionally, lengthy delays due to bid protests or bonding difficulties are eliminated. These contracts reduce competition, however, and may increase the cost of the project. Furthermore, because preplaced contracts are cost-reimbursement contracts, they require more extensive government oversight than fixed-price contracts. USACE has developed methods to expedite RA initiation through the implementation of the following two innovative contracting strategies:

- Preplaced RA and Rapid Response Contracts
- Total Environmental Response Contracts (TERCs)

There are restrictions on these types of contracts, but they may provide an excellent means to accelerate the RA. The RPM is encouraged to consult with the appropriate USACE contact to discuss the possibility of using them.

OSWER Directive 9355.5-05/FS, "Procedure for Use of USACE Preplaced Contracts to Expedite Superfund Cleanups," April 1994, contains more information on preplaced and rapid response contracts.

3.10.2 RD/RA Design Approach

The design approach for an RD/RA is an important part of the contracting strategy. Specifications, a generic term that includes drawings, are developed by the remedial designer and included in the RD package. Specifications contain a description of the technical requirements the constructor must meet to implement the RA and the criteria for determining whether these requirements are met. Two types of design specifications typically used in Superfund are detailed design and performance-based specifications. The type of specification package, developed in response to specific site characteristics and the selected remedy, influences both the design and the RA procurement schedule. Although the RPM cannot mandate which type of design specifications the remedial designer should develop, if the RPM can accurately describe EPA's requirements for the site in the RD SOW, the designer should choose design specifications to meet EPA's requirements. Therefore, the RPM should know the different types of design specifications and their effect on the RA procurement strategy when planning how to manage the RD/RA.

Detailed Design Specifications

Detailed design specifications and drawings are used in solicitations when the government's technical requirements are definite and can be clearly communicated to bidders (e.g., an entire treatment plant designed down to the bolt level). Under this type of specification, the contracting party (in some cases, EPA) or the designer may be responsible for design and related omissions, errors, and deficiencies

in the specifications and drawings. If the constructor follows the design and the remedy fails, the constructor may not be liable. The government must assume the cost of correcting the problem (and pursue designer liability, if any, separately). RAs lending themselves to detailed design specifications include landfill covers and traditional ground water treatment systems.

Detailed design specifications permit RA contract award solely on price and may result in a lower cost to the government (see section 5.4 for additional information). Competition for contract award is also expanded because construction firms without design capabilities may bid on projects. Although detailed designs save time during the RA procurement phase of a project (by alleviating the need for a technical proposal review), some time is usually lost during the intensive design effort. The RPM, in consultation with the TRT, should decide whether the overall schedule and budget can be reduced using this approach.

Performance-Based Specifications

Performance-based specifications in the RD package advise the constructor what the final product must achieve and explicitly describe how performance will be measured. The RA constructor proposes the method to achieve the requirements established in the specifications. If the RA constructor has undertaken an impossible task, meets technological problems, or cannot complete performance due to a lack of experience, the constructor assumes the risk of financial loss. This potential risk of financial loss, however, translates into a higher project cost for the government (in the form of higher bids). Performance-based specifications are suitable for more complex treatment technologies and are commercially available through a number of vendors. A performance-based specification package is generally more easily prepared and can result in a shortened RD schedule. Time savings, however, are offset by the additional procurement time needed to conduct technical evaluations of the submitted proposals, since each bidder may propose different means to achieve the prescribed requirements.

3.10.3 RA Contracts

The enormous scale and complexity of procurement has necessitated the development of a wide variety of contract types. The appropriate contract to implement the RA is a project-specific determination made by the party contracting for the RA. USACE and the ARCS/RAC contractor, respectively, will decide the RA contract type for USACE-managed and EPA contractor-managed RAs. Although the RPM does not choose the contract type for the RA procurement, he or she must be aware of the different contract types.

RA Contract Type

The three types of contracts generally used for RAs are fixed-price, cost-reimbursement, and time and materials contracts.

Fixed-Price Contracts

Fixed-price contracts provide a firm price for the RA at contract award. The contract amount is adjusted only when work must be added to or deleted from the contract, such as upon the occurrence of an unanticipated event or contingency. Most Superfund RAs, in which the work is well-defined, are awarded as fixed-price contracts.

Cost-Reimbursement Contracts

Cost-reimbursement contracts provide for payment to the contractor of all allocable, eligible, and reasonable costs expended by the contractor in contract performance. In addition to the costs, most cost-reimbursement contracts provide for the payment of a fee (profit) to the contractor. Cost-reimbursement contracts contain an estimate of total cost and a cost ceiling so funds may be obligated. These contracts should be used only when the performance cost cannot be estimated at the time of contract award with the accuracy necessary for a fixed-price contract. Because cost-reimbursement contracts require the government to pay for all costs incurred by the RA constructor, the government assumes a financial risk. To minimize the government's potential financial risk, more intensive contract management is required by EPA.

Time and Materials Contracts

A time and materials contract provides for the acquisition of supplies, services, equipment, and construction on the basis of direct labor hours at specified hourly rates and materials at cost. These contracts are used only where it is not possible (at

the time of contract placement) to estimate accurately the scope (extent or duration) of work required. The contract provides for direct labor hours at an hourly rate and the provision of materials at a designated cost. Time and materials contracts require the use of time and cost standards applicable to the particular work item.

RA Contract Requirements

After the RA contract type is established, bonding and wage rate requirements must be met by the constructor. Bonding and wage rates are the responsibility of the RA contracting party, but the CO works with the contracting party to ensure all requirements are met. The RPM, however, should be aware of the status of such requirements.

Construction and Service Contract Wage Rates

The contracting party soliciting the RA contract must differentiate between construction and service portions of the contract. Whether an RA or portions of it are determined to be *construction* (alteration or repair, including dredging, excavating, and painting) or *service* (operating a treatment unit, refuse removal, etc.) will determine the labor wage rates and the bonds necessary for the project. The plans and specifications should differentiate between the two types of activities so that appropriate labor wage rates (Davis-Bacon Act rates for construction and Service Contract Act rates for service) can be used.

For construction work funded in whole or in part under Section 104(g)(1) of CERCLA, the law requires that all laborers and mechanics employed by contractors be paid wages at rates not less than those prevailing on projects of a similar character within the same locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act. Service Contract Act wage rates must be applied when appropriate for government contractors providing services.

OERR, "Davis-Bacon Act/Service Contract Act and Related Bonding," contains more information on wage rates and bonding requirements.

Bonding Requirements for RA Contracts

Historically, bonding companies have been reluctant to issue bonds where the construction cleanup costs are high. By separating the project into two portions, construction and service, the overall construction costs are lower, thereby increasing the opportunities for contractors to obtain bonds. Performance and payment bonds are required on all federal construction jobs over $25,000. **Figure 3-8** describes construction bond requirements. When RA costs increase, bonds may need to be re-evaluated and additional bonds obtained by the constructor.

Figure 3-8

Construction Bond Requirements

The Miller Act (40 U.S.C. 270a-270f) requires performance and payment bonds for any construction contract exceeding $25,000. A *payment bond* is required should the RA contractor fail to pay its subcontractors. The amount of the payment bond shall equal:

1. 50 percent of the contract price if the contract price is not more than $1 million;
2. 40 percent of the contract price if the contract price is more than $1 million but less than $5 million; or
3. $2½ million if the contract price is more than $5 million.

A *performance bond* guarantees that the cost of the construction can be recovered should the RA contractor default on its obligation. Performance bonds generally cover 100 percent of the contract price and can be increased if the cost of the RA changes. The performance bond requirement may be waived or reduced by the CO, provided the government's financial interest is adequately protected.

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3.10.4 RA Procurement Strategies

The selected procurement method should correlate to the type of work being performed and will depend on the type of design specifications developed. Since EPA usually does not directly procure the RA, the RPM probably will not choose the RA procurement method. The RPM should, however, be familiar with the different types of procurement methods. In general, there are four basic forms of procurement within federal construction contracting:

- Sealed bidding
- Negotiated procurement
- Two-step sealed bidding
- Non-competitive (sole-source) procurement

For detailed information on these types of RA procurement, see section 5.4.

3.11 Coordinating with the State

The state is an integral part of the Superfund program and as such must be afforded the opportunity to participate in a meaningful way in RD/RA implementation. As a first step in defining state involvement for a site, the RPM should determine whether a State Memorandum of Agreement (SMOA) exists between EPA and the state (40 *CFR* 300.500). The SMOA usually establishes the general roles and responsibilities of EPA and the state during Federal-lead and state-lead response actions. Having a SMOA will save time in negotiating site-specific agreements (i.e., Superfund state contracts and cooperative agreements) and other Superfund-related issues with the state. For states that have not signed a SMOA with EPA, the RPM has a greater role in establishing the terms of the EPA-state relationship.

Secondly, the RPM and his or her state counterpart should meet before the RD starts to discuss fully the roles and responsibilities of both parties. During this initial meeting, the RPM should question the state about potential state concerns related to its CERCLA obligations. State constraints on funding or property transfer may have a significant effect on the implementation of the project and must be identified prior to issuing a design assignment. This meeting serves as a kick-off to an ongoing exchange that must continue to take place between EPA and the state.

Once EPA and state roles are defined by a SMOA or discussions, the RPM should develop a site-specific agreement outlining state and EPA responsibilities for that site. Superfund state contracts (SSCs) or cooperative agreements (CAs) specify EPA and state roles for RDs and RAs. In a Federal-lead, Fund-financed response, EPA is the lead agency and the state is the support agency (40 *CFR* 300.500). When EPA is the lead agency, an SSC is created between EPA and the state (see section 3.11.2); when the state is the lead agency, a state enters into a CA with EPA. SSCs also allow the transfer of necessary resources that the state may request as part of its support agency function.

3.11.1 State Support Role in Federal-Lead RD/RAs

For a Federal-lead response, the RPM should encourage the state to be an actively involved member of EPA's project team. Under Section 104 of CERCLA, the state is required to:

- Provide a 10 percent cost share of the remedial response (could be 50 percent or more for state-operated facilities)
- Conduct and fund all O&M activities
- Accept transfer of all property acquired by EPA to conduct the RA

In addition to the statutory requirements, Sections 300.515(g) and (h) of the *NCP* require that the following be done for RDs and RAs:

- The extent and nature of state involvement during the RD and RA be specified in site specific SCCs or CAs
- A joint inspection be conducted at the conclusion of RA construction
- The lead agency allow the support agency the opportunity to review documents (i.e., for Federal-lead RDs, the state is allowed a minimum of ten working days and a maximum of 15 working days to review RDs)

Without the state's assurance of its willingness to fulfill these requirements, the RA cannot be implemented. An experienced RPM understands that gaining the state's support takes much more than meeting minimum requirements. Therefore, early and full participation by the state is crucial to project success.

3.11.2 Developing the Superfund State Contract

The SSC is a joint, legally binding site-specific agreement between EPA and a state to obtain the necessary state assurances before an RA can begin at a site. The process of developing an SSC may take a year or longer. Creating a draft SSC early in the RD and meeting with the state on a regular basis as discussed above to resolve common issues should prevent the SSC from delaying the RA implementation. Surprising the state with higher projected RA costs or labor intensive O&M requirements near the end of the RD is poor project management. This may cause the state to object to

meeting unanticipated obligations, which may result in project disruption. Taking a proactive approach by regularly meeting with the state and creating an environment where the state is a valuable team participant should prevent incidents like this from occurring.

In addition to addressing the state's required CERCLA obligations, the RPM should also work with the state to ensure the following issues are dealt with in the SSC:

- Providing a complete RA cost estimate with an appropriate contingency amount to minimize state reluctance to increase its cost-share during the RA. RA construction change orders may result in costs exceeding the SSC amount. To minimize state disagreement over financial terms as the project progresses, careful analysis of the RA cost estimate and the associated contingency must be performed and included with the SSC.
- Defining if and to what extent the state will be involved in RA construction management (change order and claims review, value engineering proposals, and USACE construction contractor selection technical evaluation panels).
- Determining at what point the remedy can be declared "operational and functional" (see section 5.7.1). Once the remedy is determined to be operational and functional, the state is required to assume O&M activities (40 *CFR* 300.510). The SSC should clearly list the tests, performance requirements, or other functional requirements to be used to make this determination.
- Identifying O&M requirements and projected costs. In this section, the RPM and the state should address facility transfer, operator training, site access for O&M activities, and the O&M manual contents.

OSWER Directive 9355.0-57FS, "Cost-Risk Analysis for Remedial Actions," (DRAFT) 1995, provides guidance on estimating contingency amounts for RAs.

3.12 Maximizing Community Relations

Community relations is a useful and vital aspect of the RD/RA process. Community relations activities serve to keep communities informed of the activities at the site and help EPA anticipate and respond to community concerns. EPA, as the lead agency in a Federal-lead RD/RA, must do the following, according to 40 *CFR* Section 300.435:

- Review the community relations plan and update it as necessary
- Issue a fact sheet and hold a public meeting at RD completion, as appropriate (public meetings can also be held throughout the RD/RA process, if appropriate)

A community relations plan is developed for a site when the RI/FS commences. The community relations plan should be reviewed and updated to reflect the anticipated community relations activities that will occur during the RD/RA. Many RPMs may recall difficulties in implementing the RA because of the lack of initial coordination with the community over construction concerns. The key to effective community relations is taking a proactive role. The RPM must seriously discuss the effect of the construction and ways to mitigate its effect on the community. The RPM should not wait until the final design to initiate a discussion of the effects of the proposed RA with the community because it often will be too late to accommodate community concerns by making modifications.

The RPM may be assisted by USACE (if it has the RD and/or RA lead) or an EPA contractor in revising the community relations plan. The Regional Community Relations Coordinator may also be consulted. However, the RPM must retain the primary responsibility for plan implementation.

For ARCS/RAC contracts, all anticipated community relations support should be described in detail in the RD and RA SOWs. EPA contractors may only serve in a supporting capacity; they may *not* represent EPA during meetings with the community.

During the RD, the RPM should meet with local citizens groups early and often to discuss the effect

of the RA on their community. These effects may include:

- Air emissions—The potential for fugitive emissions, types of monitoring, plan for suppression, warning systems for the community (i.e., to address concerns about playgrounds, school areas, etc.), and evacuation procedures are very real community concerns. Some RPMs have arranged to have air monitoring data read out to a local point within the community, installed video cameras to record site activities for local cable access channels, and worked with the community to develop a warning system to notify the community of an emergency situation.
- Traffic—The RA generally will involve a substantial increase in vehicular (particularly truck) traffic around the site. The designer will suggest truck hauling routes (based on road weight restrictions, ease of transport, etc.) but citizens who know the area may have their own suggestions. The RPM should consider the alternatives, which may include rerouting or restricting the time of day that trucks may operate.
- Noise levels—The RA may result in an increase in noise levels in the surrounding community. The designer is responsible for evaluating the local restrictions on noise levels and ensuring that the design incorporates these standards. Even if the design complies with the local noise standards, the RPM may need to consider additional sound suppression systems to accommodate the community.
- Relocation—The RA may result in temporary or permanent relocation of community structures or residents, which the RPM should address.
- Economic effects—Citizens will question the economic effect that the RA will have on the community. As a show of good faith, the RPM may request that the contract be structured in such a way as to allow more local business participation. The contract can be phased (e.g., site preparation work, site security) and separated into nonhazardous and hazardous components that would allow smaller local firms to compete.

Overall, the RPM must remember that the community can also serve as an ally during the RD/RA effort. For example, community members may notice suspicious activities and report them to EPA, thus reducing Superfund site vandalism. By establishing a rapport with the community, the RPM will find that the community should be more responsive which in turn will make everyone's job easier.

The RPM should also discuss all of the above issues with local citizens groups before and during the RA. Section 5.3.2 provides more information on community relations efforts during the remedial construction project phase.

OSWER Directive 9230.0-04, "Community Relations Guidance for Evaluating Citizen Concerns at Superfund Sites," and EPA/540/G-88/002, "Community Relations in Superfund—A Handbook (Interim Guidance)," contain additional information on community relations.

Chapter 4 Federal-Lead Remedial Design

4.1 Introduction

The remedial design (RD) is a series of engineering reports, documents, specifications, and drawings that detail the steps to be taken during the remedial action (RA) to meet the goals established in the Record of Decision (ROD) and remove the site from the National Priorities List . This chapter describes the responsibilities of the Remedial Project Manager (RPM) in overseeing the development of Federal-lead RDs.

The RPM ultimately is responsible for overseeing the successful completion and implementation of the RD. The RPM's role in the RD process, however, differs depending on whether the RD is an EPA- or United States Army Corps of Engineers (USACE)-managed RD. For EPA-managed RDs, the RPM oversees the work of EPA contractors developing the RD and has more direct control over the RD effort. For USACE-managed RDs, the RPM facilitates USACE development of the RD and acts in an advisory capacity while remaining responsible for overseeing the project and ensuring that the RD meets EPA goals and objectives. The term *contracting party* is used in this chapter to refer to either EPA or USACE, since both EPA and USACE may be contracting with a remedial designer. In some instances, USACE will perform the RD in-house and will not use contractor services.

An overview of the RD process highlighting the RPM's responsibilities for EPA- and USACE-managed RDs is presented in **Figure 4-1**.

Office of Solid Waste and Emergency Response (OSWER) Directive 9355.1-1, "Superfund Federal-Lead Remedial Project Management Handbook"; and EPA 540/R-94/022 and 103, "Response Action Contract Users' Guide, Volumes 1 and 2," provide additional information on project management.

4.2 Deciding to Task the RD to an EPA Contractor or USACE

The RPM must determine whether to task the RD to an Alternative Remedial Contracting Strategy/ Response Action Contract (ARCS/RAC) contractor or to USACE. The RPM should consult with the Technical Review Team (TRT) and consider the following factors when making this determination:

- Need for on-site federal presence
- The RPM's workload and availability to manage government contractors
- Technical expertise needed for the design
- USACE and ARCS/RAC contractor experience and history
- ARCS/RAC contractors' contract capacities
- Conflict of interest (COI) screening
- Continuity with future RA activities

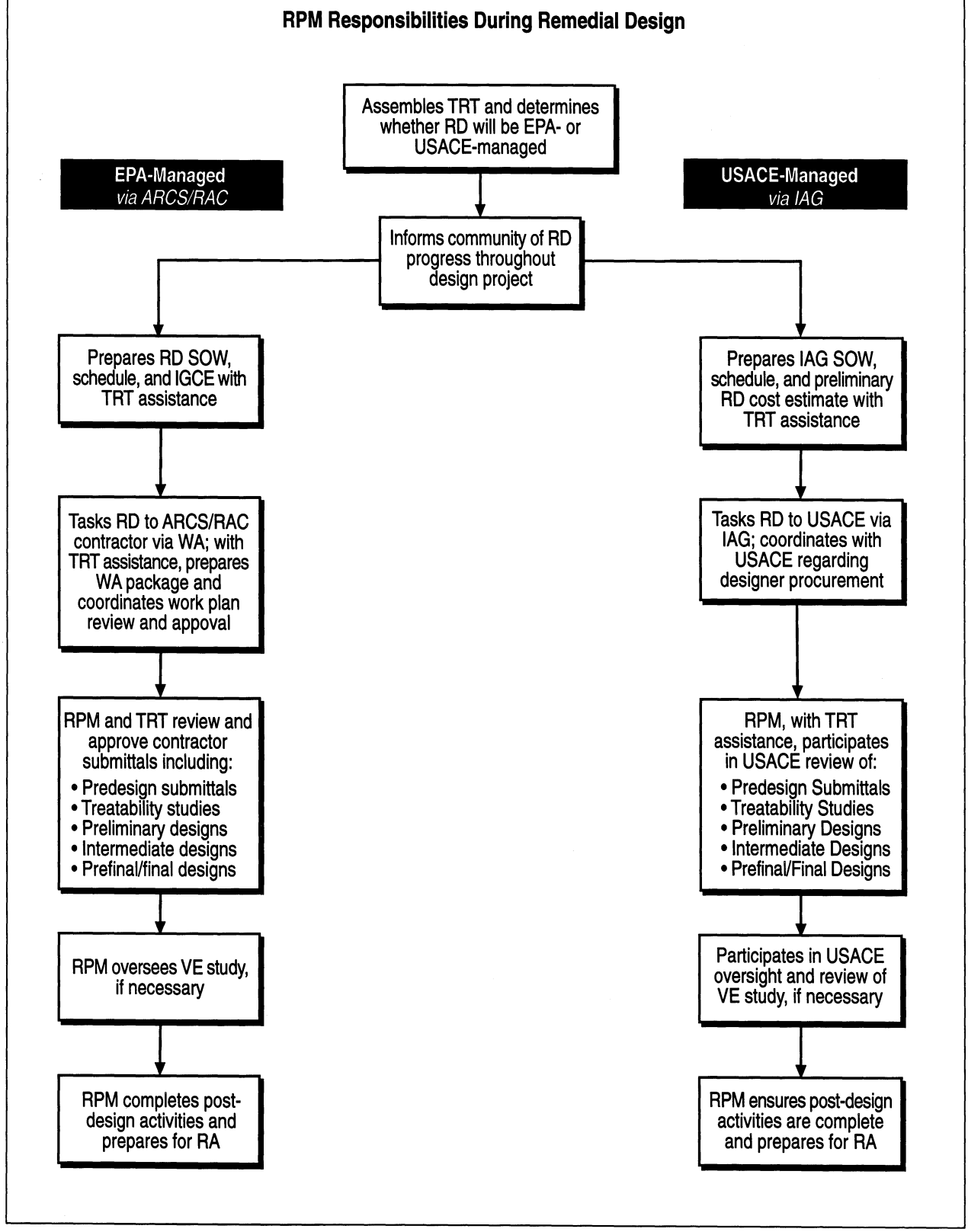
Tasking the RD to an ARCS/RAC contractor or to USACE will affect the RPM's workload and responsibilities. The interagency agreement (IAG) between EPA and USACE creates a different type of contractual relationship than the relationship between EPA and its contractors. Regardless of whether EPA or USACE manages the RD, however, the RPM remains ultimately responsible for the success of the RD.

OSWER Directive 9242.3-08, "Revision of Policy Regarding Superfund Project Assignment Between Alternative Remedial Contracting Strategy Contractors and USACE," December 1991, provides information on using EPA contractors and USACE.

4.3 Developing the Statement of Work

The RPM must prepare a statement of work (SOW) for the RD. Many RD requirements are developed during the remedial investigation (RI) and feasibility study (FS) and are detailed in the ROD and the

Figure 4-1



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RPM's project management plan (see Chapter 3). The RPM should consult the information collected to complete the RI/FS, ROD, and project management plan when preparing the RD SOW. The RPM, with TRT assistance, prepares the SOW detailing EPA's requirements for EPA-managed RDs. For USACE-managed RDs, the RPM prepares an IAG SOW for the RD, which outlines EPA RD requirements. USACE develops the RD SOW with RPM assistance using the RD IAG SOW as a framework.

4.3.1 Preparing the Remedial Design Statement of Work

The RPM is required to prepare RD SOWs for EPA-managed designs that are contracted out through ARCS contracts or RACs. The SOW for EPA-managed designs must be very detailed because the SOW becomes a legally binding component of the ARCS/RAC contract. An RPM must prepare an SOW for USACE-managed designs as part of the IAG between EPA and USACE. The IAG SOW for USACE-managed designs, prepared with assistance from USACE, facilitates communication between EPA and USACE regarding design requirements. The IAG is discussed in section 4.4.2.

SOW for EPA-managed RDs

The RD SOW is the most important document that an RPM prepares during the RD/RA process because it establishes the framework to implement the remedy. An inadequate, incomplete, or inaccurate definition of the work to be completed by the remedial designer will affect adversely the time, cost, and effectiveness of the site remediation. The SOW must describe clearly the RD requirements to prevent the designer from incorporating unnecessary or insufficient components into the design. The RPM must understand EPA's site remediation goals and what is required to achieve them before preparing the SOW.

Work is allocated to ARCS/RAC contractors by issuing a work assignment (WA). Each WA includes a detailed SOW that describes the work to be completed as part of the WA. Each ARCS/RAC contract contains standard tasks outlining the work to be performed under the contract and includes standard tasks for RD WAs. When developing an SOW for an RD WA, the RPM should use the standard tasks listed in the contract as a basic SOW framework and expand the framework to incorporate site-specific requirements.

Standard tasks, in addition to simplifying SOW development, provide EPA with a consistent method of tracking WA costs. In RACs, WA tasks and subtasks compose the work breakdown structure (WBS). The WBS simplifies the tracking of monthly WA costs because the contractor must report costs in the WBS format. The RD standard tasks for RACs are listed in **Figure 4-2.**

Figure 4-2

EPA Contractor RD Standard Tasks (RACs)

Task 1	Project planning and support
Task 2	Community relations
Task 3	Data acquisition
Task 4	Sample analysis
Task 5	Analytical support and data validation
Task 6	Data evaluation
Task 7	Treatability study/pilot testing
Task 8	Preliminary design
Task 9	Equipment/services/utilities
Task 10	Intermediate design
Task 11	Prefinal/final design
Task 12	Post remedial design support
Task 13	Work assignment closeout

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The benefits of using a WBS include:

- Establishing a common framework for activities within each EPA Region
- Facilitating SOW template development
- Simplifying the monthly tracking of WA costs
- Enabling RPMs to use EPA historic cost databases to prepare independent government cost estimates (IGCEs)

An OSWER Directive, *Guidance for Scoping the Remedial Design*, details the items and concerns to incorporate when developing the RD SOW. **Appendix E** contains a model RD SOW that may be used to develop a site-specific SOW. The directive recommends that RPMs use the following guidelines:

- List all possible SOW tasks in the order indicated in Figure 4-2, but only provide task information relevant to the design. Do not delete or change the order or numbering of the standard tasks. For example, if it appears that data acquisition will not be required as part of the RD, the SOW should state, "Task 3: Not required." The RD SOW can be amended later to include Task 3 requirements if necessary.
- Specify all deliverables and their due dates and include the methods for evaluating them.
- Instruct the contractor to use existing RI/FS site-specific plans whenever possible. For example, the health and safety plans (HASPs), sampling and analysis plans (SAPs), and emergency response plans (ERPs) prepared for the RI/FS can be reused during the RD with minor modifications or addenda.
- Require justification prior to any resampling effort. Additional sampling consumes time and resources and should be avoided if possible. The RPM also must re-examine the RI/FS data quality objectives (DQOs) to ensure that they are appropriate for the RD.
- Incorporate standard design specifications by reference for the designer to use wherever possible. Many portions of an RD are not site-specific and can be adapted from previously prepared specifications. USACE has developed treatment-specific design specifications that can benefit EPA-managed projects. A listing of these standard design specifications appears in **Figure 4-3**. The design specifications may be obtained from USACE's Huntsville Construction Division.
- Specify that design submittals conform to the Construction Specification Institute (CSI) format or a locally supported format. If USACE is expected to manage the RA, the submittals must conform to USACE's specification format contained in ETL 1006, *Technical Requirement for Pre-design and Design Submittals.*
- In situations where ARCS/RAC contractors design the remedy and USACE procures RA services, the ARCS/RAC contractor must be available for consultation during the RA. The RA SOW should include the coordination between the RD contractor and USACE as a separate task or subtask (see section 5.2.4 for more information on RA SOWs). Significant RPM coordination with USACE personnel, including the USACE resident engineer, is required to ensure that the RA WA is in place when the RD WA is completed. This will help ease the transition from one remedial phase to the next.

Figure 4-3

USACE Standard Design Specifications

USACE has developed the following treatment-specific design specifications:

- Air Stripping
- Asbestos Abatement
- Blower, Off-Gas: Treatment Systems
- Chemical Feed Systems
- Clearing and Grubbing
- Contractor Chemical Data Quality Control
- Filtration Systems
- Geomembrane Barriers for Landfill Covers
- Geonet
- Geosynthetic Clay Liner
- Low Permeability Clay Liner
- Monitoring Well Installation
- Piping, Off-Gas: Treatment Systems
- Plate and Frame Filter Press
- Remediation of Contaminated Soils and Sludge by Incineration
- Removal of Underground Storage Tanks
- Safety, Health, and Emergency Response (reviewed by the EPA/Labor Task Force)
- Separation/Filtration Geotextile
- Soil/Bentonite Slurry Cutoff Walls
- Solidification/Stabilization of Contaminated Materials

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Design Contractor's Responsibility for Quality Control

The RPM must require as part of the SOW that the contractor perform internal design reviews. Internal design reviews are a cornerstone of the contractor's quality control (QC) program and are carried out by members of the design team to ensure delivery of a quality product to EPA. The RPM will review

contractor QC methodologies as part of the work plan review.

The most important QC activities generally performed by a design contractor are: plan-in-hand reviews and correlating drawings and specifications. Plan-in-hand reviews are performed by the design contractor at the end of the design by visiting the site and comparing the current site conditions with the design drawings and making any appropriate corrections.

Correlating drawings and specifications is a structured process to coordinate the drawings and specifications among the various engineering disciplines using the process flow diagrams (PFDs) and the piping and instrumentation diagrams (P&IDs) as the templates to cross-check the design and ensure that errors or omissions are discovered and corrected. For example, this review may find that mechanical drawings indicate equipment with different horsepower ratings than those shown on electrical drawings. This review will be performed before submission of the prefinal design to the contracting party (see section 4.7.6).

SOW for USACE-Managed RDs

The relationship between EPA and USACE during USACE-managed RDs is outlined in the IAG. Although the RPM prepares the IAG SOW, USACE prepare the designer's RD SOW. It is strongly recommended, however, that the RPM prepare an effective IAG SOW and work with USACE to prepare a design SOW. Clear lines of communication between the two agencies will increase project quality and reduce unnecessary delays.

The IAG SOW does not need to contain the same level of detail as an RD SOW prepared for an EPA contractor because USACE functions as an extension of EPA and is free to develop its own RD specifications. The IAG SOW prepared by the RPM could define only the major project requirements, schedule, all known constraints, funding issues, and roles and responsibilities, but also should contain any communications requirements between USACE and EPA, an oversight cost estimate, and any special reports to be generated for the RPM.

All predesign information also must be made available as part of the SOW provided with the IAG.

When developing the IAG SOW, the RPM, in conjunction with the TRT, is encouraged to meet regularly with USACE representatives to discuss the project requirements and EPA's expectations.

Ideally, USACE should be involved in the RI/FS as part of the RPM's TRT as soon as it is expected to be a USACE-managed RD. Early involvement is invaluable in establishing a good working relationship between the agencies and minimizes schedule delays when changing from EPA's RI/FS contractor to USACE. The RPM also must firmly establish early in the relationship that he or she will be involved in the USACE design contract SOW preparation. Cooperation between the agencies during RD SOW preparation prevents the need to modify the designer's contract or delivery order, a process that takes additional time. Negotiating changes after contract award historically has taken several months to complete and has resulted in prolonged interruptions in design work.

Most difficulties incurred by an RPM when working with another agency are caused by lack of communication between both parties. Failure to use the expertise of TRT members, particularly when the RPM is not intimately familiar with engineering and construction, can compound the communication difficulties. Early and frequent interaction may prevent these types of problems from occurring and will help define each agency's roles and responsibilities.

OSWER Directive 9355.0-43, "Guidance for Scoping the Remedial Design," March 1995; ETL 1006, "Technical Requirement for Predesign and Design Submittals"; and EPA 540/R-94/022 and 103, "Response Action Contract Users' Guide, Volumes 1 and 2," provide additional information to assist the RPM in preparing the RD SOW.

4.3.2 Developing a Preliminary Remedial Design Schedule

The RPM prepares a baseline RD schedule as part of the SOW development process. During the work plan approval process, a highly detailed RD schedule (developed by the contractor) will be negotiated between the parties. The RPM should ensure adherence to the detailed RD schedule to

successfully manage an RD (see section 3.9). For EPA-managed RDs, EPA has developed remedy-specific RD schedules for each of the nine categories that encompass the range of technologies being used to remediate NPL sites. These categories are listed in **Figure 4-4**. The generic schedules are based on historical data from previous EPA contracts. The OSWER Directive, *Guidance for Scoping the Remedial Design*, contains remedy-specific RD schedules divided into EPA contractor standard tasks. An RPM can adapt these schedules to formulate a preliminary or baseline RD schedule based on the standard tasks in the site-specific RD SOW.

Figure 4-4

Principal Remediation Categories for RD Schedules

- Groundwater Treatment - Complex
- Groundwater Treatment - Simple
- Groundwater Treatment - Simple (Expedited)
- Treatment of Soils/Sludge - Complex
- Treatment of Soils/Sludge - Simple
- Civil Engineering - Complex
- Civil Engineering - Simple
- Civil Engineering - Simple (Expedited)

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During USACE-managed RDs, USACE personnel develop the RD schedule with RPM input and cooperation. The schedule cannot be modified by the designer without prior approval from the contracting party. The RPM must be available as needed to resolve issues that affect the schedule.

Once the schedule has been developed and approved, the RPM should enter the information into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). The RPM continually must update the CERCLIS information as the RD and RA progress. CERCLIS, however, is not to be used to supplement the RPM's own scheduling efforts. The RPM's master schedule should be the primary document; CERCLIS is merely an administrative tracking device and is not suitable or intended to be used as a project management tool.

4.3.3 Developing the Remedial Design Independent Government Cost Estimate

An IGCE is an estimate of the cost required to complete a project. *Federal Acquisition Regulation* (*FAR*) Part 36.605 requires that an IGCE be prepared for each contract or contract modification (such as a WA) expected to exceed $25,000. The accuracy of the IGCE depends on the detail provided in the SOW. After the RD SOW is completed, the RPM must complete an IGCE for EPA-managed RDs and is strongly encouraged to complete a similar cost estimate for USACE-managed RDs. The RPM is responsible for updating CERCLIS with the cost estimate information and confirming that RD funds are available before the actual design work begins.

IGCEs for EPA-Managed RDs

If EPA is the contracting party, the RPM, as the Work Assignment Manager (WAM) for the RD, is required to prepare an IGCE before issuing the WA. OSWER Directive 9355.0-43, *Guidance for Scoping the Remedial Design*, provides basic information to estimate the level of effort (LOE) for each of the standard tasks using the principal remediation categories in Figure 4-4. These LOE estimates are derived from data collected from previous EPA contracts. The RPM should consider the use of these estimates only as a starting point in developing a more site-specific cost estimate. Before preparing an IGCE, the RPM should contact the Regional IGCE coordinator who is available to assist the RPM with the format, content, and review of the estimate.

IGCEs for USACE-Managed RDs

An RPM is not required to prepare an IGCE as part of the IAG with USACE. USACE prepares the IGCE when developing a site-specific contract for design services or an indefinite delivery work order under their preplaced/indefinite delivery contracts. Although not required to prepare an IGCE, the RPM should develop a rough estimate before entering into RD scoping discussions with USACE. Comparing independent RD cost estimates is an effective means of determining whether both parties fully comprehend the scope of the design activity. It also helps resolve potentially difficult issues such as USACE travel costs, the number of staff involved,

and the duration of the design process.

4.4 Tasking the Remedial Design

The RD is tasked to ARCS/RAC contractors by issuing an RD WA and to USACE through an IAG. The RPM's responsibilities for tasking the RD to an EPA contractor or to USACE and for managing the progress of the RD are discussed below.

4.4.1 Tasking the Remedial Design to an EPA Contractor

EPA orders work from ARCS/RAC contractors by issuing a written WA to the contractor. The WA is a legally binding part of the EPA contract with the contractor and generally contains the project background, scope of work, project schedule, a list of deliverables, approved LOE, documentation requirements, and restrictions on contractor travel, printing, or other activities. This section does not describe the entire WA management process but provides a brief overview of basic WA procedures. This section describes:

- Preparing and issuing the RD WA package
- Issuing RD WA amendments and modifications
- Closing out the RD WA

The WA process is described in greater detail in other references listed at the end of this section.

Preparing and Issuing the RD WA Package

The RPM prepares a WA package to initiate a new WA. The WA package is reviewed by the Project Officer (PO) and reviewed and approved by the Contracting Officer (CO) before being issued to the contractor. The WA package must include the following:

- Work assignment form (WAF)—The WAF is a one-page form used to track the various actions required to initiate, approve, amend, and complete a WA. The WAF also includes the approved expenditure limit that provides the RPM with the means to control the funds available to the contractor and allows the RPM to manage the phasing and execution of the WA.
- SOW—The SOW is a clear description of the work required of the contractor. The SOW includes a detailed breakdown of work, all required deliverables, work quality requirements, and delivery schedule (see section 4.3).
- IGCE—An IGCE is the RPM's cost estimate for the cost of performing the work detailed in the SOW. The IGCE is used by the CO to negotiate WA costs with the contractor and must *never* be disclosed in *any* fashion to the contractor (see section 4.3.3).
- Nomination and appointment of Contracting Officer's representative (COR) form, EPA Form 1900-65a—Form 1900-65a is used to designate the WAM for the new WA. The RPM usually will function as the WAM for RD WAs.
- Procurement request (PR), EPA Form 1900-8—The PR is used to commit funds to individually funded WAs. If a WA is bulk funded, as most RAC WAs are, funds are committed by indicating the expenditure limit on the WAF.
- Work assignment allocation matrix—The work assignment allocation matrix is used to identify which ARCS/RAC contractor will receive the WA. (This form is added to the WA package by the PO.)

After the PO reviews the WA package for accuracy and completeness, it is submitted to the CO for final review and approval. The CO signs the WAF, issues the WA to the contractor, and returns copies of the approved WA to the RPM and PO.

Once the ARCS/RAC contractor has received the WA, the contractor attends a scoping meeting with the RPM, TRT, and PO and, possibly, the CO to discuss the WA. The contractor prepares and submits a work plan that describes the contractor's proposed approach for completing the WA tasks. Any required changes to the work plan will be negotiated with the contractor by the CO with assistance from the PO and RPM. A revised work plan will be submitted by the contractor if significant changes are required. The RPM and PO oversee the approval of the contractor work plan or revised work plan.

Issuing RD WA Amendments and Technical Direction

The unforeseen complications inherent with RD work require a certain degree of EPA and contractor flexibility. Site conditions may exist that were not considered when the WA SOW and contractor work plan were prepared. The necessary response to the new site conditions may affect the approved scope, LOE, or dollar values and require revisions to the WA. There are two methods for clarifying the WA: issuing technical direction or amending the WA.

Issuing Technical Direction

The RPM may issue technical direction to assist the contractor in completing the WA. Technical direction should be issued in the form of a technical direction memorandum and may be issued in response to a contractor question, to clarify provisions in the SOW or EPA-approved work plan, in response to project or site activities, or to comment on or document approval of contractor deliverables. Technical direction, however, cannot be used to change the scope or budget of the WA.

Amending the WA

A WA amendment is required for changes to the WA scope when funds or LOE above the approved work plan budget are needed or when funds or LOE levels need adjustment. If the WA amendment will increase the WA cost by more than $25,000, the RPM must prepare an IGCE for the amendment. The CO issues final approval for all WA amendments. The contractor is required to submit a revised work plan to incorporate WA amendment changes. The revised work plan is approved using the same procedures used to approve the original work plan.

The RPM can increase or decrease WA funding for bulk-funded WAs by preparing a WAF and increasing or decreasing the expenditure limit. The RPM submits the WAF to the PO for review and the PO presents it to the CO for final review and approval. For individually-funded WAs, the RPM must prepare a PR and an amended WAF and forward them to the CO for processing. The RPM must consult with the Region's Information Management Coordinator to ensure, prior to increasing WA funding, that additional RD funds are available.

The RPM must also remain aware of the ARCS/RAC WA period of performance and extend the period as necessary. The RPM extends the period of performance by updating the WAF and submitting it for PO review and CO review and approval. The RPM must update CERCLIS with all WA changes that affect the WA budget or schedule.

Closing Out the RD WA

The final task in each WA is WA closeout. WA closeout involves:

- RPM, PO, CO, and contractor evaluations of contractor performance
- Organizing and retiring WA files
- Site demobilization, if necessary
- Verifying and processing final WA costs

The WA is considered complete upon approval of the final deliverable and receipt of the final invoice. After the WA is complete, the RPM evaluates the contractor using the WA completion report (WACR) form. The PO, CO, and contractor also complete WACRs.

The RPM is responsible for organizing and retiring WA files and ensuring that contractor files are properly organized and retired. The RPM also must coordinate the return of all government property in the contractor's possession that will not be used by the contractor during the RA.

OSWER Directive 9242.6-01, "ARCS Work Assignment Management—Field Guide," January 1989; EPA/540/G-89/008, "ARCS Contracts Users' Manual"; and EPA 540/R-94/022 and 103, "Response Action Contract Users' Guide, Volumes 1 and 2," provide additional information on the WA process.

4.4.2 Tasking the Remedial Design to USACE

The RD is tasked to USACE with an IAG. An IAG is a written agreement negotiated between agencies that allows an agency to purchase goods and services from another agency. All Superfund IAGs are similar in that they contain special conditions for records retention, reporting, and cost recovery. For RD/RA projects, there are three types of IAGs between EPA and USACE: RD IAGs, RA IAGs, and technical assistance IAGs. **Appendix D** contains model RD and RA IAGs. This section refers to RD IAGs. Each

type of IAG may be executed in one of three ways—as a generic IAG, as an incrementally funded IAG, or as a two-phase IAG.

A Region and USACE may have a long-standing generic IAG between them with sufficient funding for EPA to task USACE with the preliminary RD/RA planning and cost estimate. Some Regions prefer using one generic IAG with USACE to initiate RD projects. After the initial planning and preparation is complete, the RPM prepares an RD IAG for the actual design.

Incrementally funded IAGs are used for specific projects with USACE. EPA prepares an IAG with limited funding. The limited funding allows USACE officials to procure a design firm and meet with the RPM and define and shape the RD SOW (including schedule and budget). EPA approves the start of the actual design work by amending the IAG to increase the available funding. Additional funds can be added to the IAG when needed as the remedial work progresses. This approach requires more paperwork than using one generic IAG.

A two-phase IAG is an older form of IAG that is similar to incrementally funded IAGs. Like the incrementally funded IAG, the two-phase IAG begins with limited funds to allow initial consultations between EPA and USACE. The second phase, however, requires the preparation of an additional IAG to increase the scope of work and increase the available funding and, therefore, requires additional time and paperwork to complete. Many Regions have adopted the incrementally funded IAG approach and no longer use the two-phase approach.

This section provides a brief overview of basic IAG procedures. These procedures include:

- Preparing and executing the IAG
- Preparing IAG amendments and increasing funding
- Closing out the IAG

Preparing and Executing the IAG

The RPM prepares the IAG package for PO and CO approval. The IAG review and approval procedures vary by Region. The RPM, therefore, should follow Regional guidance concerning specific IAG procedures. The IAG package contains the following documents and may contain additional Region-specific documents:

- EPA Form 1610-1—the EPA standard IAG form that includes the RD SOW and schedule
- Attachment A, "Special Conditions for Design IAGs"—a summary of special conditions developed for Superfund to deal specifically with cost documentation requirements (Attachment A contains requirement lists for design IAGs)
- Decision Memorandum—memorandum from the Program Administrator requesting the Regional Administrator's signature approving the IAG
- Commitment Notice—the format and content are Region-specific

While the IAG should be as detailed as possible, the Office of General Counsel (OGC) has determined that EPA may not unilaterally impose its QA/QC requirements in IAGs. The specific QA/QC requirements must be negotiated into the IAG on a case-by-case basis.

Once the IAG is signed by the designated EPA Regional official, it is forwarded to USACE for signature by the responsible authority. It is then returned to the EPA Region so funds can be transferred by the Regional budget staff.

Separate IAGs are necessary for RDs and RAs due to the different funding authorization and tracking codes assigned to each activity.

Preparing IAG Amendments and Increasing Funding

Changing site conditions may require the IAG to be amended. Amendments also may be necessary if the scope of the activity changes or additional funds are needed to complete the design. The same process for executing the original IAG must be followed to amend an IAG. The RPM also must be aware of the time required to complete the design and be prepared to extend the period of performance as necessary.

Closing out the IAG

IAGs must be closed out upon completion and all remaining funds deobligated for recertification and use at other Superfund sites. The RPM initiates

closeout activities when at least one of the following conditions exists:

- No further activities will take place
- All expenditure commitments have been met

The RPM prepares a written closeout request that states there will be no further activity under the IAG, that EPA has received the services stated in the agreement, and that all invoices have been paid. The RPM prepares a letter for the designated EPA Regional official's signature requesting USACE to begin IAG closeout activities. The closeout activities are designed to certify completion of the design effort and resolve any outstanding costs. The RPM should consult Region-specific guidance for additional IAG closeout activity information.

4.4.3 Managing the Progress of the Remedial Design

The RPM is responsible for managing RD progress. There are several methods that an RPM can use to manage the design effort and ensure compliance with the requirements established in the RD SOW. The level of oversight required to manage the RD successfully depends on whether USACE or an ARCS/RAC contractor is responsible for the design. When USACE develops the RD in-house or oversees the RD contract, the design document will be in accordance with the *Federal Acquisition Regulation (FAR)*; therefore, any design effort managed or performed by USACE does not require as much scrutiny as an EPA contractor design effort.

The methods available to the RPM for overseeing EPA- and USACE-managed designs require effective use of TRT members' experience and expertise. The specific methods are discussed below.

Managing ARCS/RAC RDs

EPA-managed RDs are tasked to ARCS/RAC contractors with an RD WA. EPA contracts are cost-reimbursement contracts and, therefore, require close governmental control. The RPM must proactively manage ARCS/RAC contractor performance to ensure that work is satisfactorily completed and the government is receiving goods and services commensurate with costs billed.

The RPM cannot assume that the design effort will be performed exactly as required. He or she, with the assistance of the TRT, must actively oversee and manage contractor performance with the objective of assuring that contractor activities meet the requirements of the RD SOW. There are a number of effective ways that an RPM can manage RD WA progress, including:

- Inspecting work—Unannounced inspections may reveal that design work is not being performed as expected. If a contractor concentrates all work effort into a short time period before an EPA submittal delivery date, the design quality may suffer. If Regional travel budgets do not allow the RPM to visit the contractor, the progress reports can function as the primary inspection tool. Work inspections and progress reports also allow a preview of the final RD submittal so that revisions may be incorporated before the final design is prepared. Inspections also allow the RPM and TRT to determine if the contractor is staffing the project to the levels and with the individuals promised.
- Telephone communications—Frequent RPM communication with the contractor is important to establish EPA's expectations for a quality contractor work effort. The contractor is more likely to report any difficulties or issues encountered if the RPM is readily available to offer quick solutions. A scheduled time and day for weekly contact should be maintained throughout the duration of the WA.
- Meetings with contractor personnel—The RPM should schedule regular meetings with contractor personnel. Meetings typically occur after major deliverables have been submitted and reviewed by EPA. Additional progress meetings may be appropriate, particularly for complex sites, and should include the appropriate TRT members.
- Comparing progress with work plan schedule—The RPM must determine if the contractor is performing according to the work plan schedule. A transmittal register such as the one provided in **Appendix B** is a useful tool for tracking deliverable due dates, submittal dates, and EPA responses.

- Reviewing progress and financial management reports—The ARCS/RAC contracts require specific reporting requirements and additional reporting requirements may be specified in the WA. The progress reports allow the RPM, with TRT assistance, to evaluate contractor performance and progress. The financial reports provide information detailing how government funds are spent and give the RPM the opportunity to question contractor expenses and ensure that sufficient funds remain in the WA budget to complete the design effort. ARCS/RAC contractors are required to notify EPA when 75 percent of the approved funds have been expended. The RPM should seek any clarification on the monthly progress or financial reports review procedures from the PO.
- Reviewing deliverables—The RPM must review all contractor deliverables to ensure that they meet the RD SOW requirements. It is strongly recommended that the RPM use the TRT to review design deliverables. The RPM is responsible for ensuring that the reviews are completed within the allotted time frames to prevent delaying the contractor.

The RPM, as part of the RD WA management process, also must examine the contractor staffing mix and provide constant feedback to the contractor regarding overall WA performance. These RPM activities are described below.

Monitoring Contractor Personnel

The quality of contractor output depends on contractor personnel competence. The RPM must ensure, with TRT assistance, that the design project personnel are qualified to perform the work according to the SOW standards. The RPM should clearly define personnel experience and qualifications needed in the RD SOW and ensure that the contractor work plan complies with SOW's personnel requirements. The RPM should continue to oversee the contractor personnel mix throughout the life of the RD.

The RPM should be familiar with and discourage several problematic contractor practices. Frequently the contractor staff that prepare the work plan are not the same individuals assigned to work on the design. Some contractors also are plagued by rapid personnel turnover that negatively affects design quality. Finally, the RPM should verify that the professional levels and contractor personnel are being used as described in the approved work plan.

To determine if such difficulties are occurring, the RPM should thoroughly review the monthly progress reports. If inadequacies with the labor mix or personnel involved with the design are suspected, the RPM may request all contractor personnel information, including résumés and position descriptions, to evaluate personnel qualifications. The RPM, with assistance from the PO, should immediately inform the contractor of any problems related to contractor personnel and take necessary steps to resolve the difficulties.

Providing EPA Feedback to the Contractor

The RPM should be in regular contact with the ARCS/RAC contractor throughout the RD WA. The RPM establishes the tone for the project and by his or her actions conveys this tone to others involved with the project. The RPM must provide the contractor with regular feedback regarding contractor performance so the contractor understands EPA expectations and delivers a product consistent with or exceeding those expectations. The RPM must inform the contractor immediately of any inadequacies because the longer a difficulty remains undiscussed, the more difficult it is to resolve.

There are several guidelines for the RPM to consider when providing EPA feedback to the contractor:

- Avoid delay—Give feedback immediately when reviewing a contractor submittal or when a problem is discovered.
- Be specific—Indicate specific problems and provide examples.
- Keep records—Record when and what feedback was given. A memorandum should be prepared and sent to the contractor documenting the problem, discussion, and resolution. A copy of the memorandum should be placed in the WA file. (The RPM should seek PO input and assistance when resolving contractor problems.)

- Reinforce positive performance—Give positive, as well as negative, feedback where appropriate.
- Remain consistent with the WA scope of work—Changes to the scope of work require concurrence by the CO.

Under term-form WAs, available under ARCS and RACs, the contractor is only required to give its "best effort" in performing the work. For this reason, diligent monitoring and frequent discussions with the contractor are necessary to prevent the government from paying for poor performance that will be claimed later as best effort. Information on the use of term- and completion-form WAs is available in the *RAC Users' Guide.*

Managing USACE RDs

Roles and responsibilities governing EPA and USACE actions have been established in a national memorandum of understanding (MOU). The MOU, however, does not relieve the RPM of the responsibility for managing RD progress, ensuring that ROD requirements are met, and ensuring that the RD is completed on schedule and within the budget agreed to by both parties.

After executing the IAG, USACE personnel, with the RPM's assistance, establish the RD completion schedule. The RPM must work with USACE to identify the deliverables that EPA will review and EPA's review schedules. The RPM may use USACE's computerized schedule management system that feeds into the Regional WasteLAN database to monitor RD progress.

The RPM receives monthly progress reports and a copy of Standard Form-1080 (for requesting payment) from USACE. Although EPA has adopted the direct cite payment process for USACE-managed projects, the RPM should still receive and review monthly vouchers. The direct cite payment process allows USACE rather than the RPM to certify the invoice for payment. All monthly reports contain a description of both USACE in-house and contractor activities. The national MOU does not preclude the RPM from questioning USACE expenditures and requesting additional documentation, including project time sheets, to review vouchers submitted by USACE. If the RPM believes that there are inaccurate charges, he or she should notify the PO for further direction. EPA can request reimbursement from USACE for disputed fund transfers.

A communication strategy should be included in the IAG. As part of this strategy, the RPM should schedule routine meetings and conference calls with USACE to oversee the RD effort. It is imperative that the RPM maintains contact with USACE during the design phase because the RPM is ultimately responsible for the design effort.

OSWER Directive: 9355.5-14 FS, "EPA/USACE PAYMENT PROCESS Direct Cite/Revised Reimbursement Methods," May 1990, provides additional information on the EPA/USACE IAG payment procedures. EPA 540/R-94/022 and 103, "Response Action Contract (RAC) Users' Guide, Volumes 1 and 2," provide additional information on term- and completion-form WAs.

4.5 Procuring a USACE Designer

After an IAG is executed between EPA and USACE, the USACE design districts have several design procurement options available. These options include:

- In-house (USACE) design
- Use of indefinite delivery (IDT) architecture/ engineer (A/E) contracts
- Total environmental restoration contracts (TERCs)
- Site-specific A/E contracts

In general, procurement of a site-specific contract takes six months and initiation of work by an IDT contractor typically takes 60 days. Initiation of work by a TERC contractor varies depending on the requirements.

USACE may need to procure a contractor to prepare the design if in-house services are not available and preplaced contracts are not being used. USACE begins the designer procurement process by preparing a USACE version of the EPA project management plan (see Chapter 3). The USACE project management plan details the procedures for

contracting and managing the project. The RPM should request a copy of the plan from the USACE project manager and review it to ensure EPA requirements are met.

USACE must undertake certain contractor procurement activities after completing its project management plan, including:

- Summarizing the project requirements in the *Commerce Business Daily* (*CBD*), a government solicitation publication used to announce available federal contracts
- Developing the design contractor preselection list
- Contacting designers on the preselection list to determine interest in the project
- Developing a designer selection list containing at least three interested firms
- Making a tentative designer selection

The USACE project manager will work with the RPM to meet EPA requirements for contract action at a site.

OSWER Directive 9355.5-05, "Procedure for Use of USACE Preplaced Contracts to Expedite Superfund Cleanup Tasks," April 1994, provides additional information on USACE preplaced contracts.

4.6 Reviewing and Approving the Work Plan (ARCS/RACs)

The ARCS/RAC contractor describes its proposed technical approach for completing the requirements of the RD SOW in the work plan. **Figure 4-5** outlines the general contents of a contractor work plan. Additional predesign phase submittals may be included as part of the work plan or may be submitted shortly thereafter. These submittals are discussed in section 4.7.2.

After receiving the work plan, EPA must complete the following tasks:

- Review the work plan to ensure that the contractor understands and incorporates all EPA requirements

Figure 4-5

Components of a Work Plan

- Statement of project goals
- Description of each task/deliverable
- Project schedule identifying task and deliverable completion dates
- Proposed RA contracting strategy
- Proposed personnel
- Areas requiring clarification or anticipated problems
- Proposed use of subcontractors with discussion of how the effort will be managed by the prime contractor
- Detailed cost proposal broken down by task and subtask, including subcontractor cost breakdown (using WBS)
- COI statement
- Drawing register listing all drawings and specifications that will be prepared

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- Negotiate with the contractor to modify or clarify the work plan
- Approve the work plan

4.6.1 Reviewing the Work Plan

The RPM performs a comprehensive technical review and cost analysis immediately upon receipt of the work plan. The purpose of the review is to ensure that the ARCS/RAC contractor fully understands the scope of the project and that the proposed technical approach, schedule, and staffing are complete, reasonable, and comply with the RD WA requirements.

The technical review includes a work plan evaluation by professionals familiar with the RD process who have the knowledge, skills, and experience necessary to evaluate the technical aspects of the work plan. The RPM's TRT should receive a copy of the work plan as soon as it is available and should be consulted as part of the RPM's technical evaluation of the work plan. The RPM also must conduct a cost analysis that includes reviewing the individual cost elements of the work plan and comparing them with the IGCE. The RPM should provide explanations for variances between EPA and contractor cost estimates to the CO and suggest methods for resolving the differences through negotiations.

When reviewing the work plan, the RPM must ensure that the following questions are answered

adequately:

- Is the proposed work reasonable, appropriate, and complete?
- Does the work plan respond to the RD SOW and do the proposed tasks fit the RD SOW or does the work plan unnecessarily exceed SOW work requirements?
- Are the skill mix and number of LOE hours appropriate for the tasks? Is the level of subcontracting necessary and appropriate for the design effort?
- Are the schedules and milestones reasonable and acceptable?
- Are travel and other direct costs necessary, reasonable, and appropriate?
- Are the contractor personnel qualifications appropriate for the work?
- Has the contractor defined problems that require EPA resolution?
- Are there any issues that require CO or PO attention?

The ARCS/RAC contractor must provide its recommended RA contracting strategy as part of the work plan (see section 5.4). This strategy must include the proposed procurement methods, the type of design specification (performance versus detailed), and phasing/fast-tracking alternatives. The RA contracting strategy influences the overall design effort in terms of schedule and budget and must be agreed upon before the contractor expends design resources.

The RPM summarizes his or her review of the work plan in a memorandum to the PO and CO. The PO and CO review the RPM's report and recommendations and may request additional information from the RPM before CO approval.

4.6.2 Negotiating with the Contractor

The RPM, PO, and CO work plan reviews may reveal that the proposed contractor work plan does not meet EPA technical requirements, cost estimates, or both. The RPM, PO, and CO should meet and discuss the need for work plan negotiations with the contractor. The CO, with assistance from the PO and RPM, develops the negotiating position. The CO represents EPA in all negotiations with the contractor and must ensure that negotiation records adequately document negotiation results.

The RPM and PO assist the CO in preparing the EPA negotiating strategy by reviewing the earlier RPM work plan recommendation memorandum to ensure that it adequately:

- Details variances between the RD SOW and contractor work plan.
- Examines the work plan from the contractor point of view and indicates contractor strategy or possible motivation.
- Determines instances where contractor variance with the SOW is due to contractor knowledge of the site or previous RD experience and where contractor variance appears to indicate a misunderstanding regarding EPA objectives. These determinations are especially important when the contractor has made substantive or material changes from the SOW.
- Lists all recommended changes to the work plan.
- Provides a list of issues and proposed changes for the PO and CO to consider.

The CO shall maintain written documentation of the significant differences between the government and contractor negotiation positions. Additionally, documentation for the government's negotiating position, why changes were made, and the results of the actual negotiations must be created and retained. After successful negotiations and after the contractor submits the revised work plan, the RPM reviews it to ensure that all negotiated changes are incorporated and that the work plan does not contain additional modifications not agreed upon during negotiations. The RPM may require the contractor to note or highlight all deletions, additions, and revisions to the work plan. The work plan areas that are not marked do not need to be as thoroughly reviewed by the RPM. After completing his or her review, the RPM prepares another work plan review memorandum recommending work plan approval or outlining items for further negotiation and submits it to the PO and CO for their review.

4.6.3 Approving the Work Plan

If the CO determines that the work plan adequately addresses all EPA requirements, the CO approves it and informs the contractor. The RPM may need to adjust the WA expenditure limit following work plan approval to make available funding sufficient to begin the RD. Adjustments to the expenditure limit are indicated on the WAF and approved by the CO.

OSWER Directive 9202.1-12, "Guidance on Roles and Responsibilites for Preparing Independent Government Cost Estimates (IGCEs) for Remedial and Enforcement Work Assignments," July 27, 1993, and EPA 540/R-94/022 and 103, "Response Action Contract (RAC) Users' Guide, volumes 1 and 2," provide additional information on approving the work plan, including information on conducting and documenting work plan negotiations.

4.7 Overseeing the Design Development

The design development phase includes all activities relating to the review and approval of all design efforts, including preliminary, intermediate, prefinal, and final design phase submittals. The government must review all deliverables to ensure that it is receiving goods and services commensurate with the costs billed. The contracting party (EPA or USACE), therefore, must review all design submittals.

This section provides descriptions of many of the design deliverables and details EPA review procedures associated with each of the submittals. The RPM is responsible for ensuring that all submittals are delivered and reviewed in a timely manner to prevent delays in the project schedule. The RPM also is expected to manage his or her design oversight activities and balance federal, state, and community relationships.

This section describes:

- Design review procedures
- Predesign phase submittals
- Treatability screening submittals
- Preliminary design phase submittals
- Intermediate design phase submittals
- Prefinal/final design phase submittals

4.7.1 Design Review Procedures

The RPM review procedures may be conducted in parallel or in series with other ongoing design activities. Parallel reviews are conducted while other design work continues and eliminate inefficiencies and delays caused by work interruptions. Parallel reviews, however, are not appropriate in all circumstances because the work performed may have to be repeated if the review results indicate that the design effort is not proceeding in the desired direction. In a serial review, subsequent design activities do not begin until the review is completed, all comments are resolved, and approval to proceed is granted.

The RPM is responsible for coordinating the review of all contractor deliverables when EPA is the contracting party. The RPM must review submittals that are within his or her breadth of knowledge and experience and distribute all other submittals to the TRT. A copy of the submittals must be submitted to the designated state officials for their review. The RPM also may provide copies of the submittals to the potentially responsible parties or technical assistance grant contractors hired by the community. The RPM collects TRT comments and any additional relevant suggestions, resolves conflicting comments, consolidates the comments into a single report, and provides the results of the review to the contractor.

The RPM, during EPA-lead designs, is involved with scheduling a post-submittal meeting that includes all involved parties, including the TRT and state officials, after every major design submittal. The purpose of the meeting is to reach consensus on remaining design submittal issues. The RPM must designate someone to take meeting notes and document resolution of the issues.

The contractor must respond to all EPA comments and indicate whether the comment was incorporated or provide an explanation for excluding it. The contractor has a professional responsibility to inform the RPM of any unintended or adverse effects that result from incorporation of EPA comments into the design. The RPM should ensure that the contractor response to EPA comments is provided according to the schedule in the work plan.

The RPM also may coordinate the review of contractor deliverables as part of the IAG with

USACE. If USACE is the contracting party and the RPM is facilitating the EPA review, the RPM must follow USACE review procedures. If the RPM is not coordinating the review of contractor deliverables, the RPM should participate in the review as a member of USACE's review team. These procedures should have been resolved as part of the IAG SOW.

The duration of review activities for any particular project is a function of the site characteristics, the complexity of the design, and EPA or USACE administrative requirements. The specific review and approval milestones should be identified clearly in the project schedule. All involved parties should be aware of the consequences resulting from unnecessary delays.

There are a number of concerns that must be incorporated into a thorough RD review. Information on biddability, operability, constructability, claims prevention, and environmental reviews and a design review checklist are included in **Appendix C**. These reviews provide a more systematic approach to the design review process and, although experienced reviewers include many of these features as part of their review, the RPM should consult the specific review information to ensure a thorough review.

4.7.2 Predesign Phase Submittals

Several plans must be submitted by the design contractor before any on-site field activities are initiated. The design contractor must submit an RD work plan to describe its proposed approach to completing each project task (see section 4.6). The following additional plans may be submitted either with the contractor's work plan or shortly thereafter:

- Site management plan
- Health and Safety Plan (HASP)
- Sampling and Analysis Plan (SAP)
- Contingency plan

Site Management Plan

The site management plan details the security provisions to be taken during the RD. Security provisions include:

- Methods for limiting access to the site
- Secure waste disposal practices
- Management responsibilities

Site security is a concern particularly when equipment is left on-site during RD field activities. The RPM should ensure that the contractor is tasked with periodic site security inspections and that there exists a means of maintaining (or enhancing, if necessary) existing security features. Site security becomes more important during the RA for two reasons: additional equipment could increase the likelihood of site vandalism; and there is a potential for danger to trespassers as a result of the construction activities.

Health and Safety Plan

The Occupational Safety and Health Administration (OSHA) regulations require that a single written occupational, safety, and health program that includes a HASP be in place for remedial activities at all Superfund sites. There should be one HASP per site, *not* one HASP per contractor, and every site employee should be provided with a copy. The objective of the plan is to protect workers through the identification, evaluation, and control of health and safety hazards and to provide for emergency response contingency planning. While EPA uses the acronym HASP, OSHA uses the term safety and health program or plan, and USACE uses site safety and health plan. The required contents of the plans are similar.

The contents of a HASP must include (but are not limited to) the requirements of 29 *Code of Federal Regulations* (*CFR*) 1910.120 for hazardous waste operations. The standards outlined in 29 *CFR* 1910.120, referred to as Hazardous Waste Operations and Emergency Response (HAZWOPER) standards, contain specific requirements to minimize the health and safety hazards associated with actions at uncontrolled hazardous waste sites. In addition, the HASP also may include other OSHA safety standards for traditional construction activities. **Figure 4-6** outlines the general contents of the HASP, incorporating only the HAZWOPER standards. To create the HASP, the HASP developed for the RI/FS may be reused or updated.

Only the hazardous portions of site cleanups fall under HAZWOPER standards. Designating areas as nonhazardous, and therefore not subject to HAZWOPER, results in a more cost-effective

Figure 4-6

Components of the HASP

- Key personnel and hazard communications plan
- Health and safety risk analyses
- Site control measures
- Employee training assignments
- Medical surveillance
- Personal protective equipment
- Air and personnel monitoring
- Spill containment program
- Confined space entry procedures
- Decontamination procedures
- Emergency response plan

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cleanup and enables more firms to compete for those portions of the construction work. OSHA standards, not cleanup levels, determine hazardous exposure levels. The designation of nonhazardous areas must be made by professionals competent in worker health and safety.

Emergency Response Plan

The emergency response plan (ERP) is a required element of the HASP and includes a description of how to handle potential site emergencies and how to minimize the risks associated with a response. The ERP must be developed and implemented *before* commencing operations at a site. The required elements of the ERP are codified in 29 *CFR* 1910.120(1)(2).

The ERP must include information on site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, state, and federal agencies. The ERP must be included in overall site operation training programs and must be reviewed and rehearsed regularly. The plan also must remain available on-site for employee, OSHA, and other government agency review.

The ERP should incorporate the capabilities and limitations of the local emergency response community and the local community's contingency plan, which should be developed by the Local Emergency Planning Committee (LEPC). The Superfund Amendments and Reauthorization Act Title III, or the Emergency Planning and Community Right-to-Know Act, requires local governments to create LEPCs. LEPCs should have in place local contingency plans for coordinating police, fire, utility, and medical services.

The local emergency responders should be involved early on in efforts to develop the ERP so they are familiar with their roles in a site emergency. Once it is completed, copies must be provided to the local emergency response facilities.

RPM's HASP Responsibilities

The RPM must review the HASP when an EPA contractor is tasked with the RD or RA. To conduct this review, the RPM should consult a health and safety contractor or USACE to have the HASP reviewed by a certified industrial hygienist. For USACE-managed RDs and RAs, USACE is responsible for reviewing and approving the HASP.

It is the contractor's responsibility to comply with all OSHA requirements, including the HASP. OSHA personnel ensure contractor compliance by performing periodic safety inspections. It is the RPM's responsibility to ensure that the contractor implements the HASP. To effectively carry out this responsibility, an RPM may use the following techniques:

- Inquire about health and safety activities at every progress meeting. Let it be known that health and safety is an important criterion when rating contractor performance.
- Review the site files for HASP revisions. HASPs are evolving documents that must be revisited continually and modified as necessary. If the cover is dusty, chances are that the HASP is not being followed.
- The RPM can contact the TRT or EPA's Emergency Response Team (ERT) in Edison, New Jersey, for advice if there is a question on whether the HASP is being implemented properly. The ERT is the national Superfund lead on all health and safety issues related to site cleanup. The RPM also has the option of contacting OSHA for a compliance inspection.

The RPM, as EPA's representative, must maintain effective community relations, according to the *National Contingency Plan.* During the predesign phase, the RPM should contact the LEPC to coordinate the community's local contingency plan

with the ERP. The RPM should obtain a preliminary agreement with the community to provide emergency response services as part of the ERP.

The RPM also should facilitate the incorporation of the community's concerns during the development of the ERP. The RPM must ensure that the local response community is equipped to handle their respective roles. All emergency responders must have a level of training comparable to the job they will be performing. This requirement generally translates into a minimum of 24 hours of training. Failure to initiate discussions with the community early in the RD process may affect the overall project schedule and lead to a breakdown in community relations. Although the RPM should establish initial contact regarding the use of local emergency response units, the final agreement is the contractor's responsibility and is the constructor's responsibility during the RA because the ERP is part of the HASP and the HASP is the contractor's responsibility.

Publication 9285.1-03, "Standard Operating Safety Guides," June 1992; EPA/540/G-89/010, "Health and Safety Audit Guidelines"; Publication 9285.1-02, "Health and Safety Roles and Responsibilities at Remedial Sites," July 1991; and Publication 9285.6-08FS, "Emergency Responder Agreements for Fund Lead RAs," March 1994, provide additional information on health and safety requirements at Superfund sites.

Sampling and Analysis Plan

The SAP is a report that details the methods and procedures concerning analytical methods employed during site-related sampling and data evaluation. The SAP incorporates the information from two separate but related reports: the field sampling plan (FSP) and the quality assurance project plan (QAPP). These two reports may be submitted separately, but generally are submitted together as the SAP.

The purpose of data collection during the RD is not to recharacterize the site but to obtain physical data to support the design effort. The RPM must ensure that the SAP is adequately reviewed by personnel with the appropriate experience and qualifications who are familiar with the RD information requirements and who can identify unnecessary procedures.

Field Sampling Plan

The FSP details the sampling and analytical procedures and methodologies the contractor or designated subcontractor will use and should be written so that a field sampling team unfamiliar with the site is able to collect the required samples and field information. The FSP specifies how many samples will be taken, how and where they will be collected, what technical means will be employed to collect them, what technical methodologies and procedures will be used to analyze the samples, and how the investigation-derived waste will be disposed. The FSP also should contain an analysis of the specific data gaps that the plan is designed to eliminate. **Figure 4-7** lists the contents of the FSP.

Figure 4-7

Field Sampling Plan Contents

- Site background
- Sampling objectives
- Sample location and frequency
- Sample designation
- Sampling equipment and procedures
- Sample handling and analysis
- Investigation-derived waste disposal procedures

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There is a tendency for contractors to mistrust data collected by others, regardless of its quality. Resampling often is not necessary and only increases the time and cost of the RD. It should be avoided unless serious inadequacies in the existing data can be demonstrated. SAP reviewers should be instructed to note any unnecessary sampling or analyses.

Quality Assurance Project Plan

The quality assurance project plan (QAPP) provides a blueprint for the QA/QC activities during the sampling and analysis phases of the project that are needed to produce environmental data of the type and quality required for the project. The QAPP augments the FSP by incorporating the design of the sampling and analysis events based on a systematic plan developed using the data quality objectives (DQOs) process. The DQO process enables the designers and the users to create a sampling design that, when implemented, will yield a dataset of values within acceptable limits of error

specified by the user. DQOs are qualitative and quantitative statements derived from the DQO process that clarify study technical and quality objectives, define the appropriate type of data, and specify tolerable levels of the potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions. The DQO process is a systematic strategic planning tool based on the scientific method that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use. The key elements of the process include:

- Concisely defining the problem
- Identifying the decision to be made
- Identifying the key inputs to that decision
- Defining the boundaries of the study
- Developing the decision rule
- Specifying tolerable limits on potential decision errors
- Selecting the most resource efficient data collection design

The QAPP should address, as a minimum, the elements listed in **Figure 4-8**. If a particular element is not required, the QAPP should record why. Since some of the information required for the RD QAPP may be contained in previous site-specific QAPPs, it will be necessary only to reference those earlier approved QAPPs. Duplicate information does not need to be repeated.

EPA QA/R-5, "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations," and OSWER Directive 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA," provide additional information on preparing QAPPs and FSPs. CERCLA-specific guidance on applying the DQO process to remedial activities may be found in EPA 540-R-93-071, "The Data Quality Objectives Process for Superfund: Interim Final Guidance," September 1993.

Contingency Plan

The contingency plan is written to protect the local affected community in the event of an accident or emergency. It may incorporate an air monitoring plan and a spill control and countermeasures plan, if applicable, for the site. The following is a preliminary list of items that could be included in a contingency plan:

- Name of person responsible for responding in the event of an emergency incident.
- Plan and date for meeting with the local community, including local, state and federal agencies involved in the cleanup, as well as local emergency squads and hospitals.
- First aid and medical information including names of personnel trained in first aid; map with the locations of medical facilities clearly marked; all necessary emergency phone numbers; fire, rescue, local hazardous material

Figure 4-8

Suggested Format for the QAPP

Title and Approval Sheet
Table of Contents
Distribution List
Project/Task Organization
Problem Definition/Background
Project/Task Description
Quality Objectives and Criteria for Measurement of Data
Special Training Requirements or Certifications
Required Documentation and Records
Sampling Process Design (Experimental Design)
Sampling Methods Requirements
Sample Handling and Custody Requirements
Analytical Methods Requirements
Quality Control Requirements
Instrument/Equipment Testing, Inspection, and Maintenance Requirements
Instrumentation Calibration and Frequency Requirements
Inspection/Acceptance Requirements for Supplies and Consumables
Data Acquisition Requirements (Non-Direct Measurements)
Data Management Requirements
Required Assessments and Response Actions
Required Reports to Management
Data Review, Validation, and Verification Requirements
Validation and Verification Methods
Reconciliation with User Requirements

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teams; and National Emergency Response Team.

- Air monitoring plan—Air monitoring will be necessary at any site when the site-specific risk assessment specifies a risk via the inhalation/air transport pathway. This section details the minimum requirements for air monitoring both onsite and at the perimeter of the site. The chemical constituents identified at the site as part of the risk assessment should be the basis for pollutant sampling and measurement of atmospheric pollutants. Air monitoring may include personnel monitoring, on-site or off-site area monitoring, and perimeter monitoring. Trigger concentrations to implement the contingency plan should be specified.
- Spill control and countermeasures plan—This plan will provide contingency measures for potential spills and discharges from materials handling or transportation. It describes methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structures, equipment or material from the discharge of waste due to spills; provides for equipment and personnel to perform emergency measures required to contain a spill and to remove and properly dispose of any media that become contaminated due to spillage; and provides for equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material.

4.7.3 Treatability Studies

A treatability study is a laboratory or field test designed to provide critical data needed to evaluate and support the design of one or more treatment technologies. Treatability studies usually should be conducted during the remedy evaluation phase of the RI/FS and include a three-tiered approach: (1) laboratory screening; (2) bench-scale testing; and (3) pilot-scale testing.

The only function of a treatability study during the RD is to provide the quantitative design and cost data required to optimize critical design parameters. The earlier laboratory screening and bench-scale testing procedures performed during the RI/FS are used to determine if a remedy will work and most likely will be adequate to allow an RD treatability study to begin with the pilot-scale test. Pilot-scale testing provides an evaluation of the following types of information:

- Full-scale performance
- Treatment train performance
- Materials handling characteristics
- Process upsets and recovery
- Sidestream and residuals generation
- Energy and reagent usage
- Site-specific considerations such as heavy equipment access, waste-feed staging space, and local availability of equipment and qualified personnel

Figure 4-9 provides a suggested pilot-scale treatability study work plan format.

Figure 4-9

Suggested Contents for a Pilot-Scale Treatabilty Study Work Plan

- Project description
- Cost estimates/schedule
- Test objectives
- Treatability study work plan
- Pilot plant installation and setup
- Pilot plant operation and maintenance procedures
- Parameters to be measured
- Sampling plan
  - Analytical methods
  - Data management
  - Data analysis and interpretation
- Subcontractor's HASP
- Residuals management plan
- Subcontractor's contract management

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Pilot-scale testing is expensive (averaging $225,000 to $1 million per site) and often can be avoided by relying on alternative means for collecting performance data. Contractors bidding on the RA contracts and technology vendors marketing waste treatment systems frequently include detailed

performance-based specifications in their bids. Potential RA contractors include detailed information about their processes. Vendors may be allowed to remove small amounts of site waste to test the application of their technologies. The data available from these sources may satisfy the designer's data needs and avoid the additional time and expense of conducting a pilot study.

Overseeing Treatability Study Progress

For EPA-managed RDs, the RPM must monitor contractor oversight of the treatability study subcontractor. The RPM, however, must not contact the subcontractor directly to discuss EPA concerns. All contact with the subcontractor must be coordinated through the contractor.

For USACE-managed RDs, USACE ensures the treatability study is completed, if necessary, and will report the study progress to the RPM. USACE must notify the RPM if the results of the treatability study affect the ROD, RD cost, or RD schedule.

The RPM will oversee the ARCS/RAC contractor or USACE performance of the following activities:

- Procuring the treatability study subcontractor, test facility, equipment, and materials
- Procuring outside laboratory services, if necessary for performance analysis
- Establishing an on-site field laboratory to facilitate analysis of test samples
- Obtaining samples as specified in the work plan
- Testing equipment to ensure proper operation
- Analyzing test samples
- Evaluating test results and preparing results report

Reviewing the Treatability Study Evaluation Report

The RD contractor submits a treatability study evaluation report at the conclusion of the treatability study. The report provides detailed information regarding the effectiveness of the treatment technology when compared with the performance standards established for the site by the ROD. The report evaluates the effectiveness, implementability, cost, and actual results and compares them with the predicted results. The report also evaluates full-scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation (i.e., how the unit will be scaled from pilot-scale to full-scale and how unknown factors may affect the design). The report describes the usefulness of the treatability study results as optimum design parameters.

The RPM reviews the evaluation report using the same methods used to review any contractor deliverable, including using the TRT. The RPM also should consider the benefits of a project review meeting with the contractor to allow the contractor to present the results of the treatability study and to summarize the current status of the RD.

Maintaining Effective Community Relations During the Treatability Study

The RPM must maintain effective community relations during an on-site treatability study. The RPM should augment the community relations plan (see section 3.12) to address any unique issues related to the proposed testing. These issues may include the potential for off-site air emissions, transportation of hazardous materials, noise levels, increased traffic, and other issues that affect the community.

The RPM, after consultation with the Community Relations Coordinator, may consider including additional public availability sessions, visitor's days, or other outreach methods to explain the proposed testing. A fact sheet describing the activity with a section that specifically addresses any potential community concerns or a briefing with the local public officials also may be useful.

OSWER Directive 9380.3-10, "Guide for Conducting Treatability Studies Under CERCLA," December 1989, provides additional information on performing treatability studies.

4.7.4 Preliminary Design Phase

The preliminary design phase is considered complete when approximately 30 percent of the design work has been completed. The preliminary design phase is an active phase and requires close RPM supervision. For EPA-managed RDs, the RPM should schedule a meeting with the RD contractor to begin the preliminary design phase. Due to the logical progression of the engineering design process, certain preliminary design phase submittals

are conceptual documents that must be completed and approved before successive preliminary design phase documents are begun.

The contracting party (EPA or USACE) is required to review and approve numerous preliminary drawings and specifications that build upon the design foundation established by the predesign phase submittals (see section 4.7.2). The preliminary design phase submittals include:

- Design criteria report
- Basis of design report
- Preliminary drawings and specifications
- Results of value engineering (VE) screen
- Preliminary RA schedule
- Preliminary RA and operation and maintenance (O&M) cost estimates

This section describes the preliminary design phase submittals and procedures for reviewing and approving them. **Figure 4-10** outlines preliminary design phase submittal components.

Figure 4-10

Preliminary Design Phase Submittal Components

- Design criteria report
  - Project description
  - Design requirements and provisions
  - Preliminary PFDs
  - O&M provisions
- Basis of design report
  - Design assumptions
  - RA contracting strategy
  - Permits plan
  - Preliminary easement/access requirements
  - Preliminary P&IDs
- Preliminary drawings and specifications
  - Outline of general specifications
  - Drawings and schematics, including final P&IDs
  - O&M requirements
  - Chemical and geotechnical data
- Results of VE screen
- Preliminary RA schedule
- Preliminary RA and O&M cost estimates

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EPA and USACE use different procedures and identify designer submittals by different names. The submittal names also may vary among Regions. The RPM, therefore, should know the functions of the submittals rather than the submittal titles. At times, the design criteria report and the basis of design report may be submitted as a single report.

Design Criteria Report

The design criteria report describes the technical parameters upon which the design will be based. The design contractor must submit and await contracting party approval of the design criteria report *before* expending additional design effort. This allows the contracting party to determine if the contractor is correctly interpreting and translating ROD performance standards, applicable or relevant and appropriate requirements (ARARs), and engineering standards and codes into site-specific engineering parameters.

The design criteria report may contain the following elements:

- Project description
- Design requirements and provisions
  - Waste characterizations
  - Technical design standards that the completed project is expected to meet
  - Complete description of how ARARs, pertinent codes, and standards will be translated into engineering parameters
  - Technical factors of importance to the design and construction, including currently accepted environmental control measures, constructability, and the use of currently acceptable construction practices and techniques
- Preliminary process flow diagrams (PFDs) for the treatment processes under design that identify all process significant components within the treatment train(s), the stream properties, and additional information as needed, including an integral chart showing stream properties and heat and material balances. The PFDs should include:
  - Pretreatment requirements
  - Volume and types of media requiring treatment

  - Treatment schemes (includes all media and by-products)
  - Input/output rates of flow streams
  - Influent/effluent qualities of flow streams (temperatures, pH, concentrations, etc.)
- O&M provisions that will have a significant influence on design approach (e.g., unattended operation, remote output of instrumentation signals, process data logging requirements, etc.)

Basis of Design Report/Design Analysis Report (USACE)

The basis of design report is a detailed description of the analyses conducted to select the design approach. The basis of design report, referred to as the design analysis report by USACE, may include the following elements:

- Summary and detailed justification of design assumptions
- RA contracting strategy
- Permits plan
- Identification of easement and access requirements
- Preliminary piping and instrumentation diagrams (P&IDs)

Summary and Detailed Justification of Design Assumptions

The basis for making the necessary design assumptions must be clarified for future reference. The necessary clarification requires that the designer provide:

- Calculations supporting the assumptions (e.g. unit sizing, feed rates, etc.) and references to any software programs used to model data
- Material and energy (or heat) balance
- Evaluation of how ARARs will be met
- Plan for minimizing negative effects on the environment and community during the construction and O&M phases

RA Contracting Strategy

The designer submits an RA contracting strategy detailing the qualifications that will be expected of the RA contractor. The strategy plan provides the information necessary to procure an RA contractor with any unusual experience, skills, or equipment that may be incorporated into the design.

Permits Plan

The permits plan details how requirements for all permits needed to implement the RA will be obtained and satisfied. The plan identifies required off-site disposal and discharge permits, the time required to process the permit applications, and a schedule for submitting permit applications. Where permits are not required for on-site activities due to federal exemptions, the substantive requirements of the permit(s) that would otherwise be required must be detailed (see section 3.7.1).

Identification of Easement and Access Requirements

The property surrounding a site that is needed for site access, RA staging areas, or other remediation purposes must be identified early in the design process. Failure to secure the necessary property through acquisition or access agreements may prevent the lead agency from procuring the RA constructor and will delay the commencement of RA activities (see section 3.7.1).

Preliminary P&IDs

The preliminary P&IDs expand upon the PFDs that were submitted with the design criteria report and later revised. The P&IDs become the foundation for the remainder of the design.

Preliminary Drawings and Specifications

The contracting party also must review all preliminary drawings and specifications. These include:

- An outline of general specifications
- Drawings and schematics, including final P&IDs
- A description of the planned O&M requirements
- All chemical and geotechnical data

Outline of General Specifications

The outline details the specifications that will be prepared and submitted as part of future RD submittals. The specifications must conform to the CSI format when designs are conducted under EPA contracts. USACE has developed its own format,

outlined in ETL 1006, *Technical Requirement for Pre-design and Design Submittals*, as well as the standardized design specifications listed in Figure 4-3, which are available from USACE's Huntsville Construction Division.

Drawings and Schematics

The type and number of drawings depend on the remedy selected. At this stage in the design, only the PFDs and P&IDs will be submitted in final form. These submittals shall include but are not limited to:

- A complete list (drawing register) of all drawings and specifications that will be produced through the end of the design
- Facility representations, including final PFDs and P&IDs and preliminary site and utilities layouts
- The site layout, existing site plan, utilities layouts, and demolition plans

Planned O&M Requirements

The anticipated O&M requirements following the completion of the RA must be described so that the RPM and state have access to the information and understand their expected future role in site remediation.

Chemical and Geotechnical Data

All data used to develop the design or be included in the RA contract documents shall be presented in a tabulated format. The sources of the data also must be identified.

Results of Value Engineering Screen

The VE screening includes an evaluation of the relationship between cost and function in the RD, with an emphasis on high cost areas. VE screening results are presented as a recommendation supporting or rejecting the need for a full-scale VE study. The VE screen should be performed as soon as possible during the preliminary design to avoid the time and expense of significant redesign resulting from the VE study. The VE study is discussed further in section 4.8.

Preliminary RA Schedule

The preliminary RA schedule must be appropriate to the size and scope of the anticipated activities and must include an evaluation of a phased approach to expedite the RA. The preliminary RA schedule should be one of the final preliminary design phase submittals, with the exception of the preliminary RA cost estimate, to allow the appropriate design personnel sufficient time to evaluate the design and prepare a reasonably accurate RA schedule.

Preliminary RA and O&M Cost Estimates

The preliminary RA cost estimate must include all costs necessary to arrive at a current working estimate (CWE). The CWE is a detailed bottom-up cost estimate developed from design documents and serves as the basis for all future (intermediate or prefinal/final) stage estimates and the RA IGCE. The CWE must include the estimated contract cost (including contractor direct labor, equipment, and material costs, overhead, profit, and bond), allowance for applicable contingencies (during both design and construction), escalation to midpoint of construction, appropriate escalation of operating costs, allowances for construction management, engineering during construction, as-builts, and other pertinent allowances.

The estimate should be prepared with as much detail as design documents allow. At the preliminary project stage, however, the design is only about 30 percent complete. Thus, design contingencies (i.e., construction contingencies during design) normally will be higher at this stage than for intermediate or prefinal/final design project stages. Cost allowances also must be made for construction features yet to be included in the design. New WAs issued under RACs will require the contractor to develop RA cost estimates using the USACE's work breakdown structure and MCASES-Gold software. This requirement is written into the RA Model SOW provided in **Appendix E.**

The preliminary RA cost estimate should be as accurate as the available information allows. The final cost for simple projects may be as much as 40 percent higher or 20 percent lower than the preliminary cost estimate and as much as 50 percent higher or 30 percent lower for complex projects. This estimate should be more refined than the ROD estimate. USACE has developed specific hazardous, toxic, and radioactive waste (HTRW) cost engineering guidance, which outlines in detail procedures for preparing HTRW cost estimates. This

information is provided in the reference materials listed below.

The O&M cost estimate will generally include operating labor (wages, salaries, training, overhead, and fringe benefits associated with post-construction operations); maintenance material and labor (labor, parts, and materials required to perform routine maintenance of facilities and equipment); auxiliary materials and energy (chemicals, fuel, electricity, water, sewer, etc. needed for plant operations); purchased services (sampling costs, laboratory fees, and other professional services); administrative costs; insurance; taxes; and licenses (property taxes, permit renewals, reporting).

The preliminary RA and O&M cost estimates generally will be the final preliminary design phase submittals, which allows the designer's cost estimator time to evaluate the RD, schedule, and O&M requirements and prepare reasonably accurate cost estimates.

Reviewing the Preliminary Design Phase Submittals

The lead agency is responsible for reviewing preliminary design phase submittals. In-depth reviews should be conducted by professionals experienced in the disciplines covered by the design. The submittals are the basis for all remaining design activities and, therefore, must be reviewed thoroughly by the contracting party to avoid costly and time-consuming redesigns later in the RD. The technical review must focus on the design criteria analysis and basis of design reports first. These reports provide an overview of the design and establish the tone for the remaining design effort.

At a minimum, the review should focus on the following:

- Assuring that the engineering design parameters correctly incorporate the ARARs and other ROD requirements
- Verifying that unit processes are being employed by the treatment train
- Confirming that the standards for efficient removal or treatment are reasonable for both the process and for waste volumes and concentrations
- Checking that process waste streams are adequately identified and addressed and that flow rates are appropriate
- Verifying that proposed siting of the process is appropriate and that any site abnormalities have been addressed
- Checking design calculations thoroughly enough to assess professional quality of design activity
- Completing a preliminary design biddability, constructability, and operability and an environmental and claims prevention screening (see **Appendix C**).

For EPA-managed RDs, the RPM must collect all TRT comments and forward them to the contractor. As specified in the SOW, the contractor shall review and formally respond to each comment. USACE-managed site-specific contracts also require the contractor to respond to all review comments.

The RPM must update CERCLIS as the RA cost estimate and schedule is refined. Updating and maintaining the information in CERCLIS facilitates effective communication between the RPM, PO, and CO and helps ensure that RA funds will be available as needed.

USACE Engineering Regulation 1110-3-1301, "Cost Engineering Policy and General Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Remedial Action Cost Estimates," and Technical Manual 5-800-2, "Construction Cost Estimates," provide information on preparing RA cost estimates.

4.7.5 Intermediate Design Phase

The RD enters the intermediate design phase following the completion of the preliminary design. Approximately 60 percent of the design effort is completed before the intermediate design phase ends. All data collection and analysis should be completed and approved by the contracting party before the intermediate phase of the RD process begins. During the intermediate design period, the drawings and specifications submitted at the preliminary stage are completed and new, more detailed or later-phase documents are begun. Many of the deliverables, therefore, are refined preliminary

Figure 4-11

Intermediate Design Phase Submittal Components

- Revised design criteria report, if necessary
- Revised basis of design report, if necessary
- Intermediate drawings and specifications
  - Preliminary specifications
  - Drawings and schematics
  - O&M requirements
  - Unit price lists for the RA
  - Chemical and geotechnical data
- VE study results
- RA schedule
- Intermediate RA and O&M cost estimates

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design deliverables, while some are submitted for the first time. **Figure 4-11** outlines the major components of the intermediate design phase.

Less complex projects may not require a formal intermediate design phase or the associated submittals. In these cases, the RPM may consider substituting an in-progress review for the intermediate design phase submittals. This should be done only when it is apparent intermediate design phase submittals are unnecessary.

Revised Design Criteria Report

The design criteria report is updated and modified only if necessary and should not be modified extensively during the intermediate design phase. Major modifications should be addressed during the preliminary design phase and, for all practical purposes, should be complete at the preliminary submittal stage. VE study results, however, may affect the design if proposed VE changes are incorporated. Design changes will affect the contents of the design criteria report.

Revised Basis of Design Report

The basis of design report also is updated and modified where appropriate. Like the design criteria report, the basis of design report should not be modified extensively during the intermediate design phase with the possible exception of the permits plan and the easement/access requirement components of the report. These components must be updated throughout the design process because they are subject to change as the design progresses. As with the design criteria report, proposed VE changes would affect the basis of design report.

Intermediate Drawings and Specifications

During the intermediate design phase the preliminary drawings and specifications are further refined and additional information and reports are completed. The intermediate drawings and specifications include:

- Draft specifications
- Drawings and schematics
- Revised O&M description and cost estimate
- Unit price lists for the RA
- Chemical and geotechnical data

Draft Specifications

The contractor is required to submit draft specifications for construction, installation, site preparation, and field work standards, including an equipment startup and operator training plan. All specifications shall conform to CSI format (USACE-managed RDs will follow the USACE ETL 1006, *Technical Requirement for Pre-design and Design Submittals* specifications). The contractor should prepare new specifications only where guidance does not exist in EPA/USACE guide specifications or from previous RDs.

The technical specifications governing major process-significant or complex components of the proposed treatment systems should include requirements for the technology vendor to provide visits by experienced factory representatives to supervise the installation, adjustment, startup, and operation of the treatment systems.

Drawings and Schematics

The intermediate design package will build on the work presented during the preliminary design. The type and number of drawings and specifications depend on the remedy. The drawings may include but are not limited to:

- A current drawing register that lists every drawing and specification that will be produced during the project and the current status (revision number and date) of each document

- A revised PFD, if necessary (the PFD should be finalized during the preliminary design phase)
- Revised P&ID(s), if necessary (the P&IDs should be finalized during the preliminary design phase)
- Facility drawings (grading and paving, foundation plan and sections, piping plan and sections, structural plan and elevations, electrical schematics and plans, conduit routings, instrumentation and cable plan details, piping isometrics, etc.)
- A process-control logic table describing how all of the individual components of the process system are interrelated
- All utilities drawings depicting electrical, sewage, waste, gas, telephone, water lines, etc.
- Site layouts, existing site plan, contour maps, and physical features of the site
- Site work zones (for establishing worker protection zones) and date for verifying the location of clean zones
- Plans for flood protection, excavation, demolition, site clearing and grubbing, and work limits

Revised O&M Description

As the design is refined, the actual O&M requirements become more established. The RPM should present O&M requirements to the state as the information is made available.

Unit Price Lists for the RA

The contractor must provide the unit price or lump sum pricing lists for each bid item.

Chemical and Geotechnical Data

All data used to develop the design should be included in the RA contract documents, presented in a tabular form. The sources for all data and any uncertainties also must be identified.

Results of VE Study

The RPM should be aware of VE study results. After the VE study report is produced, any proposed changes that are incorporated will affect intermediate design phase submittals. The EPA CO must approve any proposed VE design changes for ARCS/RAC contractor RDs. USACE should inform the RPM of any incorporated VE design changes that affect the cost, schedule, or ROD requirements. Section 4.8.1 contains additional information on the VE study process.

Updated RA Schedule

The revised RA schedule should identify the timetable for initiating and completing all critical path tasks and major milestones. The schedule also should provide an accurate estimate of the RA completion date.

Intermediate RA and O&M Cost Estimates

As with the preliminary RA cost estimate, the intermediate RA cost estimate must include all costs necessary to arrive at a CWE. The estimate should be prepared with as much detail as the design documents allow. At the intermediate project stage, designs should be about 60 percent complete and design contingencies should be higher at this stage than for prefinal/final design project stages, but lower than for the preliminary design stage.

The intermediate RA cost estimate should be refined using flow sheets, layouts, and equipment details, and is expected to be accurate within plus 30 percent and minus 15 percent for simple projects and plus 40 percent and minus 20 percent for complex projects. The basis for unit prices should be provided with the estimate and should reflect current costs for labor, equipment, and materials. Vendor quotations should be included in the estimate when used.

As the design is refined, the actual O&M cost estimate also becomes more established. Anticipated O&M costs must be presented to the state as the information is made available.

Technical Review of the Intermediate Design

The intermediate design phase submittals must be reviewed for technical content and consistency with the ROD. The contracting party (EPA or USACE) is responsible for assuring that the intermediate design is reviewed for:

- Biddability, constructability, operability, claims prevention, and environmental screening (see **Appendix C**)

- Use of the most currently accepted pollution control measures and technology
- Use of currently accepted construction practices
- Spot-checking revised or newly submitted calculations to assess design quality

For EPA-managed RDs, the RPM collects all TRT comments and forwards them to the contractor. As specified in the SOW, the contractor reviews and formally responds to each comment. USACE site-specific contracts also require the contractor to respond to all review comments.

The RPM also must update CERCLIS as the RA cost estimate and schedule are refined. Updating and maintaining the information in CERCLIS facilitates effective communication between the RPM, PO, and CO and helps ensure that RA funds will be available as needed.

4.7.6 Prefinal/Final Design

The prefinal design is a draft version of the complete RD, including all drawings, specifications, reports, and attachments. All contracting party comments generated during the intermediate design review should be incorporated, all design work completed, and the RA contract documents finalized.

The contracting party must review and approve all prefinal design documents before requesting the final design from the contractor. After the contracting party has reviewed the prefinal design and the contractor has incorporated any additional comments, the contractor will submit the final Final design. The final design should be stamped and signed by licensed professional engineers involved in preparing and certifying the final engineering package. The certifications may include civil, mechanical, structural, electrical, and chemical engineering and registered geologist certifications.

Figure 4-12 outlines the major components of the prefinal/final design deliverable.

Final Design Criteria Analysis Report

The final design criteria analysis report generally should duplicate the contents of the intermediate design criteria analysis report incorporating revisions based on review comments. The USACE version of this report will be written in the past tense to indicate that the criteria were considered before design completion.

Figure 4-12

Prefinal/Final Design Phase Submittal Components

- Design criteria report
- Basis of design report
- Prefinal/final drawings and specifications
  - Complete specifications
  - Complete drawings and schematics
  - Construction QAPP
  - Draft O&M manual
  - Appendices
- RA solicitation package
- RA schedule
- Prefinal/final RA cost estimate

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Final Basis of Design Report

The final basis of design report generally should duplicate the contents of the intermediate basis of design report incorporating revisions based on review comments. Copies of all permit applications also must be included as part of the permits plan section of the report and access requirements finalized to incorporate changes since the intermediate report. The USACE version of the basis of design report, like the design criteria analysis report, will be written in the past tense.

Prefinal/Final Drawings and Specifications

The major generic components of the prefinal/final drawings and specifications listed in Figure 4-12 are described below.

Complete Specifications

The prefinal/final specifications should finalize the intermediate specifications and include final construction, installation, site preparation, and fieldwork standards, including an equipment startup and operator training plan. The complete specifications also must include a submittal register to identify all plans, documents, and construction submittal items that will be submitted by the constructor during the RA. All specifications shall conform to CSI format (USACE-managed RDs will follow the USACE ETL 1006, *Technical Requirement for Pre-design and Design Submittals* specifications).

Complete Drawings and Schematics

All drawings and schematics must be presented in final form. The types and number of drawings vary depending on the nature of the remedy. The drawings may include, but are not limited to:

- A drawing register listing each drawing and specification produced during the course of the project with current status indicated
- Facility representations, PFDs, and floor plans
- P&IDs
- A process control table
- Utilities drawings
- Grading and drainage controls
- A landscape plan
- A seeding and sodding plan and wetlands and revegetation plan
- A vicinity map
- Site characterizations, contour maps, and physical features
- Site work zones, designated safety zones, and site clearing activities
- Excavation plans
- Site layouts and demolition plans
- A flood control plan

Construction Quality Assurance Plan

A construction quality assurance plan (CQAP) must be prepared by the designer in accordance with the *Construction Quality Assurance Plan for Hazardous Waste Land Disposal Facilities* and submitted as part of the prefinal/final report. The CQAP is the plan that describes the QA tests necessary to ensure that the final product meets the design specifications. The tests are used to provide quantitative criteria with which to accept the final product. Construction QA is the responsibility of the contracting party and takes place throughout the construction process.

The CQAP, at a minimum, should contain the following elements:

- Lines of authority and responsibilities of all key personnel involved in the RA
- Construction QA personnel qualification requirements
- List of inspection activities, including the summary, scope, and frequency of the tests and observations used to monitor the RA and verify compliance with environmental requirements and customary construction practices, OSHA, building and safety codes, etc.
- List of sampling requirements
- All documentation requirements for reporting construction QA activities, including daily summary reports and inspection data sheets

Draft O&M Manual

The responsibilities for completing the O&M manual are shared between the designer and the constructor. The designer must prepare and submit a draft of the O&M manual during design. The designer completes its portion of the manual and provides a copy with the specifications. The RA constructor completes the manual during the RA phase of the project. The draft manual may contain the following (with the party responsible for completing each section indicated in parenthesis):

- Description of how the designer intends the facility to operate (*designer*)
- Description of normal O&M, including startup procedures, prescribed treatment or operation conditions, and schedule (*constructor*)
- Description of potential operating problems, including common or anticipated remedies and a useful life analysis of significant components that includes replacement costs (*designer and constructor*)
- QA plan for O&M, including a description of routine monitoring tasks, a description of required laboratory tests, required data collection reporting requirements (to EPA, USACE, the state, etc.), and the location and rationale of monitoring points (*designer*)
- Description of alternative procedures to prevent releases or threatened releases which may endanger health or prevent cleanup standards from being attained (*designer*)

- Description of the corrective action to be taken in the event of a release (*designer*)
- Safety plan, including a description of precautions, personal protective equipment (PPE) requirements, and the tasks required in the event of a safety systems failure (*designer and constructor*)
- Description of all installed equipment, including identification numbers, vendor data and submittals, monitoring components, site equipment, spare parts, and component maintenance and replacement schedules (*constructor*)
- Description of all record and reporting mechanisms required, including daily operating logs, laboratory records, for operating costs, mechanisms for reporting emergencies, maintenance records, and reporting requirements to the appropriate parties (*designer*)
- Final O&M cost estimate projected annually along with supporting documentation (*designer and constructor*)

Appendices

All pertinent data used in developing the design will be included as appendices. The list includes, but is not limited to:

- Calculations
- Chemical data
- Geotechnical data
- Applicable references

Complete RA Solicitation Package

The prefinal/final report must include the following RA contract documents:

- Solicitation/contract form
- Supplies or services and prices
- RA SOW
- Terms and conditions of the contract, including payments, delivery schedule, point of delivery, and acceptance criteria
- Method of procurement, including evaluation, basis, and method of awarding the RA contract
- Prevailing wage rates determination, in accordance with the Davis-Bacon Act or the Service Contract Act, and the wage rate expiration date
- Deadline and location for submitting bids/ offers
- All appropriate contract clauses

RA Schedule

The final RA schedule should detail the specific RA milestones and outline the estimated completion dates. The schedule also must include the estimated labor, equipment, and oversight resources required to complete each milestone as well as additional site-specific or contracting party schedule requirements.

Prefinal/Final RA and O&M Cost Estimates

As with earlier stage RA cost estimates, the prefinal/ final RA cost estimate must include all costs necessary to arrive at a current working estimate. The estimate should be prepared with as much detail as the design documents allow. Since the design is more complete at this stage, design contingencies normally will be lower at this stage than for preliminary and intermediate design project stages. Cost allowances also should be significantly reduced at this stage. The prefinal/final RA cost estimate is expected to be accurate within plus 15 percent and minus 5 percent. The basis for all unit prices should be provided with the estimate, and should reflect current costs for labor, materials, and equipment. Vendor quotations should be included in the estimate when used. Cost risk analysis should be used for assignment of contingencies to accommodate any potential cost growth.

The RA cost estimate *cannot* be substituted for the IGCE when preparing the RA solicitation package because the IGCE is used for comparing and negotiating costs with the RA contractor. A contractor-prepared cost estimate cannot be used for this purpose (see section 5.2.5).

The final O&M cost estimate information is included as part of the materials submitted with the prefinal/ final draft O&M manual.

Reviewing the Prefinal Design

The contracting party's TRT reviews the prefinal design phase submittal to ensure:

- Contractor completion of the plan-in-hand reviews and correlating drawings and specifications as detailed in the SOW (see section 4.3.1)
- Final biddability, constructability, operability, claims prevention, and environmental reviews (see **Appendix C**)
- Accuracy of the RA cost estimate, quantities of materials, etc.
- Use of currently accepted construction practices
- Use of the most currently accepted pollution control measures and technology
- Adequacy of the O&M plan and the CQAP
- Adequacy of site security and the RA health and safety specifications
- Compliance with local/national building and safety codes

4.8 Value Engineering During Remedial Design

VE is required for RDs because *FAR* Part 48 requires that federal contracts, with few exceptions, must include a clause providing for VE services. In addition to the *FAR* requirement, the Office of Management and Budget Circular No. A-131 requires the use of VE, when appropriate, in all federal departments and agencies to reduce nonessential procurement and program costs.

VE is an organized effort directed at analyzing the functions of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life-cycle cost consistent with required performance, reliability, quality, and safety. VE during an RD is similar to classical design reviews but focuses on functionality and reducing the investment necessary to achieve the design function. VE can be applied during any phase of the project, but application during early phases of the RD produces the maximum benefit.

The VE process involves a VE screen, the use of a VE study team, and, possibly, a VE study. These procedures are discussed below.

4.8.1 VE Screen

The first step in VE for an RD is the VE screen. The contracting party must ensure that the schedule and budget for the RD allow for VE and should include VE redesign in the cost and budget contingencies. For USACE-managed RDs, USACE is responsible for VE activities, including the VE screen. For designs developed by an ARCS/RAC contractor, the RPM includes the VE screen in the WA SOW to ensure that it is conducted.

In the VE screen, the designer reviews the proposed process and identifies the potential high cost design elements or subsystems that may become candidates for a formal VE study. **Figure 4-13** highlights typical questions the designer should ask when conducting a VE screen. This task should be completed as early as possible, with the results of the VE screen presented in a formal report to the contracting party *with or before* submittal of preliminary design phase drawings and specifications.

The contracting party reviews the VE screen recommendations and determines if a VE study is necessary. When USACE is the contracting party, it should notify the RPM if a VE study will be performed and the effects that a study will have on the ROD, budget, and schedule. When EPA is the contracting party, the RPM should consult with the TRT to ensure that potential high costs or problem areas have been explored in the VE screen before authorizing a VE study.

4.8.2 VE Study Team

The VE team selected to conduct the VE study must be independent from the actual design team so that no VE study team member has a financial interest in the outcome. Studies may be conducted by a VE team from another federal agency, a VE consultant, EPA in-house personnel or, in certain situations, by the EPA contractor (ARCS/RAC). If the EPA contractor that is developing the design conducts the VE study, the CO must ensure that the contractor has an independent VE group within its organization and demonstrate that the contractor has made the decision to develop a quality product regardless of the effects on profit.

If the Regional EPA office has a VE program in place, this team may perform the study. Lacking an

Figure 4-13

Value Engineering Screening

The Society of American Value Engineers (SAVE) developed the following questions to identify design elements as candidates for a VE study.

- Is the item expensive?
- Is the item complex?
- Is it a high-volume item? Can a simple change in one item produce large savings in the total project?
- Does the item use critical materials?
- Is it difficult to construct?
- Does it have high O&M costs?
- Does it require specialized skills to construct or operate?
- Does it use obsolete materials and methods?
- Was the design rushed?
- Does it use traditional design?
- Is the competition producing the item at a lower cost?

In addition, several other questions should be asked:

- Does the design advocate using proprietary technology? (Royalties, which must be paid for proprietary technology, could be avoided by considering other options.)
- Will it require highly trained personnel to operate?
- Is the design treating everything using a single piece of equipment, when several pieces of equipment would be more cost-effective and efficient?
- Is the design using technology already proven in industry in similar (not necessarily in the hazardous waste field) commercial applications? (Look to chemical processing, oil refining, field production, etc.)
- Has the design used predesigned skids or equipment packages effectively?

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in-house team, the RPM should consult with the USACE VE study team chief engineer located in the Savannah, Georgia division office. If the RPM requests the USACE specialized VE team in advance, it may be able to conduct a timely review without adversely affecting the schedule.

All technical disciplines involved in the design must be represented on the team. Team members should have received the 40-hour VE training sponsored by the Society of American Value Engineers (SAVE) and the team leader should be certified by that organization. Adjunct members also may participate. EPA should not, however, pay for contractor personnel VE training. A representative from the designer should also be available.

4.8.3 VE Study

A VE study during an RD uses a prescribed methodology to address technical problems creatively and attempt to lower project capital or O&M costs. The typical VE study consists of six phases:

- Information—The VE team identifies and analyzes the function of each design element to be studied.
- Speculation—The creative phase of the process in which efforts are made to find a better way of performing a specified function.
- Analysis—Each idea is analyzed for function and potential cost benefit.
- Development—The ideas are developed in detail and the VE proposal is written. Development is limited to concept and potential cost savings. Potential cost savings account for the cost of redesign. No detailed design work is performed by the VE team during this phase.

- Presentation—An oral presentation based upon the written proposal is made. Team recommendations are presented to the decision-making body.
- Implementation—Incorporation of VE proposals in the design.

The first three phases of the VE study often occur during a week-long team meeting. The development phase may take an additional two to three weeks. The VE study team leader will provide the contracting party with redesign options and study recommendations.

The decision to incorporate the results of the VE study is made by the contracting party. Where USACE is the contracting party for the RD, USACE should consult with the RPM before making a decision to incorporate VE study results, especially when proposed design changes may affect the schedule or design costs. Where EPA is the contracting party, the EPA CO consults with the RPM and TRT and makes the decision to incorporate VE study results.

Office of Management and Budget (OMB) Circular A-131, May 21, 1993, requires federal departments and agencies to use VE where appropriate.

4.9 Post-Design Activities

Post-design activities include the preparation of the RA solicitation package (final drawings and specifications), advertising the solicitation in the *CBD*, holding a preproposal conference for all potential constructors, and issuing amendments to the solicitation package as necessary. The procurement process is addressed in more detail in section 5.4.

Prior to the initiation of the solicitation process by the contracting party, the RPM is responsible for completing the following activities:

- Obtaining the Superfund state contract (this must be signed by the state before EPA Headquarters releases RA funds for the site)
- Obtaining all site access/property for the RA
- Ensuring that the designer will be available during the RA to provide technical support
- Preparing the RA SOW and the IGCE
- Preparing the IAG or WA
- Revising the RA communications matrix
- Ensuring TRT availability
- Issuing an RD fact sheet (40 *CFR* 300.435)
- Making information available to the public, as appropriate, in a public availability session before RA initiation (40 *CFR* 300.435)

Chapter 5 Federal-Lead Remedial Action

5.1 Introduction

The primary purpose of this chapter is to provide a Remedial Project Manager (RPM) with an overview of the remedial action (RA) process and his or her responsibilities regarding the RA. The RA is the process by which the remedy, as selected in the Record of Decision (ROD) and defined by the remedial design (RD), is implemented. The chapter highlights the RPM's planning activities for the RA (generally initiated before design completion) and provides the RPM with an overview of the traditional construction process, focusing primarily on the role of the contracting party. The RPM's role in the site closeout process is also defined and explained.

5.1.1 Preparation for the Remedial Action

There are a number of steps to be taken before the actual RA commences (most of these should have occurred during the RD). **Figure 5-1** is a checklist of pre-RA issues that need resolving.

Figure 5-1

Preremedial Action Checklist

- Is the Superfund state contract (SSC) complete?
- Has the RD fact sheet been completed and community issues resolved?
- Has the Emergency Responder Preliminary Agreement for local emergency response been obtained?
- Has property access been obtained for the RA?
- Are all permit applications submitted?
- Is the designer available during the RA?
- Is the Technical Review Team (TRT) available?
- Are the RA funds available?
- Is the independent government cost estimate (IGCE) complete?
- Is the interagency agreement (IAG)/work assignment (WA) completed, including the IGCE (for the WA)?
- Has the project management plan been revised?

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5.1.2 Responsibilities of Key Participants Involved In the Remedial Action

The RA process, as illustrated in **Figure 5-2**, includes the following phases:

- RA planning activities
- Procurement of the RA constructor
- Preconstruction activities/RA submittals
- Construction of the designed remedy
- Site-completion activities

Descriptions of the roles and responsibilities of the various parties represented in an RA follow. **Figure 5-3** illustrates the parties involved in the RA process.

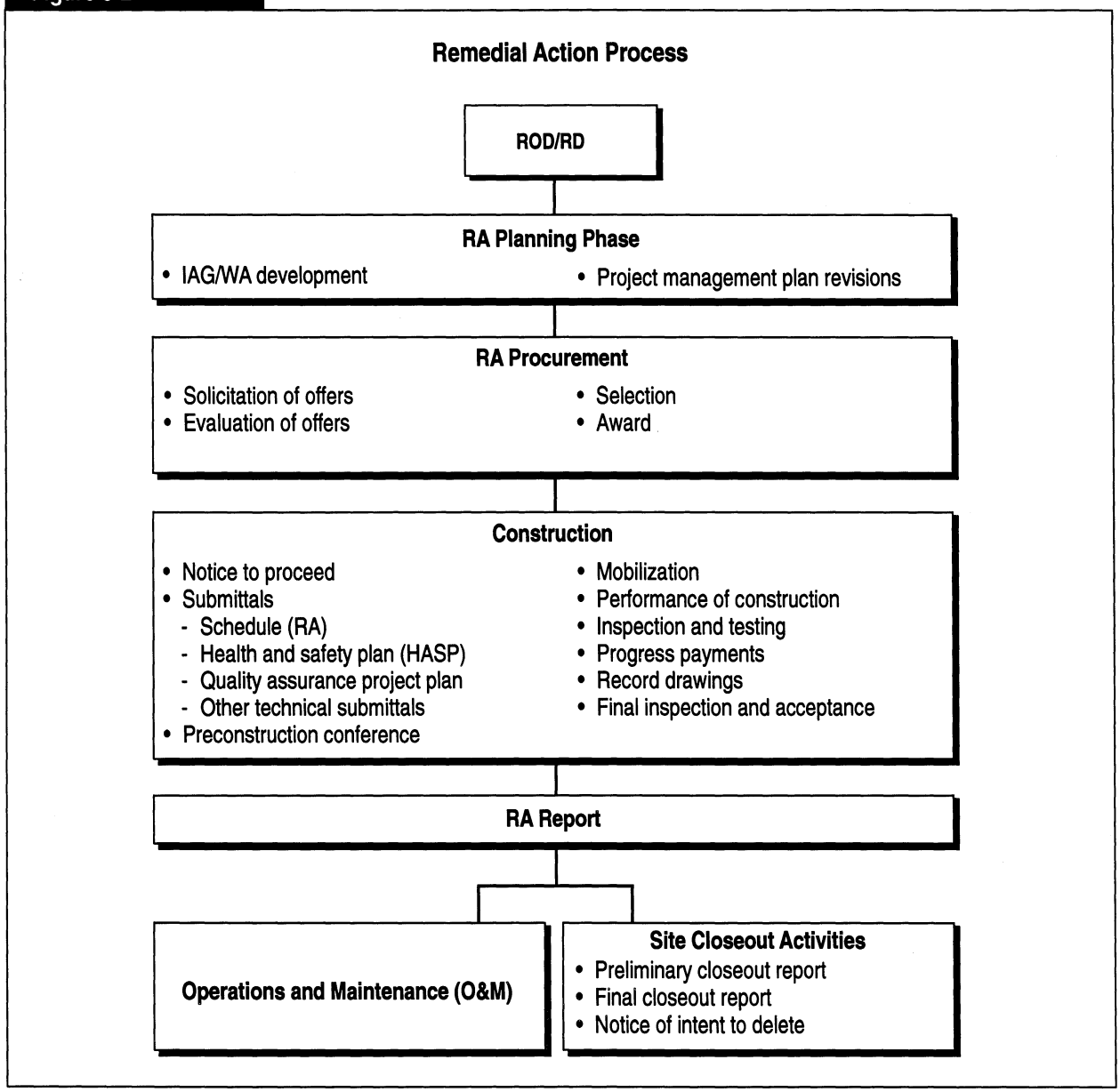
Contracting Party

The use of the term *contracting party* in this chapter differs slightly from its use in Chapter 4. The contracting party advertises, awards, and manages the RA contract. In the case of a Federal-lead RA, this role is usually filled by an EPA contractor or the United States Army Corps of Engineers (USACE). The EPA contractor is an Alternative Remedial Contracting Strategy (ARCS) or Response Action Contract (RAC) contractor. In rare situations, EPA may serve as the contracting party (i.e., when utilizing EPA prequalified contracts).

Technical Review Team

The TRT is a team of people whose primary responsibility is to assist the RPM in reviewing deliverables. The complex nature of a typical RD/RA requires in-depth knowledge of a variety of engineering and other scientific disciplines, so it is important that the RPM assemble a team of individuals with the appropriate backgrounds. The TRT is assembled as early as possible in the RD/RA process by the RPM to assist in reviewing submittals, attending project meetings, and conducting site visits (see section 3.4).

Figure 5-2



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Construction Manager (CM)

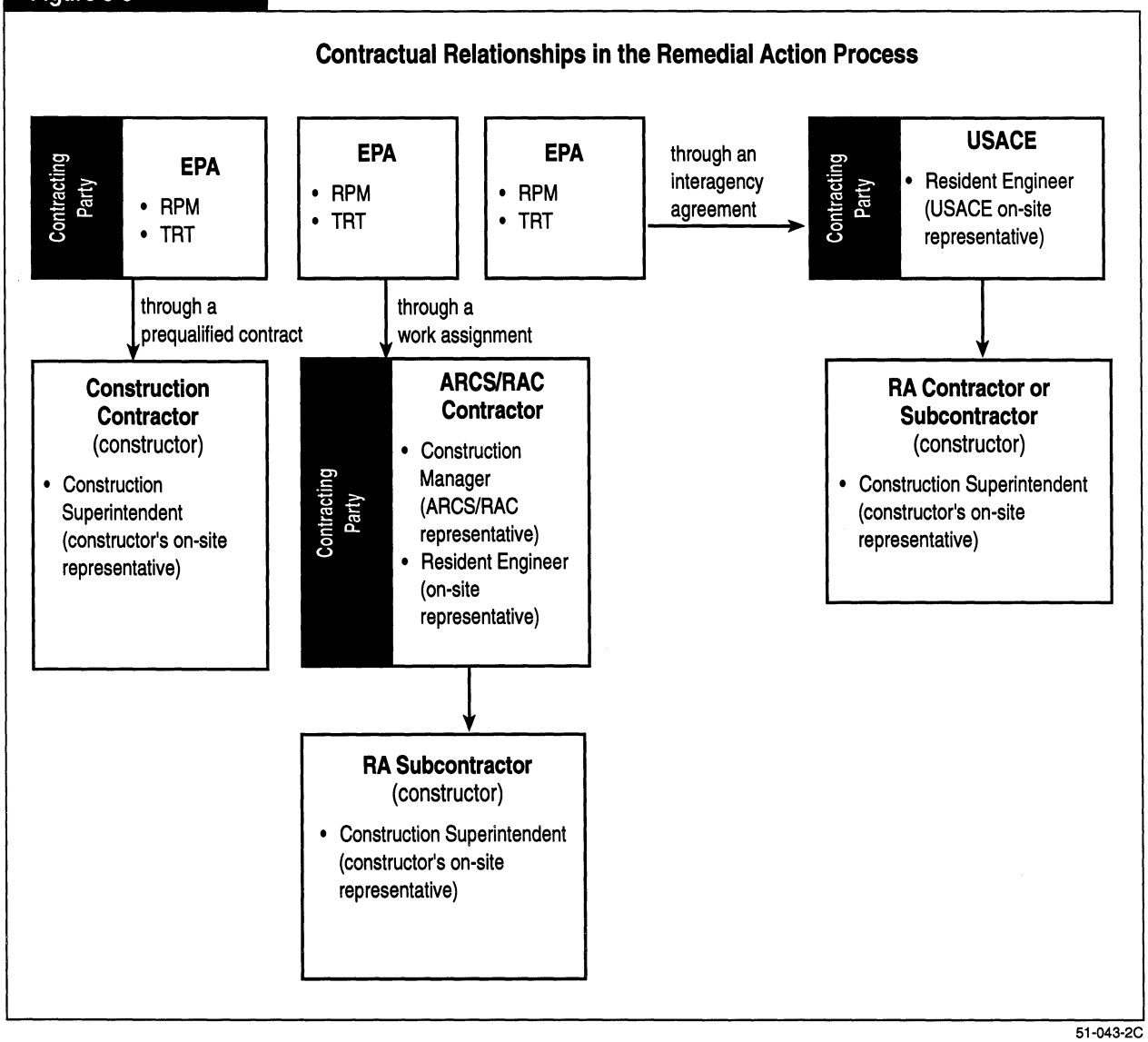
The construction manager (CM) represents the RA contracting party and is assigned to the site to administer and oversee the construction contract. For a USACE-managed RA, this terminology is not used. In such cases, the Resident Engineer (RE) fulfills those obligations.

Resident Engineer

During traditional construction projects, an RE serves as the designer's representative during the construction, installation, and start-up phases of the RA. The RE is responsible for ensuring that the constructor implements the RD in accordance with design documents. Common RE services are shown in **Figure 5-4.**

For projects where USACE managed the design and is managing the construction, USACE performs the resident engineering functions during the RA. To assist USACE in this effort, USACE retains the services of the designer (Title II services under the designer's contract with USACE). In situations where a RAC or ARCS contractor developed the RD and USACE manages the construction, the RPM retains the services of the ARCS/RAC design team to respond to questions that may arise concerning the design.

Figure 5-3



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For ARCS/RAC-managed RDs and RAs, a member of the actual design team fulfills the resident engineering responsibilities. This individual may be assigned to the site full-time, depending on the complexity of the project.

Constructor

The constructor holds the contract for the RA and does the remediation work. The constructor reports directly to the contracting party. *The RPM must honor the privity of contract between the constructor and the contracting party.* The RPM cannot direct or give the appearance of directing the constructor. By interfering with the constructor, the RPM may create a situation that could lead to a dispute claim by the contracting party.

Construction Superintendent

The construction superintendent is the constructor's official representative. The superintendent manages the equipment and materials, oversees the labor, coordinates the subcontracting work, controls health and safety at the site, and communicates with the contracting party.

5.2 Remedial Action Planning Activities

The RA planning activities are similar in scope to those activities undertaken by the RPM when initiating the RD assignment and include:

- Revising the project management plan
- Assembling the TRT

Figure 5-4

Roles and Responsibilities of the Resident Engineer

- Witnesses acceptance/confirms documentation of goods, materials, and equipment
- Monitors the work performed by the constructor
- Interprets drawings and specifications
- Attends job meetings with the constructor
- Maintains project file, reviews submittal schedules, and confirms progress reports
- Conducts inspection of completed work
- Reviews value engineering proposals
- Reviews change order requests
- Maintains an independent set of drawing markups for comparison with those maintained by the constructor
- Reviews constructor quality control files and identifies issues of concern

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- Finalizing the Superfund state contract (SSC) (funds cannot be obligated without a signed SSC)
- Drafting the RA statement of work (SOW) for the ARCS/RAC contractor or (suggested for) USACE
- Developing the IGCE for ARCS/RAC-managed RAs or assisting USACE in developing IGCE for USACE-managed RAs
- Conflict of interest screen
- Developing the RA schedule for the ARCS/RAC contractor or assisting USACE in developing a schedule for USACE-managed RAs
- Issuing the WA or executing the interagency agreement (IAG)

5.2.1 Revising the Project Management Plan

As discussed in section 3.2, the RPM is encouraged to develop a project management plan to serve as the overall strategy for delivering the project on schedule and within budget. The plan should be updated to reflect decisions made during the RD.

As part of the initial RA planning activities, the RPM should review the project management plan and make necessary changes. This exercise ensures that a complete record of major decisions charting the course of the RA is adequately documented and that the RPM is prepared to undertake RA project management responsibilities.

5.2.2 Assembling the Technical Review Team

The RPM enlists the services of career professionals to provide appropriate technical assistance in reviewing submittals, serve as consultants during the RA, and participate in site visits. As the project develops, the RPM may change team members or find that team members are no longer available. For an RA where an ARCS/RAC contractor serves as the contracting party, the RPM should obtain the services of a USACE construction advisor to help the RPM review ARCS/RAC contractor claims and change orders. USACE brings its own TRT to the project when it is the contracting party. In those cases, the RPM should identify any other appropriate EPA or state representatives to add to USACE's TRT. (See section 3.4 for additional information on the formation and composition of the TRT.)

5.2.3 Finalizing the Superfund State Contract and Defining State Involvement During the Remedial Action

Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires the state to provide 10 percent of the RA cost (the state's share of the RA cost is 50 percent or more if the state operated the facility at the time of disposal of hazardous substances) and conduct all O&M activities through an SSC. Thus, the state plays a strong supporting role during the RA. The RPM must understand the state's role and adequately plan for it to prevent schedule delays.

Before obtaining RA funds for the project, EPA and the state must sign the SSC. The SSC is critical to the RA schedule, since RA procurement cannot proceed without it. The RPM must ensure that the SSC is drafted early during the RD and completed as soon as the final RA cost estimates (including the cost of construction management services) are available. The final RA cost estimate should include a cost-risk analysis that should be performed by USACE to estimate potential cost escalation during the RA project. USACE should perform this analysis because USACE is experienced in developing accurate contingency percentages for construction projects. This potential cost escalation must be factored into the state's cost-share estimates to

minimize the likelihood of SSC cost overruns during the RA (see section 3.11 for additional information on SSCs).

The SSC is important because cost sharing in the RA may bring about increased state involvement in routine site management decisions. By defining the roles and responsibilities of the state and other parties in a Federal-lead RA before the RA commences and providing detailed cost estimates with an appropriate contingency built into the estimate, an RPM may avoid situations that result in project delays.

The RPM and the state should meet regularly during the RA to discuss site progress and any issues that may affect the SSC. If the state does not participate in the RA, it may raise issues at the end of the project that cannot easily be addressed and may delay RA completion. Ideally, the RPM should encourage the state to be a member of the TRT and attend regularly scheduled site progress meetings between the RPM and USACE personnel or the ARCS/RAC contractor, participate in site visits, and attend public meetings with the RPM. This degree of state involvement is also needed to prevent the state from being "surprised" by an EPA request to amend the SSC cost-share terms and ease the transition to the O&M phase. Finally, the state and EPA, in accordance with 40 *Code of Federal Regulations* (*CFR*) Part 300.515(g), must conduct a joint inspection upon RA completion.

5.2.4 Developing the Remedial Action Statement of Work

The RA SOW is prepared during the RD and lists all RA activities and requirements. The SOW must contain clear, concise project requirements and provide key project milestones and target dates establishing the project's schedule. The technical requirements for both ARCS/RAC- and USACE-managed RAs are discussed in greater detail below.

RA SOW for ARCS/RAC WAs

The RA SOW for ARCS/RAC WAs is developed using the standard tasks for RA services identified in **Figure 5-5**. The ARCS/RAC contractor manages the actual construction activities performed by subcontractors and the RA SOW reflects this management role. In the SOW, field construction is performed by a subcontractor under a single task. It is important to differentiate between ARCS/RAC contractor submittals and subcontractor submittals. A register such as the one presented in **Appendix B** is an essential tool the RPM uses to track the ARCS/RAC contractor's work at the site and record the contractor's transmittal of submittals. The RPM (assisted by the TRT) performs these tasks when developing the RA SOW:

- Identifies ARCS/RAC contractor submittal due dates, the methods to evaluate whether the contractor has delivered the quality of work required, and EPA's procedures (i.e., time frames, number of copies needed, location of meetings, etc.) for reviewing the submittals, as they affect the contractor.
- Identifies all subcontractor submittals that EPA elects to review. ARCS/RAC contractor personnel receive numerous submittals in accordance with the RA subcontract and EPA must identify those it wishes to review.
- Outlines minimum communication requirements, including the frequency of routine meetings. Meetings must be held at least once per week to manage the RA. There are cases, however, when daily contact is necessary to ensure project success.

Figure 5-5

RAC and ARCS Contract RA Standard Tasks

	RACs
Task 1	Project planning
Task 2	Develop and update site-specific plans
Task 3	Subcontract procurement
Task 4	Management support
Task 5	Detailed resident inspection
Task 6	Cleanup validation
Task 7	Community relations
Task 8	RA implementation (subpool activity)
Task 9	Project performance
Task 10	Project completion/closeout
	ARCS Contract
Task 1	Procurement support
Task 2	Construction management
Task 3	Technical engineering services

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- Specifies when and under what circumstances the federal government will accept transfer of all constructed facilities. A definite date for government acceptance of transfer is necessary because the government pays for liability insurance through the ARCS contract and RAC invoices as long as the subcontractor is responsible for the facility. Consults the Project Officer (PO) and Contracting Officer (CO) for further instruction related to subcontractor insurance requirements for ARCS/RAC-managed RAs.
- Details expected requirements for O&M transition.

A model RA SOW, incorporating the RAC standard tasks, is included as **Appendix E.**

RA SOW for USACE IAGs

An IAG SOW is required as part of an RA IAG and serves to communicate EPA's needs to USACE. A lack of clearly defined roles and responsibilities ultimately may lead to a breakdown in communication and a reduction in project quality. Successful USACE-managed RAs are facilitated by open and regular communication between EPA and USACE.

The IAG SOW for an RA is not the same as a contractor SOW because USACE is functioning as an extension of EPA. Ideally, the RPM should coordinate with USACE to develop an IAG SOW. The RPM should also work with USACE to develop accurate construction cost estimates. The IAG SOW should define EPA's requirements, the expected schedule and known constraints, and discuss participants' roles and responsibilities. The IAG SOW should include the following:

- Roles and responsibilities
- Communication requirements between USACE and EPA
- Special reports that may be generated for the RPM
- Special community relations requirements (i.e., site tours, media events, responding to the press)
- Estimate of dollar amount of oversight costs
- Description of the relationship between the parties for ARCS/RAC designs and USACE-managed construction

5.2.5 Developing the IGCE

An IGCE is a detailed estimate of the cost to the government for services and supplies to be acquired by the contracting party. An RA IGCE is a detailed, formally approved estimate of cost to the government to support contract award. The RA IGCE for contract award purposes includes only those costs associated with the contract itself. Other government costs such as construction management, engineering during construction, construction contingencies, etc. should not be included in the IGCE used for RA procurement. The IGCE should include only contract direct costs of labor, equipment, and material; contractor markups, including overhead, profit, and bond; and escalation to the midpoint of construction. Design contingencies can also be included for special items in those projects for which the design has not been completed, such as for performance specification technologies.

IGCE for ARCS/RAC-Managed RAs

An IGCE must be completed before issuing an ARCS/RAC WA. Initially, the designer prepares a detailed cost estimate for the RA construction. This is *not* the IGCE and should not be substituted for it. The designer's construction cost estimate must be independently confirmed with the signature(s) of government personnel with relevant experience, such as the Regional IGCE coordinator or USACE staff tasked to do the IGCE through a technical assistance IAG. Both the ARCS/RAC contractor construction management costs and the actual construction costs must be estimated and included in the IGCE.

Construction contingencies, construction management costs, and other government costs are added to the IGCE after contract award to form a current working estimate for programming purposes. The contingency is essentially an emergency fund obligated by EPA for use when processing change orders and claims. The contingency is generally 10 to 25 percent of the construction cost estimate and can be used only by the ARCS/RAC contractor when authorized by the CO. Contingencies should be developed from a cost-risk analysis.

IGCE for USACE-Managed RAs

When USACE manages the RA, it undertakes an exercise similar to performing an IGCE before RA solicitation activities. USACE has a team of experienced construction cost estimators who are brought into a project before the final design is completed to do the cost estimation. The RPM should have USACE perform a cost-risk analysis to determine the actual level of cost uncertainty in the project. This provides a more realistic cost estimate which benefits the RPM when negotiating with the state.

5.2.6 Developing the Remedial Action Schedule

A proposed RA construction schedule is developed by the designer during the RD effort. For ARCS/RAC WAs, the RPM must add the ARCS/RAC contractor construction management responsibilities to the construction schedule. The RA WA schedule must include key delivery dates and EPA's required time frames for deliverable review. Once the schedule is in place, it cannot be changed (other than with a contract modification) and all parties must adhere to it. If the RPM does not abide by the schedule, it may affect the constructor's schedule. The constructor might then make a construction delay claim, which EPA may be required to pay.

The same information is pertinent to USACE-managed construction contracts. The RPM must clearly identify which submittals he or she will review and their associated review time frames. This information can then be incorporated into the schedule. USACE should develop the full RA schedule in consultation with the RPM.

5.2.7 Issuing the RA Work Assignment or Executing the Interagency Agreement

The type of WA used to initiate the RA depends on the party that manages the construction and serves as the construction contracting party. Information on issuing ARCS/RAC WAs and executing USACE IAGs is provided in section 4.4. Although the information presented in that section is specific to RD WAs and IAGs, the processes are essentially the same for RA WAs and IAGs.

5.3 Managing the Remedial Action

The RPM is responsible for managing the RA to ensure that the project is delivered on time and within the projected budget. At the same time, the RPM is responsible for communicating with the EPA contractor or USACE, the TRT, state, and community.

5.3.1 Managing the RA Work Assignment or Terms of the Interagency Agreement

The RPM is responsible for managing the scope, budget, and schedule of the RA. The level of oversight required to successfully manage the RA depends on whether USACE or an ARCS/RAC contractor serves as the contracting party. USACE serves as the agent of the federal government and oversees the RA construction contract in accordance with the *Federal Acquisition Regulation* (*FAR*). Therefore, USACE-managed RAs do not require the same amount of RPM scrutiny as ARCS/RAC-managed RAs.

EPA is held ultimately responsible for RA development and execution, regardless of which contracting party performs the RA. As EPA's representative, the RPM must keep the project on track by effectively managing the WA or IAG in a manner that protects EPA's interests. Although ultimately responsible for the RA, the RPM is removed from the actual implementation of physical work at the site because the constructor reports directly to the ARCS/RAC contractor or USACE personnel. To successfully manage the RA WA or terms of the RA IAG, the RPM does the following:

- Reviews all invoices, requesting backup documentation as necessary. Under the IAG, USACE accepts responsibility for certification of contractor invoices, thereby alleviating the RPM of this major responsibility.
- Establishes and maintains thorough and regular communications with the contracting party.
- Processes IAG/WA amendments immediately to increase funding or modify the scope of work. Any delays in processing paperwork can result in project delays leading to increased RA costs.
- Enforces the schedule; requests a notice of planned corrective actions to prevent schedule delays; and demands immediate reporting of any potential schedule delays by the constructor.

- Schedules routine site visits and attends daily job meetings between the contracting party and the constructor as part of any routine site visit. These meetings can reveal RA issues that may not be reported to the RPM. Weekly visits and progress meetings are strongly recommended. Additional visits should be included to coincide with significant construction events at the site.
- Provides timely responses to issues raised by the contracting party. During construction, quick decisions are necessary to prevent paying constructor delay claims.
- Ensures that the RPM is involved in any change orders that affect the scope, performance, or cost of the remedy and that would result in ROD modification.
- Emphasizes health and safety compliance. The RPM must take the initiative to place health and safety on the agenda during progress meetings and site visits.
- Ensures compliance with all applicable QA/QC requirements and policies.

Additional information on managing WAs and the terms of IAGs can be found in sections 4.4.1 and 4.4.2, respectively.

5.3.2 Community Relations During the Remedial Action

As discussed in section 3.12, the RPM implements a community relations plan. He or she identifies, based on personal contact with the community, how often and by what means the community is informed of the remediation activities. The RPM and Regional Community Relations Coordinator should update the community relations plan throughout the RA.

The amount of effort expended on community relations activities depends greatly on the nature of the RA and location of the site in relation to residential areas. Failure to prepare the community adequately for the upcoming RA may lead to serious difficulties during implementation. Before and during RA implementation, an RPM should:

- Inform the community about the RA procurement process and constructor selection.
- Notify the community immediately before the constructor mobilizes and before other major RA milestones that might affect the community.
- Provide routine updates about site progress through fact sheets and public meetings.
- Offer tours of the site (when safe to do so), particularly at the end of the remediation.
- Discuss remediation activities, including contingency plans, with those who live closest to the site and those along the travel route for off-site waste disposal.
- Prohibit construction workers from discussing remediation activities directly with the community and the media (this requirement can be written into the RA contract).

5.3.3 Reviewing the EPA Contractor's Remedial Action Work Plan

Reviewing and approving the EPA contractor's RA work plan is similar to the process described in section 4.6. The work plan is a detailed response to the RA SOW, containing a task-by-task description of the contractor's approach to meeting EPA's project requirements. The RPM, assisted by the TRT, reviews the work plan to ensure that the EPA contractor understands the RA requirements. The RA work plan must contain the following essential elements:

- Description of the roles and responsibilities of the construction management team, RE, and other key personnel; lines of authority; and lines of communication in the management of construction activities.
- Résumés of key contractor personnel assigned to the project.
- Description of the proposed procurement process.
- RA schedule and those procedures requiring EPA approval to update it.
- Preconstruction conference schedule, including a list of critical items to be covered.
- Method for implementing the construction quality assurance plan (CQAP) (see section 4.7.6).

- HASP for field construction activities (see section 4.7.2) which must be incorporated into the overall site HASP.
- Formal procedures for transmitting submittals and shop drawings from the constructor to the EPA contractor for review and approval. Formal procedures should be in place to identify which parties are responsible for reviewing each document. Large projects with a broad range of technical submittals should include a flow chart of the procedures as well as a narrative description.
- Description of the organization and maintenance of the RA contract files at all stages of the project, including disposition of files at the end of construction or at the end of O&M.
- Description of the required inspection and testing procedures for determining constructor compliance.
- Process by which the constructor is required to submit *record drawings* (these are design drawings, also called as-builts, showing the original design as modified by actual changes during construction). The marked-up record drawings will be kept on-site and should be available for review. A final set of record drawings is submitted after construction is completed.
- Description of the process by which the constructor submits invoices for completed work and verifies that the work is satisfactory; retention provisions; turn-around time for payment; required reports; and provision for final payment and release of retained funds.
- Description of internal procedures that the EPA contractor uses to manage change orders, identifying key personnel, lines of authority, procedures for developing estimates, and the schedule and budget adjustment negotiations.
- Description of the procedures by which the EPA contractor will resolve and process constructor claims.
- Procedures describing the process wherein the construction work is accepted and final payment is made to the constructor; the conditions that must be met by the constructor to obtain acceptance during the prefinal and final inspections; the shift in responsibility for the site between the constructor and the government; and the warranty of the work in accordance with the contract.
- For projects that produce facilities requiring postclosure operation, the EPA contractor provides the procedures for startup, operation, trouble-shooting, training, and evaluations until transfer to the state under the SSC (see 40 *CFR* 300.435) takes place.
- Identification major equipment needs for WA performance and how the contractor will obtain the equipment.
- Identification the system-testing criteria and acceptable limits, ranges, and timeframes that will be used to establish that the system is operational and functional (see section 5.7.1).

5.4 The Remedial Action Procurement Process

Procurement is a complex process in which the contracting party solicits bids (or offers) and evaluates them, selects a constructor, and awards the contract. There are four basic forms of procurement within federal construction contracting:

- Sealed bidding
- Negotiated procurement
- Two-step sealed bidding
- Non-competitive (sole-source) procurement

5.4.1 Sealed Bidding

Sealed bidding provides an opportunity for all qualified contractors to compete for the work on a price basis. The work must be described in detail so that bidders fully understand what is required and bid on an equal basis. The selected bid becomes the basis for a fixed-price contract. Therefore, sealed bidding is used for sites where detailed design specifications have been developed. Four steps are involved in sealed bidding.

- Presolicitation (i.e., the RD)—Drawings and specifications are developed in this step.

- Solicitation and receipt of bids—An invitation for bids (IFB) is advertised in the *Commerce Business Daily* (*CBD*). Bids are submitted in sealed envelopes according to IFB instructions. It is suggested that the IFB be placed in local newspapers as well.
- Bid evaluation—The bids are evaluated to determine if they are "responsive and responsible." Responsive bids are completely filled in, have all necessary attachments and signatures, and are not qualified or conditioned by the bidders in any way. Responsible bids are made by organizations that possess sufficient capital and resources and past work histories to indicate a high probability for successfully accomplishing the work. Sufficient work history is determined through consultation with the TRT.
- Award of contract—The lowest bid that is deemed responsive and responsible is announced and the contract awarded. This type of procurement typically results in lower costs to the government and a shorter bid time period since no technical evaluations are necessary.

When a majority of the sealed bids submitted in response to an IFB are significantly higher in cost than anticipated or are non-responsive, the RPM should be involved in any RA procurement decisions made. For example, depending on the reason for non-responsive bids, the IFB may need to be altered and re-issued or the procurement cancelled.

5.4.2 Negotiated Procurement

Negotiated procurement proposals are evaluated on the basis of technical merit and cost rather than cost alone. Six steps are involved in the negotiated procurement process.

- Presolicitation—Performance-based specifications are developed during the design, stating project requirements (i.e., standards of quality and services to be provided). Offerors develop their own approaches to meeting the performance standards established for the site.
- Solicitation and receipt of proposals—A request for proposals (RFP) is advertised in the *CBD*. The RFP contains project performance specifications and a description of the evaluation criteria. The scoring criteria and the basis for award also are provided. It is suggested that the RFP also be placed in local newspapers.
- Discussions—Offerors are made aware of any deficiencies in their proposals in order to bring as many as possible into the acceptable range.
- Evaluation of proposals—The cost and technical acceptability of the proposal and the offeror's firm's ability to accomplish the work are evaluated. The cost and technical evaluations are done separately and combined at the end for a total score. Proposals are usually categorized as technically acceptable, potentially acceptable, or unacceptable. If the RPM is required to make any technical judgments, input from the TRT is recommended. The government then issues interrogatories and all offerors have the opportunity to clarify or improve their proposals (e.g., make potentially acceptable proposals technically acceptable).
- Best and final offers (BAFOs)—The contracting party is required to solicit BAFOs from all technically acceptable proposals. BAFOs are evaluated and scored in terms of cost and technical merit to determine a final score.
- Source selection and award—The BAFO with the highest final score is selected and a contract awarded.

5.4.3 Two-Step Sealed Bidding

In this procurement method, offerors first submit proposals without cost information in response to an RFP and submit sealed bids if their proposals are found acceptable. The proposals are judged on their compliance with established criteria. They are categorized as being either acceptable, potentially acceptable, or unacceptable. Although this method is conducted as a sealed bidding procurement, there are two differences: (1) bidding is limited to those who have successfully completed the first stage and (2) bidders must comply with the RFP and meet any additional IFB requirements. The government then selects the lowest bid.

5.4.4 Non-Competitive (Sole-Source) Procurement

Non-competitive, or sole-source, procurement is the least-favored method of procuring an item or service and can be used only in the rarest of circumstances. *FAR* Part 6.3 states that *one* of the following circumstances must apply in order to employ this type of procurement:

- Only one responsible source is available and no other supplies or services satisfy EPA's requirements
- Unusual or compelling urgency exists (poor planning does not satisfy this criterion)
- An emergency situation exists involving industrial mobilization or engineering, development, or research capability
- International agreement (where a foreign government reimburses EPA)
- Authorized by a statute
- National security is an issue
- In the public interest not to proceed with full and open competition

Additional planning must be undertaken at the outset because of potential controversy surrounding the use of non-competitive procurement. If USACE is the contracting party, it ensures that the procurement is performed in accordance with all federal regulations. In those cases, the RPM should defer to USACE personnel judgement. When an EPA contractor is the contracting party, the CO must consent to a subcontract procured by this method.

5.4.5 The Remedial Project Manager's Role in the Procurement Process

The RPM's role is limited in the constructor procurement process, because EPA does not have a direct line of communication with the constructor (unless EPA is managing the contract directly through a prequalified contract). The RPM, however, is responsible for monitoring the process to ensure the procurement proceeds without delay. Even the best solicitation packages may need to be amended at some point during the solicitation process. This need usually arises in a bidders' conference where the potential bidders request clarification of the solicitation package.

The RPM should attend the bidders' conference which may include a "job walk" through the site. A job walk is a tour of the site to obtain a site overview and help the bidders/offerors decide how to approach the RA project. When USACE is the contracting party, the RPM is encouraged to participate in the technical review process as either a voting or nonvoting member. (Being a voting member, however, requires a substantial time commitment because the panel's voting members are sequestered several times during the selection process.) Although the RPM may participate in the technical review process for proposals in USACE-managed RAs, he or she may not participate in the evaluation of subcontractor proposals with an ARCS/RAC contractor-managed RA.

5.4.6 Approving the EPA Contractor's Selected Constructor

Before the contract is awarded, the EPA contractor sends a notice of intent to award to the RPM. The RPM then prepares an evaluation memorandum and submits it to the EPA CO for concurrence. The CO reviews the memorandum and consults with the RPM, PO, and TRT to determine if the constructor can perform satisfactorily. The CO acknowledges constructor acceptance by issuing a letter authorizing the subcontract or issuing a contract modification.

Once the EPA contractor selects the constructor, a notice of award is sent to the constructor and a copy to the RPM. This notice requires the constructor to submit all required bonds (payment, bid, and performance) and sign a contract within the period of time specified in the notice. If the selected constructor does not qualify (e.g., due to the inability to obtain bonds or meet other contractual requirements) or refuses to enter into a contract, the bid bond is forfeited. Due to the potential for award delay, the solicitation usually states that the bids and bid bonds may be held as long as 60 days after opening.

5.4.7 Construction Contract Award Controversies

An award controversy in a Federal-lead RA has the potential to create delay in the construction process. The method of managing contract award controversies, or bid protests, differs depending on the contracting party. Protests can be filed at any time in the procurement process but generally occur

immediately following the notice of award. For more specific information than is provided below, refer to the Office of Regional Counsel or the Office of General Counsel.

Construction Contracts with the ARCS/RAC Contractor

Construction contracts with an EPA contractor are subcontracts. Subcontractors to EPA contractors do not have a direct contractual relationship with EPA; therefore, subcontractors do not have access to federal administrative procedures for hearing protests. All award controversies regarding the contract between the EPA contractor and its subcontractor must be resolved between those two parties without government involvement. The parties may resort to state courts, which could lead to injunctions or other delays. In contrast, an EPA contractor that directly contracts with EPA would be able to access the federal administrative procedures described in *FAR* Part 33 to protest contract award.

Construction Contracts with USACE

FAR Part 33 details the requirements for filing and processing bid protests. An unsuccessful offeror (assuming the offeror would be a prime contractor with USACE) can file a protest with USACE or directly with the General Accounting Office (GAO). Protests submitted to USACE for resolution are governed by USACE regulations (USACE uses the Department of Defense Board of Contract Appeals). Normally, protests filed with a USACE CO before award of the contract prevent award until the protest is resolved.

Protests filed with GAO prevent award, if filed before award, or prohibit performance on the contract, if filed within ten days of award of the contract or five days after a requested debriefing to an unsuccessful offeror. The CO may award a contract in the interim if it is deemed to be in the best interest of the government or urgent and compelling circumstances that significantly affect the interests of the United States will not permit awaiting GAO's decision. Only in rare circumstances is this avenue taken. The normal course of action is to await decision by GAO.

Protests filed with GAO have greater potential for delaying projects because of GAO's review and decision-rendering timeframes. Once a protest is filed with GAO, it has 125 calendar days (mandated by the *Federal Acquisition Streamlining Act* of 1994, P.L. 103-355) to render a decision. For protests filed with GAO more than ten calendar days after contract award, the CO does not have to suspend contract performance or terminate the awarded contract unless it appears likely that the award may be invalidated.

5.5 Preconstruction Activities

During actual construction, the ARCS/RAC contractor assigns a CM to the site to supervise all construction activities, whereas USACE personnel assign an RE or a team of REs to RA projects. The following six activities occur immediately after contract award:

- Issuing the notice to proceed
- Conducting the preconstruction conference
- Delivering the preconstruction submittals
- Providing site security
- Mobilizing the constructor
- Posting EPA signs at the site

5.5.1 Issuing the Notice to Proceed

A notice to proceed initiates construction activity. The ARCS/RAC contractor or USACE issues the notice sufficiently in advance of the required date to provide the constructor adequate lead time. The RPM should request and receive a copy of the notice. The date on the notice marks the formal beginning of the construction project. Progress within the construction schedule will be measured by that date. Before the notice is issued, the constructor should have submitted a detailed construction schedule against which progress can be measured.

5.5.2 Conducting the Preconstruction Conference

There must be a preconstruction conference before work begins attended by all parties involved in the RA project, including the RPM, state, and local authorities (i.e., municipal public works department, municipal or county highway department, local emergency response personnel, etc.). This is the first meeting attended by everyone involved in the project. The purpose is to establish relationships, define roles and responsibilities, and answer any

questions concerning contract implementation. **Figure 5-6** lists activities covered in a typical preconstruction conference.

Figure 5-6

Preconstruction Conference Activities

- Introducing team members
- Discussing EPA's expectations
- Reviewing general project scope
- Reviewing the final CQAP and quality control plan
- Reviewing the project schedule
- Establishing scheduled meetings and briefings
- Reviewing roles and responsibilities
- Reviewing document control procedures
- Discussing key issues, concerns, and project goals
- Discussing procedures to resolve disputes and misunderstandings
- Reviewing the HASP and emergency response plan
- Reviewing procedures for project completion

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5.5.3 Delivering the Preconstruction Submittals

Refer to the RA SOW in **Appendix E** for a sample listing of preconstruction submittals. These submittals require approval before the constructor can be mobilized.

5.5.4 Providing Site Security

The constructor must provide a site security plan before mobilizing at the site to prevent the public from having access to potential site safety hazards and to prevent the theft of or damage to facilities. The contracting party and the RPM should review site security on a regular basis to ensure compliance with the accepted plan.

Many sites have security cameras with 24-hour surveillance. Routine checks must be conducted to ensure that the cameras are operational. *At a minimum, all sites under construction should have a guard posted during working hours.* It may be necessary to post guards 24 hours per day, depending on the specific problems encountered. The RPM must be forceful in reviewing the security measures and require all security lapses to be investigated immediately. Any corresponding corrective actions should be taken to prevent the lapse(s) from reoccurring.

5.5.5 Mobilizing the Constructor

Mobilization begins after the constructor completes preconstruction submittals. Mobilization is the transfer of operations to the project site. At this point, any delays caused by the government or the contracting party can result in constructor claims for delay. Conversely, if the constructor fails to progress in accordance with the schedule, the constructor may be subject to liquidated damages at the end of the project (but only if such provisions exist in the constructor's contract).

5.5.6 Posting EPA Signs at the Site

All Superfund sites should have signs posted at their front gates to inform the public about the current remedial activities. They should be posted when the constructor mobilizes at the site and must contain the following information:

- EPA logo (available from EPA Headquarters printing office: Room MG 100D, Environmental Protection Agency, Washington, DC 20460 (202) 260-2125)
- State logo
- USACE logo (if it is the contracting party)
- Site name (with "Superfund" in the title)
- Contract award amount
- A point of contact and telephone number for those who wish to obtain further information or report suspicious activities

Office of Solid Waste and Emergency Response (OSWER) Directive 9375.5-10/FS, "Public Awareness Signs at Superfund Sites," October 1990, provides additional information on Superfund signs.

5.6 Construction Implementation

Construction performance is the sole responsibility of the constructor. The constructor determines the methods and sequence for the work not previously specified in contract documents. Before mobilizing, the constructor must submit for approval a detailed work schedule that is used to measure the constructor's progress. The construction

superintendent supervises the construction activities and administers and coordinates the arrival of materials, equipment, and labor in a manner that proceeds without interruption. He or she supervises the individuals responsible for different categories of work and administers all subcontracts.

5.6.1 Inspection and Testing

In accordance with the quality assurance project plan (QAPP), the constructor is required to maintain an inspection system to substantiate that the work conforms with contract requirements before the work can be accepted by the contracting party. The terms of the contract describe the required tests and procedures. The constructor must provide the resources necessary for the accomplishment of these tests at the appropriate times.

In ARCS contracts and RACs, the CM, on behalf of EPA and the RD designer's RE, will observe all of the constructor's inspection activities and conduct additional inspections as necessary in accordance with the work plan to ensure the quality and quantity of the work. Under USACE contracts, the USACE RE conducts these inspections at his or her discretion (although if an ARCS/RAC contractor performs the RD there is also an RE representing the ARCS/RAC contracting firm). Inspection should be carried out in such a manner that the work is not delayed. The CM (or RE) shall maintain suitable records of the inspection activities reflecting the number of observations made, the number and types of defects found, the corrective actions taken, and the resolution of any written instructions. The following project aspects should be inspected:

- Progress
- Materials (quality and quantity)
- Quality of work
- Adherence to design
- Health and safety

The quality assurance (QA) inspectors, hired by the constructor, shall review all daily reports and construction activities to verify that the work conforms with the contract. This includes sampling data collected by the constructor. All data confirming the achievement of final cleanup levels must also be verified. Additionally, the inspector should verify compliance with all environmental requirements of the contract. These inspections shall include, but not be limited to, air quality and emissions monitoring records, waste disposal records, and compliance with the HASP. There also should be a plan for regular materials testing specifying what tests will be performed, on which materials, and testing schedules. All inspection reports and certificates must be filed on-site with the contracting party. The CM or RE reviews and initials each report prepared by the constructor. Any comments should be noted in the CM or RE's daily log.

The RPM's Role in Inspections

Construction inspection records must be available for the RPM to review on-site with assistance from the TRT during RAs in which an ARCS/RAC contractor is the contracting party. In addition, the RPM should conduct spot checks of inspection activities. The RPM should schedule site visits to ensure that the contracting party and constructor are fulfilling their respective responsibilities. The frequency of these inspections is determined by the size and complexity of the project, the rate of progress being achieved, and the nature of problems or issues arising during construction. At certain critical phases, daily inspections may be necessary. These inspections typically focus on recordkeeping, contract administration, claims and change order management, labor standards, construction progress, and construction quality.

The RPM also conducts a joint inspection with the state at the end of a Fund-financed RA to fulfill EPA's requirements under the *National Contingency Plan* (*NCP*), 40 *CFR* Section 300.515(g). The purpose of the joint inspection is to determine that the remedy has been constructed in accordance with the ROD and the RD. This joint inspection should not be confused with the prefinal or final inspections that take place between the contracting party and the constructor (see section 5.7.3).

5.6.2 Monitoring Construction Progress

The constructor should keep the project on schedule while maintaining the specified quality and cost of the work. As a practical matter, performance according to the construction schedule should be reinforced through frequent communication between the parties. If the constructor is in danger of defaulting on its contractual obligations, the contracting party must meet with the RPM to discuss

all potential options. The RPM monitors construction progress through management of IAGs for USACE-managed RAs and through WAs for ARCS/RAC-managed RAs. When working with USACE or an ARCS/RAC contractor, the RPM can monitor construction progress with the following:

- On-site construction activities
- Progress reports
- Progress payments

On-Site Construction Activities

The RPM should review the daily logs and the CM's (or RE's, in USACE projects) field diaries. Photographs, including those of deficient work, should be used to supplement the RE's or CM's daily reports and establish job progress. At some sites, the RPM or CM (or RE, in USACE projects) may watch footage taken of constructor activities by video cameras at the site. He or she can thus observe project progress without wearing protective gear. The cameras also serve to document field activities should claims arise later.

The RPM should attend weekly meetings between the contracting party and the constructor at the site whenever possible. While the RPM is on his or her site visits, he or she should take advantage of the opportunity to attend daily meetings between the contracting party and the constructor. The RPM also should conduct periodic spot checks of the site to observe and document RA progress.

Progress Reports

Detailed progress reports from the ARCS/RAC contractor and USACE are required by the contract on a monthly basis throughout the duration of the project and are usually submitted with the monthly invoices. The RPM uses the reports as a supplement to site visits to monitor construction activities. These reports must develop a chronological record of remediation activities and should contain the information outlined in **Figure 5-7**.

Progress Payments

In most fixed-price construction projects, progress payments are made based on the percentage of work completed. The payment formula is decided before work begins and a system is developed that the constructor uses to demonstrate, through field measurements and inspections, that the work has been completed. Verifying the quantity and quality of work completed is part of the contracting party's overall construction inspection duties.

Figure 5-7

EPA Contractor Progress Reports

- Documentation of the percentage of work completed and total project cost to date
- Summaries of the following items for the reporting period:
  - Work performed on site
  - Community relations activities
  - Change orders to and claims made on the contract
  - Problems or potential problems encountered, inspection failures, reworked items, etc.
  - Reports of accidents, injuries, etc.
- Status of contingency fund to date
- Estimate of work for the next reporting period
- Copies of daily reports, change orders, manifests for off-site disposal, and all laboratory/monitoring data

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Progress payments do *not* constitute final acceptance by the government of the work performed to date. It is customary to retain some portion of the initial progress payments—usually five to ten percent—until the constructor demonstrates that satisfactory progress is being made. Full progress payments are usually made when 50 percent of the work is complete and continue until project closeout.

At the end of the project, sufficient funds must be retained as a means of ensuring that *punch list* (a written list of items needing correction or completion in order to complete the contract terms) items are performed and the final inspection is completed. Final acceptance usually occurs after performance of punch list items and completion of the final inspection and sometime during or after the process of achieving operational and functional status (see section 5.7.1).

The RPM must review and certify for payment the ARCS/RAC contractor's invoice by verifying that the work has been completed as stated on the invoice and accompanying progress report. The invoice must include the constructor's costs as well. The ARCS/RAC contractor retains the funds payable to the constructor as noted above. The RPM should request backup documentation as necessary.

For a USACE-managed site, the RPM receives and reviews Standard Form 1080 for final payment. Although the RE certifies the invoice for payment, the RPM must still review the invoice and may request backup documentation as necessary. If there are errors, corrections will be reflected on future invoices.

5.6.3 Reviewing Record Drawings

As the construction progresses, the constructor and CM or RE document each segment of completed work. As part of this documentation, markups will be made on a set of drawings. On simple projects, such as a water main installation, the record drawings can be markups of the original RD drawings. The markups illustrate how the installed facilities differ from the original design. For the installation of a treatment facility, markups may be made on the drawings indicating the actual components installed. At the completion of the project, these markups will be used to produce a clean set of record drawings that accurately describe the installed facilities.

The RPM should review the development and ensure the accuracy of the markup drawings as the work progresses and that they are provided to EPA and the state for O&M. The requirements for modifying original drawings (i.e., production of record drawings) in accordance with the markups should be included in the RA SOW with the requirement for RE services from the designer.

5.6.4 Changes to the Construction Contract

Construction contracts for both ARCS/RAC contractors and USACE contain a *changes* clause and other related clauses. The *changes* clause provides the needed flexibility to change the work described in the contract to adjust to actual field conditions and new interpretations of the drawings and specifications as the work progresses. The *changes* clause also can be used to order additional work within the scope of the contract to meet the government's need to implement the remedy.

The constructor is obligated to accomplish the work ordered by the CM or RE who exercises the *changes* clause, and in return is guaranteed an equitable adjustment to both the price and the project schedule. Additionally, the constructor may process claims under the *changes* clause for equitable adjustments for construction change costs. Construction changes occur when the constructor performs work without a formal change order due to the direction of the CM, RE, or other authorized contracting party employee.

Whenever the work is changed, both parties must negotiate acceptable terms. When negotiations are successful, the work changes are accomplished under a supplemental agreement to the contract. If the parties are not able to reach agreement, the constructor will be ordered to proceed with work under a change order for a price that the CM or RE considers to be reasonable. If the constructor is unsatisfied with the price, the constructor may file a claim against the contracting party to resolve the issue.

The RPM will be closely involved with ARCS/RAC-managed RA change orders as part of his or her WA management duties. For ARCS/RAC contractor-managed RAs, there are two distinct spheres of authority regarding changes in EPA contracts. The constructor is a subcontractor under the EPA prime contractor, so the government is not a party to the actual construction contract. The EPA contractor, therefore, is the only party with authority to negotiate or order changes to the construction contract. The second sphere of authority is in the contractual relationship between the EPA contractor and EPA. The contractor must obtain EPA review and approval of the changed work within the context of the WA. The EPA CO is the only individual who can commit the government to pay these costs. Changes are paid through the contingency fund (see section 5.2.5). The CO requests that the CO's Technical Representative review and make recommendations to support the payment.

For USACE-managed RAs, USACE has its own change order and construction change procedures but the RPM and USACE personnel need to communicate regarding significant change orders, especially if a change order will result in a need for more funds than authorized under the IAG or if the change order affects the ROD.

Office of Solid Waste and Emergency Response (OSWER) Directive 9355.5-01/FS, "ARCS Construction Contract Modification Procedures," September 1989, provides additional information on processing change orders.

5.6.5 Managing Claims

Constructor claims are generally made for the purpose of requesting more financial remuneration or to deviate from the schedule. In the claim, the constructor alleges that the contracting party's action, inaction, or misrepresentation in the contract documents has caused an involuntary change in the cost or time of performing the contract. The contracting party can use the following techniques to minimize the occurrence and effects of claims:

- Before advertising for bids or offers, ensure that the drawings and specifications are biddable, all conflicting language has been removed, and ambiguities have been clarified.
- Make a complete investigation of the subsurface conditions before soliciting bids for and starting the RA and include the results in the bidding documents.
- Closely monitor the construction to anticipate problems and be prepared to resolve them as soon as possible.

Because EPA does not have privity of contract with the constructor for either USACE- or ARCS/RAC-managed RAs, EPA will become involved in constructor claims only under certain circumstances such as when the ARCS/RAC contractor pursues the claim in the name of the constructor (see *FAR* Part 33 and the Contract Disputes Act of 1978). If the ARCS/RAC contractor pursues a claim, it must be submitted to an EPA CO. Usually, however, the CM attempts to address any claim issues before the claim goes to the CO. If the CO denies the claim, it may be appealed in the Department of the Interior Board of Contract Appeals or in U.S. District Court.

For USACE-managed RAs, the constructor that directly contracts with USACE will submit a claim to USACE for consideration. USACE and the RPM should communicate so that the RPM is aware of any constructor claim that might affect the schedule or achievement of the remedy. If the USACE CO rejects the claim, it may be appealed in the Department of Defense Board of Contract Appeals or in U.S. District Court.

If a claim is filed, the CM or RE should address the issues raised and control future claim costs by having the technical and legal staff analyze each issue.

5.6.6 Value Engineering During Construction

Value engineering (VE) is to be included in federal construction contracts worth $100,000 or more with few exceptions (see *FAR* 52.248-1). The VE clause for construction is an incentive clause that provides the opportunity to the constructor to use the latter's unique knowledge and construction experience as a basis for submitting a value engineering change proposal (VECP) (see *FAR* 52.248-3). Developed with its own resources (i.e., non-reimbursable), the VECP is the constructor's proposal to make changes to the RA project that, if incorporated, will save money without compromising quality or performance. The savings resulting from the incorporation of a VECP are normally shared (45-55 percent split for fixed-price contracts and a 75-25 percent split for cost-reimbursement contracts) between the federal government and the contractor that submits the VECP. However, this arrangement may vary according to contract type with the sharing arrangement being determined by the type of VE and the source of savings (see *FAR* 52.248-1[f]). Payment of any share due the constructor for use of a VECP shall be authorized by a modification to the construction contract.

After EPA receives a VECP from the contracting party, it must notify the contracting party as to the status of the VECP within 45 days or, if additional time is needed, explain the delay and provide an expected date for its decision. The RPM/Work Assignment Manager prepares a letter on the status of the VECP review for the CO's signature. VECPs should be processed expeditiously; however, EPA is not liable for any delay in acting upon a VECP.

If a VECP is not accepted, the CO notifies the contracting party in writing, which in turn notifies the constructor, explaining the reasons for rejection. Any VECP may be accepted, in whole or in part, by the CO's approval of a modification to the construction contract. The CO may accept the VECP, even though an agreement on price reduction has not been reached, by issuing a notice to proceed with the change. Until such a notice is issued or the CO approves a contract modification, the constructor must perform according to the existing contract.

For USACE-managed RAs, USACE follows its own VE procedures, but should notify the RPM of any

accepted VECPs that would affect ROD requirements or the RA schedule or budget.

OSWER Directive 9355.5-03/FS, "Value Engineering," May 1990, provides additional information on VE during construction.

5.7 Contractor Completion Activities

As a project nears completion, all parties must understand their roles and responsibilities to ensure proper project completion and closeout. Final inspection and closeout activities are discussed below.

5.7.1 Achieving an Operational and Functional Remedy

Immediately following construction of the remedy, the remedy enters a "shakedown" phase referred to as the operational and functional period. This shakedown enables the constructor to make minor modifications as necessary to ensure the remedy is operating as designed.

Under 40 *CFR* Section 300.435, a remedy becomes operational and functional either one year after construction is complete or when the remedy is determined concurrently by EPA and the state to be functioning properly and is performing as designed, whichever occurs first.

The operational and functional determination by both EPA and the state is a critical milestone because it marks the start of the O&M phase of a project. Subsequently, disagreements may arise as to whether the remedy is operational and functional. To minimize disruption to the project, the RPM should do the following:

- Ensure the designer incorporates into the design documents (CQAP) the tests that are necessary to demonstrate that the remedy is operational and functional. This requirement should be included in the RD SOW.
- Obtain agreement with the state through the SSC on which tests will be used by both parties to demonstrate that the remedy is operational and functional.

5.7.2 Prefinal Construction Conference

A prefinal construction conference is required just before completing the construction work. The conference will be scheduled by the contracting party and attended by the RPM, state, and constructor. The objective of the conference is to discuss procedures and requirements for project completion and closeout. Suggested conference topics include:

- Final O&M plan submission
- Construction cleanup responsibilities
- Demobilization activities
- Security requirements for project transfer
- Prefinal inspection schedule
- EPA/state joint inspection schedule (*NCP* requirement)
- Facility startup and training
- Operator training

5.7.3 Prefinal and Final Inspections

The prefinal and final inspections are standard construction practices for closing out a contract. The purpose of these inspections is to determine whether the construction was completed in accordance with the contract. They are generally held between the contracting party and the constructor. These inspections are often confused with the mandatory EPA/state joint inspection requirement under the *NCP*, 40 *CFR* Section 300.515(g). The EPA/state joint inspection is a separate inspection held at the completion of physical construction to obtain agreement between EPA and the state that the operational and functional period is ready to commence. The contracting party and the constructor, however, may agree to invite both the RPM and the state to the prefinal or final inspection(s) to avoid having to schedule separate inspections.

Prefinal Inspection

The ARCS/RAC contractor's CM or USACE's RE and the constructor's construction superintendent will inspect the site and look at each element of work to see if it is complete and ready to be accepted. In some instances, the prefinal inspections can be performed as each major element of the job is completed instead of at the end of the project.

Generally, there will be a few elements of work still in progress at this time and some minor defects that will come to light as the inspection proceeds. A prefinal inspection report must be prepared that includes the punch list developed by the CM, completion dates for outstanding items, and a date for a final inspection (if one is to be held). A copy of this report should be sent to the RPM.

Final Inspection

Work is considered complete when the remedy is operational and functional, all punch list tasks have been performed, and terms of the contract have been met. Thus, completion of construction activities does not mean that the WA is complete. All parties should attend the final inspection. The CM or RE determines the level of work completeness. There may be a few minor work elements not yet complete, but they may not affect acceptance of the work. A portion of the constructor's final payment is retained until these outstanding elements are completed.

The RPM must focus EPA's portion of the inspection on determining whether the remedy has been implemented in full compliance with the ROD. In addition, where an ARCS/RAC contractor serves as the contracting party, the RPM needs to determine if the work has been completed as described in the ARCS/RACs work plan. The RPM should perform a thorough work plan review so he or she will be fully prepared to participate in the inspection. The RPM should have his or her TRT assist in this inspection.

Demobilization

Site demobilization occurs after the majority of construction work is completed. This phase of the remediation is generally comprised of the following tasks:

- Removing all equipment, machinery, or materials that are no longer necessary to complete site activities
- Removing temporary buildings and structures
- Completing all necessary restoration or replacement of public or private property affected by the remediation activities
- Removing site debris, disconnecting temporary utilities, and cleaning roadways or other public access or service areas
- Transferring all finalized documentation associated with the construction (e.g., log books, records, etc.)

Items removed from the site during demobilization may require decontamination before removal. Final inventories of remaining materials and utilities should also be completed. Any additional or site-specific requirements contained in contract requirements and specifications prepared during the RD should be addressed.

5.7.4 Contractual Acceptance of the Project and Warranty

Accepting the work is an important juncture in the project because it alters the rights and responsibilities of the parties involved in the construction project. The government takes over full possession of the facilities from the constructor upon acceptance of the work. Final acceptance occurs after final inspection and correction of the punch list items. The risk of loss due to damage or theft shifts from the constructor to the government. By accepting the work, the government limits its rights to require the constructor to make adjustments to or correct defects in the work.

The government's acceptance does not relieve the constructor from assuming responsibility for the quality of work performed. If any of the three exceptions to the finality of acceptance—latent defects, fraud, or gross mistakes—are found to exist, the constructor generally must correct the work.

In conditions not described above, a *warranty* clause must be in the original contract to ensure that the constructor corrects any defects. The warranty period is usually one year against defects in equipment and materials or quality of work and design.

Final Payment

Final payment to the constructor cannot occur until the following items are completed:

- All final drawings, log books, records, and other documentation are received by the contracting party.
- The contracting party receives a letter from the constructor stating that all work has been performed in accordance with the contract and is complete in every respect.

- The contracting party receives a letter from the constructor stating that all wages, debts, and payments incurred by the constructor during work performance have been settled or paid in full.
- The contracting party receives a letter from the bonding company stating that it has reviewed the constructor's final request for payment and agrees that payment will release the constructor from any and all claims that the constructor may have against the regulatory agency(ies) in performance of this contract.
- The contracting party receives satisfactory evidence of the release of any outstanding liens.

5.7.5 Remedial Action Report

Within 60 days after the final inspection, the contracting party prepares and submits an RA report to the RPM for each construction project. The report, the official record of RA activities, is a required submittal. This is not to be confused with the EPA contractor or USACE contractual obligations with the constructor. This is an EPA administrative requirement only and does not have to be done to fulfill contractual agreements. The RA report contains the following information:

- Introduction
- Chronology of events
- Performance standards and cleanup goals met
- Description of the QA/quality control (QC) procedures followed
- Description of construction activities
- Final inspection documentation
- Certification that the remedy is operational and functional
- Discussion of O&M requirements
- Summary of project costs

Review of the RA Report

The RPM reviews the RA report to ensure that the remedy has been completed and meets EPA's goals as established in the ROD. After reviewing and accepting the report, the RPM prepares a letter to be signed by an EPA branch chief, notifying the contracting party of the acceptance.

OSWER Directive 9355.0-39FS, "Remedial Action Report—Documentation for Operable Unit Completion," June 1992, provides more information on RA reports.

5.8 State Operation and Maintenance

This section provides a brief overview of O&M activities. State-performed O&M activities are necessary to protect the integrity of the remedy. (Additional guidance that EPA Headquarters is developing on O&M should be inserted into the handbook when available.)

O&M commences on the date that EPA and the state agree that the remedy is operational and functional. The exception is active ground water restoration, where EPA will operate a pump and treat system for up to ten years, after which time the system is declared operational and functional.

The SSC establishes the rules for transferring the site and its facilities from EPA to state control. Once the facility is transferred, it becomes state property. The RPM must ensure that the O&M package (drafted by the designer) has been completed by the constructor and includes all record drawings and manufacturer equipment manuals. The state and its contractors should conduct a tour of the site and obtain any special training necessary to carry out O&M before the transfer.

The RPM should be aware that site access is often overlooked as part of the transfer process. The RPM and state should determine what, if any, state site access is needed to implement O&M. These issues must be worked out before the state assumes control. O&M commences on the date in the RA report that certifies the project is complete and the remedy is operational and functional (with the exception of ground water restoration).

The SSC is also the mechanism through which EPA establishes the state's reporting requirements for O&M, including the frequency for report submission. The RPM must continue to review these reports and ensure that they are submitted on schedule after the state assumes responsibility for the site.

5.9 Site Closeout Process

The site closeout process consists of documenting that all Superfund response action is complete and the site can be deleted from the National Priorities List (NPL). Site completion requirements provide a definitive endpoint to Superfund cleanup activities and satisfy the *NCP* requirements for site deletion. **Figure 5-8** illustrates the site closeout process, highlighting the following three phases:

- Construction completion activities
- Site completion activities
- Site deletion activities

OERR/HSCD "Closeout Procedures for National Priorities List Sites," (Draft), April 1995, provides information on the site closeout process.

5.9.1 Construction Completion Activities

In 1991, the EPA Administrator established national targets for the number of sites to be deleted from the NPL through the year 2000. The concept of *construction completion*, EPA's primary measure of accomplishment toward that goal, was created to simplify the system of site categorization and to better communicate the successful completion of site cleanup activities. Construction completion means that physical construction of the remedy is complete or that no substantial physical construction is necessary to implement the remedy. It marks completion of a phase in the Superfund remedial process but does not affect the separate milestones of site completion or deletion. Characteristics of sites satisfying construction completion criteria include:

- Sites where all necessary physical construction is complete, whether or not final cleanup levels or other requirements have been achieved
- Sites where EPA has determined that the response action should be limited to measures not involving construction (e.g., institutional controls)
- Sites that qualify for deletion from the NPL

Preliminary Closeout Report (PCOR)

The PCOR forms the basis for the final closeout report (FCOR) and focuses on site construction and completion. The PCOR includes information on the release of contaminants at the site, site conditions, response action, steps remaining for site completion, and a schedule for their completion. The PCOR should contain the information shown in **Figure 5-9**.

The RPM often prepares the PCOR before the RA report for the final operable unit (OU) because the RA report can be submitted up to 60 days after determining that the remedy is operational and functional. The PCOR generally should be three to five pages long. A draft of the PCOR must be sent to EPA Headquarters for review. The purpose of the review is to ensure national consistency in reporting completions. Construction completion is considered final when the Regional Division Director approves and signs the PCOR.

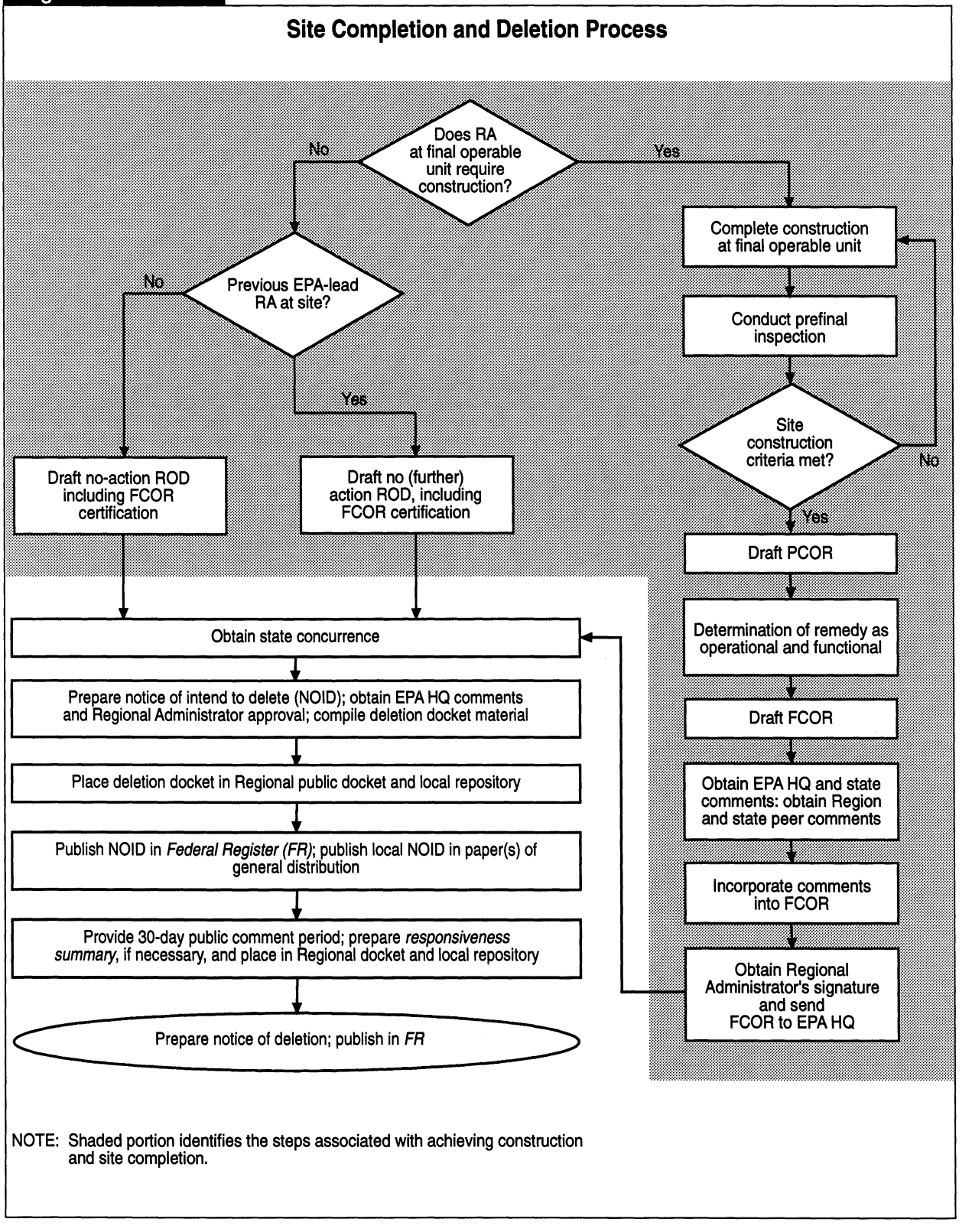
NPL Sites Involving Construction

Completion of physical construction means that the final remedy, as determined by the ROD, has been constructed at the site and a prefinal inspection has identified only minor unfinished activities on the punch list. When determining eligibility for construction completion, the RPM must anticipate likely site progress as well as consider current site status. A site with a significant number of outstanding work elements to be completed should not be categorized as achieving construction completion. Achieving construction completion does not imply final acceptance by EPA.

After a site achieves construction completion status, some minor tasks will remain before a site can move towards site completion status (i.e., completing remaining punch list items, conducting the final inspection, achieving operational and functional status, and signing the final RA report). In most cases, the RPM should prepare a PCOR to document construction completion. However, sometimes the need for a PCOR is eliminated because remedial activities at the site have progressed to the point where construction and site-completion determinations occur simultaneously. In these cases, the RPM can rely on the FCOR to satisfy the documentation requirements for both events. Additional information on preparing an FCOR is presented later in this section.

Figure 5-8

Site Completion and Deletion Process



NOTE: Shaded portion identifies the steps associated with achieving construction and site completion.

51-043-3A

Figure 5-9

Contents of the Preliminary Closeout Report

- Background of site conditions
- Remedial construction activities
- Discussion of QA/QC from cleanup activities
- Final inspection
- RA report and EPA approval
- EPA/state joint inspection (may coincide with the final inspection)
- Operational and functional periods
- O&M period
- Discussion of five-year reviews

51-043-29

NPL Sites Not Involving Construction

At some NPL sites, EPA determines through the remedial investigation/feasibility study (RI/FS) that no remedial construction is necessary to protect human health and the environment. If certain criteria are met, construction and site completion can be documented by completing one of the following:

- no-action ROD
- no-further-action ROD
- limited-action ROD requiring no physical construction (i.e., a ROD with only institutional controls)

A site with a ROD that does not require construction is considered to be a construction and site completion site when the Regional Administrator approves and signs the ROD. If the site is a no-action site where EPA has never implemented an RA, the RPM does not prepare a PCOR (or FCOR) and should instead place the following certification in the declaration section of the no-action ROD:

"EPA has determined that its response at this site is completed and no action/no further action is necessary at this site. Therefore, the site now qualifies for inclusion on the construction completion list."

For sites with no-further-action RODs where EPA *has* previously conducted RAs (triggering statutory documentation requirements), the RPM may choose either to prepare an FCOR or to document compliance with statutory requirements in the RODs, incorporating information normally included in the FCOR and the certification mentioned above.

Sites with limited-action RODs not requiring physical construction may achieve construction completion when the Regional Administrator approves and signs the ROD. The RPM does not prepare a PCOR, but should instead place the following certification in the declaration section of the limited-action ROD:

"EPA has determined that its future response at this site does not require physical construction. Therefore, the site now qualifies for inclusion on the construction completion list."

The RPM may not declare site completion at this time since the site will include some future activities such as implementing the institutional control requirements. An FCOR will thus be required (see section 5.9.2).

5.9.2 Site Completion Activities

Site completion marks the end of remedial activity at a site. A site must meet *all four* criteria below to be eligible for site completion status:

- Cleanup levels specified in all RODs are met and cleanup actions and other measures identified in all RODs are successfully implemented.
- The constructed remedy is operational, functional, and performing according to engineering design specifications.
- The site protects human health and the environment.
- The only remaining site activity to be completed, if any, is O&M.

A site may meet the site completion criteria following any one of a number of activities at a site. For example, a site is eligible for site completion following completion of the final OU of the RA, a no-action ROD, or completion of a long-term response action. In order to satisfy these requirements, an FCOR generally will be prepared. However, in certain cases a final OU limited-action ROD for a site that does not require remedial construction may be sufficient documentation to satisfy site completion requirements (see section 5.9.1).

The FCOR

The FCOR is a detailed summary of site history, emphasizing the RD and RA. In general, the RPM prepares the FCOR but also may allow other parties to prepare it. The FCOR is usually 12 to 15 pages long and should summarize the information necessary to describe the activities performed and the results achieved. **Figure 5-10** lists the types of information in an FCOR.

The information needed to prepare the FCOR should be readily available from previous documentation of site activities such as the RA report, RI/FS, and ROD.

Since it is the final record of site remedial activities, the FCOR must be complete and able to stand alone. The FCOR provides the overall technical justification for site completion, and so must clearly demonstrate how the remedial activities conducted satisfy site completion requirements. After the FCOR is prepared, the RPM submits a draft to EPA for review. The state also must be given the opportunity to review the FCOR and provide comment. However, the state does not formally offer a signed concurrence on the report itself. Site completion is considered final when the Regional Administrator approves and signs the FCOR.

Figure 5-10

Final Closeout Report Summary

Chapter	*Contents*
I. Introduction	- General statement indicating successful execution of RA
II. Summary of Site Conditions	- Site background - Early actions performed - RI/FS results - ROD findings - Design criteria - Cleanup activities performed - Community involvement activities performed
III. QA/QC of Cleanup Activity	- QA/QC protocol followed - Sampling and analysis protocol followed - Results of on-site inspections
IV. Monitoring Results	- Sufficient data available to demonstrate cleanup levels specified in the ROD or action memoranda have been achieved and implemented and remedies are performing to design specifications - Brief documentation of monitoring required at no-action sites after the ROD is signed (should also be included in the administrative record)
V. Summary of O&M Activity	- Assurance that O&M plans are in place and sufficient to maintain integrity of remedy - Assurance that all necessary institutional controls are in place - Assurance that O&M activities specified for the site will be performed by the state or PRP(s)
VI. Protectiveness	- Assurance that the implemented remedy (or no-action decision) achieves the degree of cleanup or protection specified in the ROD(s) for all pathways of exposure and that no further Superfund response is needed to protect human health and the environment - Assurance that all areas of concern described in the NPL listing have been adequately addressed
VII. Five-Year Review	- Statement explaining whether a five-year review is appropriate, and if so, the type of review (statutory or policy) and review schedule - Brief description of the results of any five-year reviews performed - Assurance that the remedy is protective
VIII. Bibliography	- Complete citations of all relevant reports

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5.9.3 Site Deletion Activities

The site is eligible for deletion from the NPL when all of the site completion activities discussed in section 5.9.2 are complete. At this point, issues surrounding placement of the site on the NPL have been addressed, the threat to human health and the environment has been addressed, and the Superfund process has completed its course. Site deletion requirements ensure that documentation and verification of activities and decision-making at the site are complete and the public has an opportunity to comment before the site is formally deleted from the NPL.

Section 300.425(e) of the *NCP* states that a site may be deleted from or recategorized on the NPL when no response/no further response is appropriate. The RPM consults with the state in making this determination. To delete a site from the NPL, EPA must determine, and the state must concur, that *one* of the following criteria has been met:

- Potentially responsible parties (PRPs) or other persons have implemented all required response actions.
- All appropriate Fund-financed response under CERCLA has been implemented, and no further response action by PRPs is appropriate.
- The RI has shown that the release poses no significant threat to public health or the environment, and therefore, taking of remedial measures is not appropriate.

Deletion of a site from the NPL does not preclude eligibility for subsequent Fund-financed or PRP actions. If future actions warrant, the *NCP* provides that Fund-financed RAs may be performed at sites deleted from the NPL. When there is a significant release at a site deleted from the NPL, the site may be restored to the NPL after rescoring the site on the Hazard Ranking System. Additionally, enforcement actions also may be taken, depending on liability releases in the consent decree or administrative order.

The RPM should initiate the deletion process by consulting with the state and requesting its concurrence with EPA's intent to delete the site from the NPL. *No site may be deleted from the NPL without state concurrence.* Once state concurrence is obtained, the RPM prepares a deletion docket containing all pertinent information supporting the deletion recommendation. The RPM works with the Superfund community involvement staff to ensure that complete copies of the docket are placed in the appropriate Regional and local repositories.

Notice of Intent to Delete (NOID)

The NOID informs the public of EPA's intention to delete a site from the NPL. The deletion docket must be complete before the Region publishes the NOID in the *Federal Register (FR)* or local newspaper(s). Site-specific information needed to prepare the NOID should be available from the FCOR. **Figure 5-11** lists the contents of a NOID.

The public has the opportunity to comment on the intended NPL deletion during the 30-day comment period that follows publication of the NOID. The RPM is responsible for preparing a *responsiveness summary* for all local and national comments received. The responsiveness summary should present all comments received during the public comment period, paired with detailed responses to the comments. The RPM must include a copy of the responsiveness summary, approved by the Regional Administrator, in the Regional docket and local repository.

Notice of Deletion

The RPM then publishes the notice of deletion in the *FR*. This notice states that all appropriate Fund-financed responses under CERCLA have been implemented and that no further response is appropriate. The notice of deletion includes an effective date, a Regional contact, and supplemental site information. All NPL rulemakings subsequent to the publication of this notice will reflect this deletion.

Figure 5-11

Contents of the Notice of Intent to Delete

Chapter	*Contents*
I. Summary	Announcement of intent to delete
II. Dates	Dates of a 30-day period for submission of public comments
III. Addresses	Name, address, and phone number of a Regional contact to whom comments should be sent; address of Regional docket and local repository
IV. Regional Contact Information	Name, address, and phone number of a Regional contact for further information or questions
V. Supplementary Information	Information: identification of site(s) to be deleted and a summary of information in the NOID **NPL Deletion Criteria:** List of the applicable NCP criteria and statement indicating that EPA retains the ability to use Superfund authority at a deleted site if future conditions warrant such action (40 CFR §300.425(e)(3)) **Deletion Procedures:** brief description of procedures followed to delete sites from the NPL **Bases for Intended Site Deletion(s):** brief descriptions of the following items: - Site history (location, former use, type of contaminants, *FR* citations of proposed and final NPL listing, and site conditions resulting in listing) - All response actions taken, including scope of RI (if applicable), general results, and conclusions regarding future performance of these actions - Specific cleanup standards and criteria and results of all confirmatory sampling - O&M procedures and site monitoring program - Reasons for needing five-year reviews, when appropriate, and plans for their execution, in accordance with EPA's plans for their execution, in accordance with EPA's requirements for protectiveness at the time of each future review - Major community involvement activities - How site meets deletion criteria - Evidence of state concurrence with decision to delete site

51-043-31B

Appendix A

Glossary

Portions of this glossary have been reprinted from *The Government Contracts Reference Book* (©1992) by Ralph C. Nash, Jr., and Steven L. Schooner, with permission from the Government Contracts Program of George Washington University.

A

Access Agreements

Under CERCLA Section 104(e), EPA may obtain access to a property to implement a remedial action. EPA obtains access through access agreements which must specify the work to be performed and how the property will be restored upon completion. Access agreements do not extend beyond the owner that signs the agreement and are not necessarily tied to the property deed.

Alternative Remedial Contracting Strategy

EPA's approach to obtaining project management and technical services to support remedial response activities at National Priorities List sites. ARCS contracts are designed to optimize quality, timeliness, and cost efficiency by: (1) promoting continuity in site project management and execution from remedial planning through construction; (2) decentralizing contract management responsibilities by placing authority and responsibility for management decisions within Regional offices; and (3) implementing performance incentives to the maximum extent possible by awarding multiple contracts in each Region or zone and using triennial ratings of contractor performance to determine the amount of work assigned to each contractor.

Applicable or Relevant and Appropriate Requirements

Federal, state, or local laws that apply to Superfund activities at NPL sites. Both emergency and long-term actions must comply with these laws or provide sound reasons for allowing a waiver. Applicable or relevant and appropriate requirements must be identified for each site relative to the characteristics of the site, the substances found at the site, or the cleanup alternatives being considered for the site.

As-Builts

See Record Drawings.

B

Baseline Schedule

A rudimentary schedule that is established early as a framework for the entire RD/RA process. Baseline schedule information is entered into CERCLIS and updated as the RD/RA process progresses.

Basis of Design Report

The basis of design report is a detailed description of the analyses conducted to select the RD. It is submitted during the preliminary RD phase and is modified if necessary as the design progresses. The basis of design report may contain a summary and justification of design assumptions, the RA contracting strategy, permits plan, easement and access requirements, and preliminary piping and instrumentation diagrams. The USACE term for the report is the design analysis report.

Biddability Review

Biddability is generally defined as the degree to which the design documents can be understood, bid on (or offered), administered, and enforced. The purpose of the biddability review is to ensure that the construction package is free of significant design errors, omissions, and ambiguities so that prospective bidders can respond in a reasonable manner at a reasonable cost.

Best and Final Offer

An offer submitted to the government in a competitive negotiated procurement after written or oral discussions have been conducted. The CO issues a request for BAFOs to all offerors within the competitive range. Following evaluation of the BAFOs, the CO selects the offer most advantageous to the government, considering price and other factors included in the solicitation. (*The Government Contracts Reference Book*)

Bid Bond

A bond used frequently in public construction projects to guarantee a bid. A bid bond assumes that the bidder will not withdraw a bid within the period specified for acceptance and will execute a written contract and furnish required bonds within the time specified in the bid. (*The Government Contracts Reference Book*)

Bidder

One who submits a bid. While this term technically refers only to an offeror on a sealed bid procurement, it is frequently used to refer to any offeror on a government procurement—whether sealed bid, competitive negotiation, or otherwise. (*The Government Contracts Reference Book*)

Bulk Funding

A system for COs to receive clearance from a fiscal and accounting officer to obligate funds on purchase documents against a specified lump sum of funds reserved for the purpose for a specific period of time. *FAR* 13.101. (*The Government Contracts Reference Book*)

Bulk-Funding Categories

Four bulk-funding categories are used in RACs: (1) other response/program support; (2) site characterization; (3) removal; and (4) enforcement. Money is obligated separately to these bulk-funding categories.

C

Changes Clause

A mandatory clause that allows the government to change contract terms unilaterally in certain situations. Under the changes clause, work described in the contract may be changed to adjust to actual conditions at the site.

Change Order

A written order from the CO directing the contractor to make a change without the contractor's consent, as authorized under the contract's clause. *FAR* 43.101. Contractors must continue performance of the contract as changed except that in cost-reimbursement or incremental funded contracts the contractor is not obligated to continue performance or incur costs beyond the established funding limits. *FAR* 43.201 and 52.243-1 through -6. (*The Government Contracts Reference Book*)

Change Order Management Strategy

The internal procedures that the contractor uses to manage change orders. The strategy identifies key personnel, lines of authority, process for developing estimates, and negotiation of adjustments to the schedule and budget. The internal procedures of different contractors may vary, but each system should interface appropriately with EPA's change orders procedures that are used to access the change order reserve funds for the work assignment.

Claims Management Strategy

The procedures used to process contractor claims. Because there usually is no privity of contract between EPA and the constructor, the constructor usually does not pursue a claim with EPA, unless the prime contractor allows the constructor to do so in the name of the prime contractor.

Closeout

For government contracts, the process of settling all outstanding contractual issues, ensuring that each party has met all of its obligations, and documenting the contract file accordingly. The primary objectives of contract closeout are: (1) to identify and resolve any outstanding obligations or pending liabilities on the part of either the government or the contractor; and (2) to ensure that contract-related decisions and actions have been properly documented. (*The Government Contracts Reference Book*)

Commerce Business Daily

A daily publication of the Department of Commerce that lists U.S. government solicitations, contract awards, subcontracting leads, sales of surplus property, and foreign business opportunities.

Communications Matrix — A method the RPM can use to structure the communications strategy. The matrix identifies key team members and documents how information will be distributed among the members.

Community Relations — Efforts to establish two-way communication between the public and EPA to create a better understanding of EPA programs and related actions. These efforts, made early and throughout Agency actions, ensure public input from affected communities about issues concerning them. Specific community relations activities are required for Superfund remedial actions.

Consent Decree — A legal document, approved by a judge, that formalizes an agreement reached between litigants. In Superfund cases, consent decrees establish the terms by which PRPs will conduct all or part of a cleanup action of a Superfund site, cease or correct actions or processes that are polluting the environment, or otherwise comply with regulations where PRP failure to comply caused EPA to initiate regulatory enforcement actions.

Contracting Party — The party that advertises, awards, and manages a contract. Depending on the circumstances, EPA, an ARCS/RAC contractor, or USACE may be the contracting party.

Constructability Review — A constructability review is performed to enhance the "buildability" of the design. It allows for the evaluation of the design for accuracy and completeness. In addition the review provides an opportunity to eliminate impractical and inefficient remedial action requirements as well as deficiencies in contract documents.

Construction Completion — The completion of all physical construction of the remedy(ies) or the emplacement of the substantial physical construction necessary to implement the selected remedy. This is typically documented in a preliminary closeout report after a prefinal inspection is performed and only minor punch list items remain or when only nonconstruction aspects of the remedy, such as institutional controls, need to be implemented (see OSWER Directive 9320.2-3C and 58 *Federal Register* 12142).

Construction Manager — Representative of the contracting party assigned to the site to administer and oversee the construction contract. The construction manager performs the following roles: mediates conflicts at the site, reviews and evaluates schedule deviations, reviews and approves invoices, and administers the construction contract. The RPM communicates directly with the construction manager (see resident engineer).

Construction Superintendent — The official representative of the RA constructor. For a remedial action, the construction superintendent manages the equipment and materials, oversees the labor, coordinates the subcontracting work, controls health and safety at the site, and responds to communications from the contracting party.

Constructor — A contractor, usually a subcontractor, that performs the construction work in a remedial action.

Contract Modification — A written change in the terms of a contract. *FAR* 43.101. A unilateral or bilateral written change in the specifications, delivery point, rate of delivery, contract period, price, quantity, or other provision of an existing contract in accordance with the contract clause. Examples include change orders, notices of termination, supplemental agreements, and exercises of contract options. (*The Government Contracts Reference Book*)

Cooperative Agreement — A legal instrument used to transfer money, property, or services to a state or local government or to another recipient in order to accomplish a public purpose where substantial involvement is expected between the government and the recipient. 31 *United States Code* 6305. A cooperative agreement is not subject to the *FAR*. (*The Government Contracts Reference Book*)

Cost-Reimbursement Contracts — Cost-reimbursement contracts provide for payment to the contractor of all allocable, eligible, and reasonable costs expended by the contractor in contract performance. In addition to the costs, most cost-reimbursement contracts provide for the payment of a fee (profit) to the contractor.

Critical Path Method — A scheduling technique used by contractors to plan, coordinate, and control work activities to complete contract work as quickly and economically as possible. The critical path represents the longest chain of interrelated activities in the project schedule diagram. A delay in completing an item on this critical path usually delays the entire project. (*The Government Contracts Reference Book*)

D

Data Quality Objectives — DQOs are used to formulate sampling plans for the RD/RA field data collection effort. DQOs are qualitative and quantitative statements used to ensure that data of known and appropriate quality is obtained during data gathering activities. DQOs for RD and RA are detailed in the quality assurance project plan for each activity and will vary depending on the intended use of the data.

Davis-Bacon Act

The Davis-Bacon Act, 40 *United States Code* 276a, requires payment of not less than prevailing wage rates to workers on federal or federally-funded construction projects costing more than $2,000. *FAR* 22.403-1. (*The Government Contracts Reference Book*)

Demobilization

Period of time at the end of a contract or remedial action when most closeout actions are completed, final invoices are submitted, and government property is returned.

Design Analysis Report

See basis of design report.

Design Criteria Analysis

The analysis used to describe the technical parameters on which the design will be based. The analysis must be submitted and approved prior to expending additional design effort to confirm that the contractor is correctly interpreting and translating ROD performance standards, applicable or relevant and appropriate requirements, and engineering standards and codes into site-specific engineering parameters.

Design Drawings

Drawings showing the original design plan for a remedial activity.

Detailed Design Specifications

Specifications that set forth precise measurements, tolerances, materials, in-process and finished-product tests, quality control measures, inspection requirements, and other specific information. Design specifications increase the government's liability for claims that arise during contract performance regarding design defects since the government generally assumes responsibility for the correctness and adequacy of design specifications. Consequently, *FAR* 10.002 requires that functional and performance specifications be used instead of design specifications whenever possible.

E

Emergency Response Plan

A required element in the overall site-specific health and safety plan (HASP) that must be in place before commencement of on-site operations. The emergency response plan includes arrangements for local fire departments, hospitals, and police departments to provide coordinated and integrated services throughout the project in the event of an emergency.

Expenditure Limit

The amount of dollars available to the contractor to expend in performance of a particular work assignment. The contract prohibits the contractor from exceeding the expen-

diture limit (EL) without CO approval. The government sets the EL when a work assignment is issued and adjusts it as needed during the course of the work assignment to manage the phasing and execution of the work.

F

Fast-Track Construction

Method of construction contracting under which the constructor begins building as soon as the foundation plans are ready and a foundation permit has been issued, regardless of whether the designer has finished designing the project. Throughout work performance, the designer must keep ahead of the constructor's progress in order to supply the necessary plans and drawings before each stage of the construction is reached. (*The Government Contracts Reference Book*)

Feasibility Study

The analysis of the potential cleanup alternatives for a site. The feasibility study usually starts as soon as the remedial investigation is underway.

Federal Tort Claims Act

An act, 28 *United States Code* 1346(b), 2401-2402, 2671-2672, 2674-2680, permitting persons injured by negligent conduct of the government to sue for damages in U.S. district courts. Before filing suit in court, the injured party must file for administrative relief with the agency involved. (*The Government Contracts Reference Book*)

Field Sampling Plan

The field sampling plan provides guidance for all fieldwork by defining in detail the sampling and data collection methods to be used during the project. The FSP includes sampling objectives, locations and frequency, equipment and procedures, and sample handling and analysis and contains an analysis of specific data gaps and ways in which the sampling is designed to fill in the data gaps. The field sampling plan and the quality assurance project plan are routinely submitted as a single document, referred to as the sampling and analysis plan.

Fixed-Price Contract

A type of contract providing for a firm pricing arrangement established by the parties at the time of contracting. The contract amount usually is adjusted only when work must be added or deleted from the contract. Superfund RA construction contracts may be issued as fixed-price contracts.

Fundamental Changes

A fundamental change is a major change in the selected remedy that affects the ROD. When a fundamental change is made, a ROD amendment must be prepared in accordance with the procedures specified in the National Contingency Plan, 40 *CFR* section 300.435(c)(2).

G

Gantt Chart Method

The Gantt chart is a bar chart that represents work activities through a time-scaled bar line. The time scale is weekly or monthly for as many years as the RD/RA project is scheduled to last.

H

Hazard Ranking System

HRS is the principal screening tool used by EPA to evaluate relative risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or ground water and on other factors such as nearby population. The HRS score is the primary factor used to decide if the site should be on the NPL.

Health and Safety Plan

A plan outlining the implementation of all federal, state, and local requirements regarding human health and safety. Each remedial contractor must submit a corporate health and safety plan (HASP) and any site-specific HASP required by an individual work assignment issued under the contract.

I

Indefinite-Delivery Contract

A contract in which the time of delivery is unspecified in the original contract but established by the contracting officer during performance. (see *FAR* Subpart 16.5). (*The Government Contracts Reference Book*)

Indefinite Quantity

A type of contract used when it is impossible to determine in advance the precise quantities of supplies or services that will be needed during a contract performance period. The method of ordering work must be stated in the contract as well as the minimum/maximum orders allowable during each period.

Independent Government Cost Estimate

A detailed estimate of the cost to the government for services or supplies to be acquired from a contractor. Cost estimates are performed by the government and not by contractors. (*EPA Independent Government Cost Estimating Guide*)

Interagency Agreement

A written agreement between federal agencies to provide support, services, or management setting forth the roles and responsibilities of each agency for performing and overseeing the activities or other services. Interagency agreements are commonly used to procure services of other federal agencies.

Intermediate Design Phase

The intermediate design phase commences at the completion of the preliminary design phase and ends with the completion of approximately 60 percent of the design effort.

L

Level-of-Effort

A quantification of work in terms of the amount of effort expended, usually measured in labor-hours or labor-years. (*The Government Contracts Reference Book*)

Local Emergency Planning Committee

Superfund Amendments and Reauthorization Act, Title III, also known as the Emergency Planning and Community Right-To-Know Act, requires local governments to create a local emergency planning committee for Superfund sites. The committee should have in place a local contingency plan for coordinating police, fire, utility, and medical services in the event of an emergency.

M

Miller Act

The Miller Act requires the execution of separate performance and payment bonds as a prerequisite to award of construction contracts exceeding $25,000. *FAR* 28.102. (*The Government Contracts Reference Book*)

Minor Changes

Minor changes have little or no consequence on the overall scope, performance, or cost of a remedial project, and do not affect the selected remedy outlined in the ROD. Minor changes are recorded in the post-decision document file.

N

Negotiated Procurement

A procurement in which the basis of the proposal evaluation is a combination of technical merit and cost, rather than just cost.

Non-Competitive (Sole-Source) Procurement

A contract for the purchase of supplies or services that is entered into, or proposed to be entered into, by an agency after soliciting and negotiating with only one source. As the least favored method of procuring an item or service, non-competitive procurement may be employed only in limited circumstances, outlined in *FAR* part 6.3.

Notice of Deletion

A notice of deletion is a *Federal Register* notice that states that all appropriate Fund-financed responses under CERCLA have been implemented and that no further response is appropriate. The notice also includes an effective date of the deletion, a Regional contact, and supplemental site information. All NPL rulemakings subsequent to the publication of this notice will reflect the deletion.

Notice of Intent to Delete

A notice of intent to delete is a *Federal Register* notice informing the public of EPA's intention to delete a site from the NPL. The deletion docket must be complete before the Region publishes the notice in the *Federal Register* or local newspaper(s). Site-specific information needed to prepare the notice should be available from the site closeout report.

Notice to Proceed

A notice to proceed initiates construction activity and the date on the notice to proceed marks the formal beginning of the construction project. The contracting party will issue a notice to proceed sufficiently in advance of the required date to provide the constructor adequate lead time.

O

Offer

A response to a solicitation that, if accepted, would bind the offeror to perform the resultant contract. *FAR* 2.101. Responses to an invitation for bids, in sealed bidding, are offers that are called bids or sealed bids. Responses to a request for proposals, in negotiation, are offers that are called proposals. An offer may also take the form of an unsolicited proposal.

Offeror

The party that makes an offer and looks for acceptance from the offeree. In government contracting, the offeror is the generic term for prospective contractors that submit bids, proposals, or quotations.

Operability Review

The objective of this review is to determine whether the particular system or remedial facility will function in an optimal manner, as required by the design documents, and whether it can be maintained for its intended use. The operability review is a specialized review where only operations and maintenance issues are examined.

Operation and Maintenance

Operation and maintenance (O&M) activities are performed to protect the integrity of the remedy for a site. The state performs O&M after the site is transferred from the federal government to the state upon state and federal agreement that the remedy is operational and functional. An exception to this is active ground water restoration where EPA operates a pump-and-treat system for up to 10 years after the system has been declared operational and functional.

P

Payment Bond

A bond required by the Miller Act for all federal construction contracts exceeding $25,000, that covers payment for labor and materials if a constructor is unable or refuses to perform its construction contract. A payment bond assures payments, as required by law, to all persons supplying labor or materials in the prosecution of work provided for in the contract. (*FAR* 28.001)

Performance Specifications

Specifications that set forth operational characteristics for the desired result. The specifications are used to determine final product performance. When the contract contains performance specifications, the contractor accepts general responsibility for product design and engineering and for achievement of the stated performance requirements.

Performance Bond

A contract bond required by the Miller Act for all federal construction contracts exceeding $25,000, that protects against loss due to the inability or refusal of a contractor to perform its construction contract. A performance bond secures performance and fulfillment of the contractor's obligation under the contract. (*FAR* 28.001)

Permits Plan

A plan listing the permits required and the strategy for complying with permit requirements. The plan addresses substantive requirements and building and safety requirements for an on-site RA as well as off-site permits. The plan should present a schedule for obtaining all required permits before the RA begins.

Phasing

The division of a project into smaller work elements that can be implemented on different schedules, resulting in acceleration of the RD and RA. Phasing allows certain elements of a project to be started ahead of others to reduce the hazards present at the site or to complete simple prerequisite work elements ahead of more complex and hazardous work elements. All elements are addressed at the same time, but each individual element has its own schedule and moves at its own rate through the process.

Potentially Responsible Party

Entity that may be liable for the release of hazardous substances at a site. The government conducts a potentially responsible party search as an early step in its enforcement process, seeking to identify the generators, transporters, owners, or operators of a site.

Prefinal and Final Inspections

The prefinal and final inspections are standard construction practices for closing out a contract. They are generally conducted by the contracting party and constructor. These inspections are often confused with the EPA/state joint inspection requirement under the National Contingency Plan. The contracting party and the constructor may agree to invite both the RPM and the state to one of these inspections, however, to avoid the need to schedule a separate EPA/state joint inspection.

Prefinal Construction Conference

A prefinal conference, scheduled by the contracting party, which should occur just before the construction work is completed and is attended by EPA, the state, and the constructor. The objective of the conference is to discuss procedures and requirements for project completion and closeout.

Prequalified Contracts

A contracting method that expedites the RD/RA process by eliminating the solicitation and audit requirements for site-specific contracts. Prequalified contracts require approximately 30 to 60 days to initiate activities and delays due to bid protests or bonding difficulties are eliminated. However, this type of contract may reduce competition and may increase the cost of the project. EPA is the contracting party for prequalified contracts.

Procurement Process

The process by which the contracting party solicits bids (or offers), evaluates the bids, selects a contractor, and awards the contract. The nature of the procurement process depends on whether sealed bidding, negotiated procurement, two-step sealed bidding, or non-competitive (sole-source) procurement is used.

Progress Payment

A payment made as costs are incurred by the contractor under a contract or on the basis of percentage of completion or achievement of a particular stage of work.

Progress Report

Detailed progress reports from the contractor are required on a monthly basis throughout the duration of the project. The progress reports are used by the RPM to monitor the contractor activities and are usually submitted with the monthly invoices.

Project Management Plan

A strategy developed by the RPM for successfully delivering a RD/RA project on time and within budget. The plan documents the project management goals and operational procedures and is updated periodically.

Prompt Payment Act

Passed in 1982, 31 *United States Code* 3901 *et seq.*, requires solicitations and contracts to specify payment procedures, payment due dates, and interest penalties for late invoice payments. The act is implemented by *FAR* Subpart 32.9 and OMB Circular No. A-125, *Prompt Payment*, August 19, 1982. The government must make invoice payments and contract financing payments as close as possible to, but not later than, the due dates specified in the contract (generally 30 days after receipt of a proper invoice, 14 days for construction contract progress payments). Agencies pay an interest penalty for late invoice payments or improperly taken discounts for prompt payment.

Punch List

A list of work that must be corrected or completed to satisfy contract requirements for a construction project.

Q

Quality Assurance

Tasks performed to monitor or improve an organization's quality and quantity of output. QA may include a planned, systematic pattern of actions taken to provide adequate confidence that sufficient technical requirements are established, that products and services conforms to those requirements, and that satisfactory performance is achieved. *FAR* 246.101.

Quality Assurance Project Plan

The QAPP describes the policy, organization, functional activities, and quality assurance/quality control protocols necessary to achieve data quality objectives.

Quality Control

Tasks performed by individuals inside an organization to improve the quality of the organization's output. Government contracts may call for the contractor to provide a QC system that ensures that the work meets contract requirements. QC generally includes: (1) setting cost, performance, safety, and reliability standards; (2) comparing the offered product or service with house standards; (3) taking corrective action when necessary; and (4) planning for improvements. (*The Government Contracts Reference Book*)

R

Real Estate Planning Report

A report describing property needs for the RD/RA project, based on information received from the designer. The report includes analysis of costs should EPA choose to acquire a property or an interest in property. USACE automatically develops a real estate planning report for all remedial designs it performs or manages.

Record of Decision — A public document that explains which cleanup alternative(s) will be used to clean up sites listed on the NPL. It is based on information generated during the RI/FS and consideration of public comments and community concerns.

Record Drawings — Design drawings also called "as-builts," which show how the original design has been modified by actual changes during construction.

Remedial Action — The actual construction or implementation phase of a Superfund site cleanup following RD.

Remedial Action Constructor — The contractor that performs RA construction.

Remedial Design — A phase of site cleanup where engineers design the technical specifications for cleanup remedies and technologies, as specified in the ROD.

Remedial Investigation — An in-depth study designed to gather the data necessary to determine the nature and extent of contamination at a Superfund site, establish the criteria for cleaning up the site, identify the preliminary alternatives for cleanup actions, and support the technical and cost analyses of the alternatives. The remedial investigation is usually done with the feasibility study.

Remedial Project Manager — The EPA official responsible for overseeing cleanup actions at a site. (*NPL Glossary*)

Request for Proposal — A solicitation for proposal containing performance requirements, a description of the evaluation criteria, and the basis of award. Requests for proposals are advertised in the *Commerce Business Daily.*

Resident Engineer — A design firm employee that serves as the designer's representative during construction, installation, and start-up phases of activity. The resident engineer, as a continuous presence at the site, acts directly on behalf of the designer and reports to the designer's contracting party. When USACE is managing the RA, resident engineer is also the term used for staff that perform construction manager functions (see construction manager).

Response Action Contracting Strategy — EPA's strategy designed to balance program needs and strategy objectives. The strategy includes: (1) an integrated "one program" approach to enforcement and site cleanup; and (2) greater flexibility, improved oversight, and cost management through decentralization of contract management responsibilities to the Regions.

S

Scope of Work

The scope of work is based on the ROD and delineates the work to be performed at the site.

Sealed Bidding

A procurement in which the contract is awarded to the lowest responsive and responsible bidder. The work is described in detail so the bidders understand fully what is required of them for the price of the bids since the bids become the basis for a fixed-price contract. Sealed bidding typically results in lower costs for the government and a shorter bid review time period since no technical evaluations are necessary. (*The Government Contracts Reference Book*)

Service Contract

A contract that directly engages a contractor's time and effort to perform an identifiable task rather than to furnish an end product. *FAR* 37.101. A service contract may be either a personal services contract or a nonpersonal services contract and can cover services performed by either professional or nonprofessional personnel on either an individual or an organizational basis. Service contracts include those for: (1) maintenance, overhaul, repair, servicing, rehabilitation, salvage, modernization, or modification of supplies, systems, or equipment; (2) routine recurring maintenance of real property; (3) housekeeping and base services; (4) advisory and assistance services; (5) operation of government-owned equipment, facilities, and systems; (6) communications services; (7) architect-engineer services; and (8) transportation and related services. (*The Government Contracts Reference Book*)

Significant Changes

Significant changes have a significant effect on the scope, performance, or cost of the remedy contained in the ROD and are documented in an "Explanation of Significant Differences", as required by CERCLA Section 117 (c). Depending on the nature of the change, a public comment period may be warranted.

Site Closeout Process

The site closeout process consists of the activities that are required to document that all Superfund response action is complete and the site can be deleted from the NPL. Site completion requirements were developed to provide a definable endpoint to Superfund cleanup activities as well as to satisfy the National Contingency Plan requirements for site deletion.

Site Management Plan

The site management plan describes how access issues, security, contingency procedures for accidents, management responsibilities, and waste disposal are to be handled.

Site Security Plan

The site security plan is required before mobilization at the site to prevent the public from having access to potential site safety hazards and to prevent the theft of or damage to the facilities.

Source Selection Award

A solicitation process in which a contract is awarded to the proposal with greatest value score regarding cost and technical merit.

State Memorandum of Agreement

The state memorandum of agreement, as described in 40 *CFR* Part 300.505 of the *NCP*, details state and EPA roles and responsibilities for response actions.

Superfund State Contract

The Superfund state contract is signed by EPA and a state and contains any terms that the parties agree to and the terms for implementing the CERCLA Section 104 requirement that the state 1) provide a cost-share in the cost of the remedial action, and 2) conduct all operation and maintenance activities at the site.

Statement of Work

Describes the actual work to be done by the contractor by means of specifications or other minimum requirements, quantities, performance dates, time and place of performance of services, and quality requirements. The SOW is the basis for a contractor's response to a solicitation, and provides a baseline against which progress and subsequent contractual changes are measured during contract performance. (*The Government Contracts Reference Book*)

Submittal

Also referred to as a deliverable, a submittal is a product or service that is prepared for and submitted to the government under terms of a contract, delivery order, or work assignment.

Submittal Procedures

Formal procedures for the transmission of submittals and shop drawings from the constructor to the contracting party for review and approval.

Submittal Register

A register that may be used by the RPM as a tool when tracking submittals.

T

Technical Direction

Technical direction is guidance given by the government to the contractor on how to perform task(s) within the scope of work of the contract or work assignment. Technical direction is usually issued to an EPA contractor to assist the contractor in accomplishing the work assignment statement of work or to comment on and approve deliverables.

Technical Review Team

A team whose primary responsibility is to assist the RPM in reviewing technical deliverables. The complex nature of a typical RD/RA requires in-depth knowledge of a variety of engineering and other scientific disciplines, so the RPM assembles and coordinates a team of individuals with the appropriate backgrounds. Members of the technical review team may be from EPA, other federal agencies, state agencies, local government agencies, or EPA contractors.

Time-and-Materials Contract

A cost-reimbursement contract used when it is not possible to estimate accurately the scope (extent or duration) of work required at the time of contract preparation. The contract calls for provision of direct labor hours at an hourly rate and the provision of materials at a designated cost.

Total Quality Management

A management philosophy intended to provide the foundation for a continuously improving organization by encouraging employees to focus their attention on means of improving efficiency and effectiveness.

Treatability Study

Testing a treatment method on contaminated ground water, soil, etc., to determine its effectiveness.

Two-Step Sealed Bidding

A procurement method that combines competitive procedures to obtain the benefits of sealed bidding when adequate specifications are not available. *FAR* 14.501. Technical proposals are submitted in the first step, and offerors that submitted acceptable proposals submit sealed bids in the second step. This method is especially useful in the request for submission, evaluation, and discussion of technical proposals. No pricing is involved in this bidding technique. (*The Government Contracts Reference Book*)

U

Unilateral Administrative Order

A legally binding document issued by EPA, directing PRPs to perform site cleanups or studies (EPA generally does not issue unilateral orders for site studies). This type of order is not signed by the PRPs and does not require approval by a judge.

Unit Price List

The unit price and lump sum pricing lists for each bid item.

V

Value Engineering

A formal technique by which contractors may (1) voluntarily suggest methods for performing an RD/RA more economically and may share in any resulting savings, or (2) be required to establish a program or identify and submit to the government methods for performing more economically. *FAR* 48.101(a). The object of value engineering is to reduce costs in the design or construction of a project without compromising its quality or functionality. (*The Government Contracts Reference Book*)

Value Engineering Change Proposal

A constructor's proposal to make changes to the RA construction that, if implemented, will save money without compromising quality or performance. Constructors develop and submit value engineering change proposals (VECPs) on a voluntary basis. As an incentive to submit VECPs, the constructor shares with the government any cost savings realized from accepted VECPs.

Value Engineering Screen

An evaluation of cost and function relationships in an RD/RA project, concentrating on high cost areas. The product of the screening is a recommendation for or against a full-scale value engineering study. If approved, the screening should be performed as soon as practicable during the preliminary design phase, and the results should be submitted to EPA.

W, X, Y, Z

Work Assignment

A written order for work issued by the government to a contractor under a work assignment (WA)-type contract. A WA designates the government WAM and generally contains: background for the requirement, scope of work, time schedule, deliverables, period of performance, reference to the applicable section of the contract statement of work, level-of-effort, documentation requirements, and any restriction on travel, printing, or other activity.

Work Assignment Form

A one-page form used to initiate and track a work assignment.

Work Assignment Package

To initiate a new work assignment (WA), the WAM must prepare a WA package, which includes the following items: (1) WA form, (2) statement of work, (3) independent government cost estimate, (4) WAM designation form 1900-65, (5) procurement request (EPA Form 1900-8), and (6) contractor selection notice.

Work Breakdown Structure — A display of a contractual statement of work or an organizational chart depicting the necessary hardware, software, and services required in contract performance. The structure divides the work required under a contract into logical segments to help track progress and performance cost. (*The Government Contracts Reference Book*)

Work Plan — The work plan is the contractor's response to a government-issued work assignment (WA). The work plan describes the project goals, technical approach to be used by the contractor, tasks and deliverables, delivery schedule, and proposed personnel (including résumés), equipment, subcontracting, and other special requirements of the WA. It also includes a detailed cost estimate outlining in detail what the contractor believes will be the WA performance costs.

Appendix B

Transmittal Forms

EPA Contractor Transmittal Register*

Project Title and Location				Contract No.		Work Assignment No.	
Subtask No.	Deliverable	No. of Copies	Due Date	Transmittal No.	Date Comments Sent To Contractor	EPA Acceptance Date	Remarks

*For use by the RPM/WAM to record and track deliverables submitted by the contractor.

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Transmittal of Documents for Acceptance by EPA*		Date:	Transmittal No.
To:	From:		❑ New Transmittal ❑ Resubmittal of Transmittal No. _____

Subtask No.	Deliverable	No. of Copies	Remarks

Acceptance Action	
Documents Found Acceptable (list by subtask no.)	Name/Title/Signature of Reviewer Date

*For use by the contractor when submitting a deliverable to the RPM/WAM.

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Appendix C

Design Review Checklists

Biddability Review

Definition

Biddability is generally defined as the degree to which the design documents can be understood, bid on, administered, and enforced. The purpose of the biddability review is to ensure that the construction package is free of significant design errors, omissions, and ambiguities so that prospective bidders can respond in a reasonable manner and at a reasonable cost. In this review, the actual design is analyzed for consistency with the bid documents. The bid and design documents should be clear, comprehensive and manageable. The review also should assure that the bid documents provide a firm basis against which any claims may be evaluated.

Review Team

The contracting party is responsible for having the appropriate design reviews conducted. In-house reviews may be conducted if the requisite expertise is available or reviews may be sent to another agency or contractor. The designer should be awarded the review task if independent and objective reviews can be conducted. The biddability review focuses on the bid documents that accompany the drawings and specifications. The review is conducted by a review team of members fully experienced in contracting procedures and procurement regulations and policies. It is unnecessary to solicit review input from each of the engineering disciplines having design responsibility on the project.

Timing of the Review

The initial screening may occur at the completion of the intermediate design, but contract documents generally are not prepared until later. An earlier review may hamper the designer by disrupting the design effort and forcing premature contract package development. The detailed review should coincide with the prefinal design submittal to the contracting party. The review, when combined with other types of reviews (operability, constructability, claims prevention, and environmental), should take an average of five to ten working days.

Scope of the Review

The drawings and specifications serve three basic functions in project construction. First, they describe the proposed work so that bids can be compiled. Second, they establish the rules and guidelines for procuring materials and performing the construction. Third, they act as contractual documents in case of litigation.

A review of drawings and specifications during a biddability review is not done to determine their technical accuracy. Rather, this review focuses on the completeness and clarity of information. The drawings and specifications should provide adequate information of existing site conditions to enable the constructor to anticipate any problem areas. All data available to the designer should be available, at least by reference, to prospective bidders. Availability of utilities, adequacy of space for work areas, and disposal of excess material are all considerations that must be addressed in the drawings and specifications. Technical responsibilities of the constructor and contracting party for quality control, and requirements for submittal and review of deliverables must be clearly defined for each phase of work.

Unlike drawings, specifications typically include language from contract administration and non-technical provisions such as those found in the form of General and Special Conditions. These specification sections should be checked carefully, particularly regrading constructor submittal requirements, changed conditions, progress payments, and schedules. A sample checklist of remedial action (RA) bid documents is included

in this appendix as Attachment I. Contract development or legal counsel are the most qualified reviewers for these portions of the reviews.

The proposed RA schedule should include milestone dates and logic ties, particularly when multiple constructors must interface with each other. Experienced engineers with construction backgrounds can aid in evaluating the feasibility of performing the work within reasonable time-frames, and can assist in developing more logical and more biddable schedules.

The bid forms themselves should be examined for items such as logical organization (e.g., all earthwork bid items should be grouped together), proper units for bid item quantities, adequate definition of scope of each bid item, and appropriateness of estimated quantities and adequacy of the bid period. The reviewers must examine the contract documents from a constructor's viewpoint. The contract should fairly allocate risks between the constructor and the contracting party, to minimize the contingency included in the bid amounts.

The designer's interpretation of geologic data and the conditions expected to be encountered during construction should be provided in the specifications. Any interpretations made by the designer in assessing data along with the significance and associated implications for construction must be included. The specifications should also define those areas where uncertainties exist that may require changes during construction.

The use of "as directed" statements and disclaimers should be avoided whenever possible. "As directed" provisions allow for work under the contract that cannot be fully specified until the work is under way. Excessive use of these statements can infer greater unknowns and constructor risk than appropriate, resulting in higher bids.

General Overview

The purpose of the review is to check the final design for the following:

- Clarity and simplicity of the bid schedule
- Appropriateness of contract sequencing, relationship to other work, and contract performance period
- Real and possible conflicts among the drawings, specifications, bid forms, including terms and conditions
- Completeness and clarity of the bidding instructions
- Clear guidance for measurement and payment
- Established criteria for RA contract award
- Clear guidance for contract completion requirements, including penalties, rewards and incentives
- Clear guidance for change order administration
- Clear guidance for disputes resolution
- Appropriateness and consistency of material quantity units

A checklist is attached to provide additional detail to assist in a biddability review.

Attachment I

Checklist of Remedial Action Bid Documents

- ❑ Index of Bid Documents
- ❑ Advertisement for Bids
- ❑ Instructions to Bidders
- ❑ Bid Form
- ❑ Addenda Acknowledgement
- ❑ Bid Bond
- ❑ Certificate of Surety
- ❑ Acknowledgment of Principal Form
- ❑ Non-Collusion Affidavit
- ❑ Certification of Nondiscrimination in Employment
- ❑ Certification of Nonsegregated Facilities
- ❑ Authority to Execute Agreement
- ❑ Form of Agreement
- ❑ Performance Bond Form
- ❑ Payment Bond Form
- ❑ Certificate of Ability to Obtain Insurance
- ❑ General Conditions
- ❑ Supplemented General Conditions
- ❑ Federal Requirement and Agreement Provisions
- ❑ Davis-Bacon Wage Rate Determinations
- ❑ General Agreement Requirements (Special Conditions)
  - ❑ Scope of Work
  - ❑ Control of Materials
  - ❑ Utility Coordination Requirements
  - ❑ Project Supervision Requirements
  - ❑ On-Site Inspection Procedures
  - ❑ Safety Requirements, Responsibilities
  - ❑ Emergency Procedures
  - ❑ Progress Schedule
  - ❑ Payment Procedures (Measurement, Payment)
  - ❑ Change Order Procedures
  - ❑ Correspondence Distribution
  - ❑ Submittal, Processing Procedures
- ❑ Technical Specifications
- ❑ Drawings and Plans (certified by a Professional Engineer)
- ❑ Supplemental Data (e.g. geologic data, hydrologic data)

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EPA **Design Review Checklist**

Project Title & Location:

Design Phase:
- ❑ Preliminary
- ❑ Intermediate
- ❑ Pre-Final/Final

Reviewer:
Name _____
Organization _____
Telephone _____ **Date** _____

Document Reviewed (Section/Paragraph)	Item No.	Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)	Acceptability		
			Yes	No	N/A
		BIDDABILITY			
	1	Are specification divisions appropriate and per CSI format?			
	2	Are substitutions allowed as an "engineer (or owner) approved equal" to allow flexibility during construction?			
	3	Have the appropriate material and equipment standards been specified?			
	4	Does the review confirm that no sole source or brand name material or equipment has been specified?			
	5	Are terminologies and notations consistent among drawings, specifications, bid items?			
	6	Have appropriate construction techniques been specified?			
	7	Are cross references of drawings to specifications complete and accurate?			
	8	Has a description of materials and/or facilities provided by owner been included?			
	9	Has a description of items of work provided by each contractor for multiple contracts been provided?			
	10	Have the quality control responsibilities of contractor and quality assurance by owner been adequately addressed?			
	11	Have all submittal requirements (content, schedule) been identified, and are they appropriate?			
	12	Has owner review period for each submittal been identified, and is it reasonable?			
	13	Is the construction schedule feasible and clearly defined with schedule interface points identified?			
	14	Have completion times for distinct phases been specified?			
	15	Are the drawings complete (i.e., sufficiently detailed, clearly define the work)?			
	16	Are specifications complete?			

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Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
	17	Should supplemental data be referenced on drawings or specifications? If so, has it been provided?			
	18	Have the cost/schedule monitoring requirements (i.e., progress reports) by contractor been clearly identified?			
	19	If off-site disposal of material by the contractor is required, have the contractor's responsibilities been clearly identified?			
	20	Has the division of work been clearly identified at contractor interfaces, where more than one contractor will be working at the site?			
	21	Does the bid package include all of the appropriate bid documents (see biddability review in this attachment)?			
	22	Is the structure of the bid form appropriate (i.e., are bid sections coordinated, defined, unambiguous)?			
	23	Do all bid items have appropriate units for measure and payment and are they consistent with the specifications?			
	24	Is the scope of work for each bid item clearly defined?			
	25	Has the accuracy of bid quantities for the work defined been verified?			
	26	Are the bid expiration periods stated and reasonable?			
	27	Have the criteria to be used as the basis for awarding the contract been clearly specified?			
	28	Has a review to ensure all the appropriate standard construction contract clauses been conducted?			
	29	Do the contract documents specify when ownership of contractor built or installed facilities transfers to the government or to the state?			

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Operability Review

Definition

The objective of this review is to determine whether the particular system or remedial facility will function in an optimal manner, as required by the design documents, and whether it can be maintained for its intended use. The operability review is a specialized review where only operations and maintenance issues are examined.

Review Team

The contracting party is responsible for having the operability review conducted. This review may be conducted by the contracting party, using in-house resources, an outside agency, or the designer, if an independent and objective review can occur. This review focuses heavily on process engineering, so the contracting party should ensure that the appropriate team is available.

Timing of the Review

The review should be on a continuous basis from the start of the design phase. Under ideal circumstances, the review should be an ongoing review performed at key points - preliminary, intermediate, and prefinal design phases. By using this approach, the focus of the review can change as the design develops. An example would be the review of the process or facility layouts in the Design Criteria Analysis. Adjustments could be suggested early in the process without causing major redesign cost.

Scope of the Review

An operability review assures that the completed project will conform to applicable performance and operations requirements by asking:

- Does the operation and maintenance manual conform with the drawings and specifications?
- Are the requirements stated for equipment, installation, adjustment, etc.?
- Are the specifications complete for pre-startup, checkout, and post-startup optimization?
- Have the warranties, guarantees, or other contractual requirements applicable to operation and maintenance of the project been reviewed?

Components of the design that should be evaluated to address the questions noted above are:

1. Process and Instrumentation Diagrams
2. Facilities and Process Equipment Layouts
3. Specifications review, to include General and Supplemental Conditions Review and Equipment Specification, Mechanical Specification, and Electrical Specification reviews

A checklist is attached to provide additional detail to assist in an operability review.

Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		OPERABILITY			
		Process and Instrumentation Diagrams			
	1	Are the various components in the overall process train compatible?			
	2	Is the process reliable? If not, have back-up systems been provided?			
	3	Have the critical sampling points for process monitoring been identified?			
	4	Does it appear that the proposed treatment system can be operated efficiently without the need for highly specialized training?			
	5	Are the operating requirements compatible with the intended levels for the proposed process?			
	6	Have control panels been centralized at one location? If not, is staffing adequate to man several posts?			
	7	Have alarm systems or comparable warning systems been provided in case of mechanical breakdown or system upset?			
	8	Does the selected equipment meet special needs (i.e., long term operation, acidic waste, low feed rates, etc.)?			
	9	Are there provisions for expansion if additional treatment capacity is required?			
	10	Is sufficient data collection and monitoring planned?			
		Facilities and Process Equipment Layouts			
	11	Are the process equipment and local control panels placed so the operator has easy access?			
	12	Have special materials, handling problems, (debris, dust, tree roots, wet soils, clay, etc.) been identified and addressed?			
	13	Are the items requiring routine maintenance accessible?			
	14	Are sampling valves and equipment accessible for operation checks and for preventive and demand maintenance? (If the equipment is hard to reach, it may not be maintained in a proper manner)			
	15	Have washdown and housekeeping requirements been specified?			

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Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		Specifications Review			
	16	Have the performance testing requirements for process equipment been specified?			
	17	Are equipment manufacturers' and constructors' warranties and guarantees required, and are they of reasonable duration?			
	18	Have the specific procedures for handling latent defects in process equipment been specified?			
	19	Do specifications address compliance with equipment safety codes?			
		General Requirements			
	20	Do the design documents specify submittal requirements for the equipment supplier O&M datasheets and for test results from factory tests?			
	21	Do the specifications include a requirement for completion of the O&M manual and a description of the type of equipment manufacturer services that will be required during the training start-up phase?			
	22	Do the specifications include the responsibilities of the constructor during the start-up phase?			
	23	Do the specifications include the necessary requirements for training maintenance personnel?			
		Equipment Specifications			
	24	Have factory testing requirements been specified?			
	25	Have installation requirements, alignments, adjustments, and lubrication requirements been addressed?			
	26	Have functional field testing requirements been specified?			
	27	Are there requirements for equipment labeling?			
	28	Has a list of manufacturer's recommended spare parts and special tools been specified?			
	29	Have requirements for manufacturers' certification or proper installation and performance been specified?			
	30	Have detailed manufacturer service requirements, including number of days spent on site and number of trips, been specified?			
	31	Have types of sampling equipment and their applications been included?			
	32	Is any of the equipment or are any of the materials more elaborate than needed (i.e., can other standard or off-the-shelf items be specified)?			

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Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		Mechanical Specifications			
	33	Do mechanical specifications comply with state and local codes?			
	34	Have test pressures been specified for piping?			
	35	Does the valve and specialty list include pressure ratings?			
	36	Is equipment soundproofing needed and specified?			
		Electrical Specifications			
	37	Have a sufficient number of 100 and 220/440 outlets (provided for maintenance purposes) been specified?			
	38	Is the system properly grounded?			
	39	Has cathodic protection been provided for equipment?			
	40	Is lighting adequate for O&M functions?			
	41	Has conformance with state and local electrical codes been specified?			
	42	Has power surge protection for equipment been specified?			

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Constructability Review

Definition

A constructability review is performed to enhance the "buildability" of the design. It allows for the evaluation of the design for accuracy and completeness. In addition, the review provides an opportunity to eliminate impractical and inefficient remedial action (RA) requirements as well as deficiencies in contract documents. The review must be thorough enough to ensure that drawings, technical specifications, and bid forms are unambiguous and compatible with each other. Projects designed with constructability in mind will result in the lowest possible contract price with a minimum risk to all parties. Attention to constructability also allows timely completion of the project with a minimum of contractor claims.

Review Team

The review should be conducted by individuals and organizations knowledgeable in construction techniques, materials, equipment application, and design requirements. This review could be performed using EPA in-house resources, another agency, or a contractor, as long as the review is impartial. The review team should devote approximately five to ten working days reviewing and discussing the design documents. A formal report is prepared to document review results.

Timing of the Review

The constructability review should be considered an interactive process, one that first occurs in the early design phases in order to be of optimum value. At the preliminary design phase, the constructability screening might consist of an initial brainstorming session to discuss various aspects of the proposed concepts, such as general accessibility, procurement policies, as well as a cursory review of sketches or preliminary drawings. At the intermediate design phase, the screening can be enhanced to include more detailed review of the drawings and specifications, including more specific information regarding construction methods and installation details. The most comprehensive review occurs upon submission of the prefinal design to the contracting party. However, as constructability is the focus of the earlier design efforts, this last review should proceed without surprises.

Scope of the Review

The design documents critiqued during a constructability review fall into the two major categories: drawings (civil, electrical, mechanical) and specifications (construction activities). Drawings are the primary source of guidance in the field for the RA, portraying the physical aspects of the facility or structure and showing the arrangement, dimensions, details, materials, and other information necessary for building the project. Reviewers must rely on their own experience in their disciplines to evaluate the drawings for clarity, completeness, compatibility with specifications, and ability to be understood by field personnel. Spot checks of drawings should be done for sensitivity of the design to construction.

In evaluating the specifications, reviewers determine that the specifications are sufficient to effectively communicate engineering information, quality control, performance periods, submittal requirements, and the relationship to other work.

When the review is complete, the review team should be prepared to answer the following:

- Are there any potential construction constraints imposed by the site or unusual site conditions which could affect the RA?
- What is the availability of local materials and possibility of procurement/schedule difficulties caused by long-lead items?
- What are the seasonal constraints and how will they affect the RA?
- Is there an accurate depiction of design structures and existing site conditions such as access, storage and utilities?
- Is there a lack of prescribed procedures for critical work or excessive detailing on drawings?
- Evaluation of accuracy of any estimated quantities?

A checklist is attached to provide additional assistance when performing the constructability review.

Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		CONSTRUCTABILITY			
	1	Are there any potential construction constraints imposed by the site or unusual site conditions which could affect the RA?			
	2	Are the seasonal constraints that will affect the RA identified?			
	3	Is there an accurate depiction of design structures and existing site conditions such as access, storage and utilities?			
	4	Is there a lack of prescribed procedures for critical work, excessive detailing on drawings?			
	5	Have existing utility locations been identified (water, sewer, electrical, telephone)?			

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Claims Prevention Review

Definition

A claims prevention review eliminates conflicts, inconsistences, ambiguities, errors, omissions, or other identifiable problems in the drawings and specifications and contract documents that are subject to contract modifications and constructor claims. A construction claim is a written demand or assertion to the contracting party by the constructor seeking, as a matter of right, additional money, a time adjustment, or other change in contract requirements. For purposes of claims prevention, the complexities can be reduced to basic claim types and a prevention program designed around those basis claim types. The purpose of the review is to identify causes or events which could lead to claims.

Review Team

The contracting party is responsible for having the appropriate design reviews conducted. The review can be conducted by the contracting party, other federal agencies, or the designer (if independent and objective reviews can be performed). The claims prevention review should be performed by those with experience in construction contracts management, usually resident field engineers and contracting officers.

Timing of the Review

The claims prevention review is a one-time review conducted before contract solicitation. The review should occur upon the submission of the prefinal design to the contracting party. The review is performed in conjunction with other specialized design reviews (biddability, operability, constructability reviews).

Scope of the Review

The scope of the review is limited to an administrative review. The following questions should be evaluated when reviewing the drawings and specifications and the contract documents:

- Is the contract clear, complete, and enforceable?
- Does the contract language use the common and normal meaning of words?
- Have contract documents been reviewed to ensure that conflicts do not exist among sections?
- Have the architectural and engineering disciplines taken sufficient precautions to ensure the design is reasonably free of errors?
- Do the contract documents adequately support the terms of payment selected (i.e., fixed-price or cost reimbursement)?
- Does the contract adequately explain the contract and consequences it contains for the contracting party and constructor?
- Are criteria for constructor selection clear and fair?
- Are performance standards complete, adequate, and unambiguous?
- Is there a remedy and procedure for changes?
- Are the estimated quantities reasonable?
- Is the site (and soils investigation) and disclosure of technical information adequate?

A checklist is attached to assist in conducting a claims prevention review.

Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		CLAIMS PREVENTION			
	1	Is the contract clear, complete, and enforceable?			
	2	Does the contract language use the common and normal meaning of words?			
	3	Have the contract documents been reviewed to ensure that conflicts do not exist among various sections?			
	4	Have the architectural and engineering disciplines taken sufficient precautions to ensure the design is reasonably free of errors?			
	5	Do the contract documents adequately support the terms of payment selected (i.e., fixed price or cost reimbursement)?			
	6	Does the contract adequately explain the contract and consequences it contains for the contracting party and constructor?			
	7	Are the criteria for constructor selection clear and fair?			
	8	Are the performance standards complete, adequate, and unambiguous?			
	9	Is there a remedy and procedure for changes?			
	10	Are the estimated quantities reasonable?			
	11	Is the site (and soils investigation) and disclosure of technical information adequate?			

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Environmental Review

Definition

The environmental review ensures that the design will meet the technical requirements of the Record of Decision (ROD) and that there is consistency between the implementation plans and current regulatory and policy requirements. The review also determines the adequacy of documents that address potential environmental releases during construction and contingency plans. The review does not re-evaluate potentially applicable or relevant and appropriate requirements (ARARs) but determines if the design incorporates adequate technical and administrative steps to meet the ARARs identified in the ROD.

Review Team

The contracting party is responsible for having the appropriate design reviews conducted. The review can be conducted by the contracting party, other federal agencies, or by the designer if an independent and objective review can be performed. The RPM (with appropriate representation from other EPA offices) and the state, however, are the most qualified to undertake this review. Regardless of who performs the review, the designer is not absolved of professional liability as the result of this review. If the design proves to be deficient, the designer may be held liable for errors or omissions in the design.

Timing of the Review

The environmental review should occur late enough in the design process so that technical details sufficient to judge process effectiveness or achievement of standards can be reasonably determined. The performance standards for the design should be included by the designer in the design criteria analysis. The ARARs should be determined as early as possible in the design effort to prevent redesign effort.

Scope of the Review

An environmental review seeks to address the following:

- Is there compliance with all applicable or relevant and appropriate environmental and public health requirements identified in the ROD?
- Are currently accepted environmental control measures and technology utilized?
- Are all substantive permit requirements clearly identified in the design along with the means of demonstrating compliance?
- Have all required off-site permits been applied for by the designer?
- Does the design require the constructor to comply with the off-site disposal rule (Section 121(d)(3) of CERCLA)? Are back-up facilities required in the event that the primary disposal facility goes out of compliance with the Resource Compensation and Recovery Act?

A checklist is attached to assist in conducting an environmental review.

Design Review					
Project Title & Location:					
Document Reviewed (Section/Paragraph)	**Item No.**	**Component to be evaluated for completeness, clarity and appropriateness (provide comments on separate sheet)**	**Acceptability**		
			Yes	**No**	**N/A**
		ENVIRONMENTAL			
	1	Is there compliance with all applicable or relevant and appropriate environmental and public health requirements identified in the Record of Decision?			
	2	Are currently accepted environmental control measures and technology utilized?			
	3	Are all substantive permit requirements clearly identified in the design with a description of the means of demonstrating compliance?			
	4	Have all required off-site permits been applied for by the designer?			
	5	Does the design require the constructor to comply with the off-site disposal rule (Section 121(d)(3) of CERCLA)? Are back-up facilities required in the event that the primary disposal facility goes out of compliance with the Resource Compensation and Recovery Act?			
	6	Are all performance standards clearly identified?			
	7	Has perimeter air monitoring been specified?			
	8	Are dust and noise control measures specified?			

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Appendix D

Model RD, RA, and Technical Assistance IAGs

Model for USACE Remedial Design IAG

United States Environmental Protection Agency Washington, DC 20460 **EPA** Interagency Agreement/ Amendment Part 1 – General Information	1. EPA IAG Identification Number DW 96 _____ 2. Other Agency IAG ID Number *(if known)* 3. Type of Action New Agreement	4. Funding Location by Region [As appropriate] 5. Program Office Abbreviation [As appropriate]
6. Name and Address of EPA Organization [Regional Address]	7. Name and Address of Other Agency U.S. Army Corps of Engineers (USACE) Engineering Division, Missouri River Omaha, Nebraska 68144-3869	
8. Project Title Design of Superfund Remedial Action at [site name, city, and state]		
9. EPA Project Officer (Name, Address, Telephone Number) [Regional Project Officer] U.S. Environmental Protection Agency [Regional Address] [Telephone Number]	10. Other Agency Project Officer (Name, Address, Telephone Number) U.S. Army Engineer, Missouri River Division ATTN: Lucy Harris 12565 West Center Road Omaha, NE 68144-3869 (402) 697-2422	
11. Project Period	12. Budget Period [same as project period]	

13. Scope of Work (Attach additional sheets, as needed)

This interagency agreement will allow the USACE and U.S. Environmental Protection Agency to utilize the Direct Fund Cite/Revised Reimbursable methods for costs incurred during this action. The funds are divided as follows:

Revised Reimbursable $_____
Direct Fund Cite $_____
Total $_____

Contracts financed under the Direct Fund Cite Procedure will cite the following accounting classification: 68/20X8145, (Account Number)

14. Statutory Authority for Both Transfer of Funds and Project Activities	15. Other Agency Type
CERCLA as amended (42 USCA 9601 et seq.) Executive Order 12580 and Economy Act of 1932 as amended (31 USC 1535)	Federal

Funds	Previous Amount	Amount This Action	Amended Total
16. EPA Amount			
17. EPA In-Kind Amount			
18. Other Agency Amount			
19. Other Agency In-Kind Amount			
20. Total Project Cost			

21. Fiscal Information

Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation/Deobligation Amt.
_____FAY9A	94	68/20X8145			25.76	

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Model for USACE Remedial Design IAG (cont.)

Part II – Approved Budget

EPA IAG Identification Number
DW

22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	$	$
(b) Fringe Benefits		
(c) Travel		
(d) Equipment		
(e) Supplies		
(f) Procurement/Assistance		
(g) USACE Division Costs		
(h) Other		
(i) Total Direct Charges		
(j) Indirect Cost: Rate: %		
(k) Total (EPA Share 100%) (Other Agency Share 0%)	$	$

23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Identify all equipment costing $1,000 or more) [X] Yes [ ] No

USACE equipment needs are unknown at this time. USACE shall report equipment acquisition in accordance with paragraph 3 of Attachment B - Special Provisions.

24. Are any of these funds being used on extramural agreements? (See item 22f) [X] Yes [ ] N

Type of Extramural Agreement [ ] Grant [ ] Cooperative Agreement [X] Procurement (Includes Small Purchase Order)

Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Unknown	[estimate]	100

Part III – Funding Methods and Billing Instructions

25. [X] Funds-Out Agreement **(Note: EPA Agency Location Code (ALC) – 68010727)**

[X] Disbursement Agreement

[X] Repayment — Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, EPA, Cincinnati, OH 45268:

[X] Monthly [ ] Quarterly [ ] Upon Completion of Work

[ ] Advance — Only available for use by Federal Agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.

[ ] Allocation Transfer-Out — Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Headquarters. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington D.C. 20460.

26. [ ] Funds-In Agreement

[ ] Reimbursement Agreement [ ] Repayment

[ ] Allocation Transfer-In [ ] Advance

Other Agency's IAG Identification Number	EPA Program Office Allowance Holder/Responsibility Center Number
	72E
Other Agency's Billing Address *(Include Agency Location Code or Station Symbol Number)*	Other Agency's Billing Instructions and Frequency

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Model for USACE Remedial Design IAG (cont.)

Part IV – Acceptance Conditions	EPA IAG Identification Number DW 96 _____

27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

28. Special Conditions *(Attach additional sheets if needed)*

(See Attachment B)

Part V – Offer and Acceptance

Note: 1)For Funds-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in Item 29 after acceptance signature.

Receipt of written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of the offer by EPA. Any change to the agreement by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

2) For Funds-in actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)	EPA Program Office (for technical assistance)
29. Organization/Address [EPA IAG Administration Office] [Organization/Address]	30. Organization/Address [EPA Program Office] [Organization/Address]

Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Decision Official on Behalf of the Environmental Protection Agency Program Office		
31. Signature	Typed Name and Title	Date
Action Official on Behalf of the Environmental Protection Agency		
32. Signature	Typed Name and Title	Date
Authorizing Official on Behalf of the Other Agency		
33. Signature	Typed Name and Title	Date

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Model for USACE Remedial Design IAG (cont.)

Part IV – Acceptance Conditions (continued)	EPA IAG Identification Number

28. Special Conditions (continued)

8. Minority Business Utilization

In accordance with CERCLA, as amended (P.L. 99-499), Section 105(f), any Federal agency awarding contracts, grants or cooperative agreements utilizing Superfund monies shall consider the availablility of minority contractors for participation in contracts. This includes, but is not limited to: contracts, subcontracts, SBA 8(a) awards and any subagreements.

The USACE, as a recipient of Superfund monies under this IAG, must report annually on minority contractor participation and efforts taken to encourage (outreach endeavors) the utilization of minority firms.

Reports will be forwarded annually (by November 15th) to the Minority Business Enterprise Coordinator, EPA-Region 3, Hazardous Waste Management Division (3HW43). Reports will be submitted on EPA Forms 6005-3, "Superfund Minority Contractors Utilization Report", 6005-3A, "Superfund Minority Contractors Utilization Report - Part 2".

9. As a recipient of monies under this IAG, the USACE must ensure to the fullest extent possible that at least 8% of funds for prime or subcontracts and subgrants for services are made available to businesses owned or controlled by socially and economically disadvantaged individuals, women-owned businesses, and Historically Black, Colleges and Universities.

The USACE must submit a report to EPA showing the actual amount and percentage of extramural funds awarded to DBEs on Forms 6005-3 and 67005-3a, by December 15, of each year. Reports should be submitted to:

Mr. George Mori, Senior Program Officer
Office of Small and Disadvantaged Business Utilization (A-149C)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

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Attachment A • Scope of Work for Remedial Design IAG

Site

Name, City, State

Site/Spill Identifier

Purpose

The purpose of this agreement is to obtain assistance from the U.S. Army Corps of Engineers (USACE) for the implementation of a remedial design for remedial action at site name.

Background

Briefly summarize the site in one or two paragraphs to include:

- location of site
- brief history of operations, releases, response actions, etc.
- quantity, types, and concentrations of hazardous substances
- extent of contamination
- operable unit name and number, event name and number, and project name, if applicable

A Record of Decision (ROD) was signed by the name of AA-OSWER or Regional Administrator on date selecting description of remedy as the cost effective remedy for the site name.

Remedy

The remedy selected by EPA and the State of state name includes the following major components (list major components in bullet format):

Work Statement

The USACE will be responsible for:

1. Developing the technical statement of work and awarding and managing a contract to a private firm for the design of description of remedy. The design package will consist of plans and specifications along with include as necessary operations and maintenance (O&M) plan, quality assurance project plan (QAPP), site safety plan, etc.
2. Reviewing the design package in coordination with the EPA RPM at preliminary and prefinal design stages. Approval and acceptance of the final design, with comment from EPA.
3. Conducting value engineering screening to assess the need for a value engineering study. Conducting value engineering studies when indicated.
4. Preparing a Real Estate Planning Report to be submitted to the EPA Regional Office during the preliminary design phase of the project.
5. Providing other support to include permit assistance, community relations assistance, etc.
6. Reproducing design documents.
7. Conducting procurement activities for remedial actions up to the point of award.

Attachment B • Special Conditions for Remedial Design IAG

The USACE agrees to meet the site-specific financial management and recordkeeping responsibilities contained in EPA's "Superfund Financial Management and Recordkeeping Guidance for Federal Agencies" (January 1989).

Cost Documentation Requirements

EPA acting as manager of the Hazardous Substances Superfund requires current information on CERCLA response actions and related obligations of CERCLA funds for these actions. In addition, CERCLA, as amended, authorizes EPA to recover from responsible parties all government costs incurred during a response action. To help assure oversight and successful recovery of CERCLA funds, both USACE and EPA have responsibilities under this agreement. The USACE accounting system reports must be supported by site- and activity-specific cost documentation. The USACE will organize and retain in a site file documentation of costs by site and activity (e.g., vouchers, billing statements, evidences of payment, audit reports) as follows:

1. Direct Costs
    - Payroll - timesheets or timecards to support hours charged to a particular site, including the signature of the employee and/or the employee's supervisor.
    - Travel - travel authorizations (including purpose of trip), local travel vouchers, traveler's reimbursement vouchers, carrier bills (including airline tickets, government-owned vehicle bills, appropriate receipts for hotel, car rental, etc., proof of payment. Proof of payment is satisfied by providing a copy of standard form (SF) 1166 "Voucher and Schedule of Payment" or equivalent.
    - Contractor services - copies of contracts, requests for proposals (RFPs), detailed evaluation of contractor bids, contractor invoices, USACE project officer approval of invoices, proof of payment. Proof of payment is satisfied by providing a copy of the accomplished SF 1166 or equivalent.
    - Supplies and Equipment - EPA authorization to purchase non-expendable property of $1,000.00 or more, vendor invoices, proof of payments, and hourly records of equipment use, when applicable.
    - Any other direct costs not included in the above categories.
2. Indirect Costs

If indirect costs are not calculated by the USACE accounting system, a worksheet showing calculations of indirect costs charged to a site will be retained by the USACE.

Under the IAG, the USACE certifies that: 1) any indirect costs included in billings to EPA represent, in accordance with GAO principles, indirect costs that would not have been otherwise incurred by the USACE; or 2) explicit Congressional authority exists for charging other than incremental costs of performance.

Reporting Requirements

1. The USACE will provide monthly progress reports to the RPM listed on the IAG form containing:
    - Site name and IAG number
    - Summary of work performed
    - Estimate of the percentage of the project completed

- Accounting of funds expended during the reporting period and on the project to date, which includes budget category cost breakdown
- Summaries of all change orders and claims made on the contract during the reporting period
- Summaries of all contacts with representatives of the local community, public interest groups, or state government during the reporting period
- Summaries of all problems or potential problems encountered during the reporting period
- Projected work for the next reporting period
- Attachment of a copy of all certified contractor invoices for contract costs and request for reimbursement (SF 1080) for all USACE in-house cost submitted to the EPA Financial Management Center, Cincinnati, for payment during the reporting month

2. The USACE will submit certified contractor invoices and/or a completed and signed SF 1080, Request for Reimbursement, to the EPA Financial Management Center, Cincinnati, containing, as appropriate, USACE cost by budget category identified by site, site-specific account number, and IAG number.
3. USACE will provide a final inventory of property, (before final contract payment) within one month of the end of the IAG performance period, describing the condition of each item (and requesting disposition instructions). USACE will require all contractors to provide a final inventory of property prior to their final contract payment. If the duration of the project is greater than one year, USACE will provide an annual inventory of all property acquired by or furnished to USACE with EPA funds.

Cost Recovery

In the event of a contemplated cost recovery action, the USACE will provide to EPA or the Department of Justice (DOJ) a cost documentation package detailing site-specific costs and including copies of the back-up documentation. In some cases, these requests from EPA or DOJ may require the documentation to be provided in less than thirty days. If additional time is required to comply with a request, USACE will negotiate with EPA or DOJ a schedule for responding. USACE will provide EPA with a contact for obtaining necessary site-specific accounting information and documentation.

Record Retention Requirements

The USACE (and its contractors) will retain the documents described in these "Special Conditions" for a minimum of ten years after submission of a final SF 1080 for a site or sites, after which USACE must obtain written permission from the authorized EPA official before disposing of any of the records. USACE will require all contractors entering into cost reimbursable type contracts to establish and maintain cost documentation as described above.

Project Specific Conditions

1. The USACE will invite (with reasonable notice) the EPA RPM to participate in contractor meetings in which scope of the project or progress is discussed.
2. The USACE will invite the EPA RPM to participate in the contractor selection process, as appropriate.
3. The USACE Project Manager will brief the EPA RPM regularly on the current status of the project. Briefings will be monthly unless a different frequency is mutually agreed upon by both project managers. Emphasis shall be placed on project budget, expenditure rates, and schedule.

4. The USACE personnel and its contractors will have the appropriate safety training and be involved in a medical monitoring program as specified in 29 Code of Federal Regulations (CFR) Part 1910; 51 CFR 45663 - 45675; and Section 125(e) of CERCLA, as amended.
5. EPA will provide indemnification of USACE contractors for extraordinary risk to the extent that CERCLA funds are available in accordance with Section 119 of CERCLA and EPA implementing guidance.
6. The USACE will furnish to the EPA RPM a copy of the Quality Assurance Management Plan.
7. The USACE will have final authority, with EPA comment, for approving QAPjPs, Sampling Analysis Plans (SAPs), which reflect environmental sampling and laboratory analysis, and Health and Safety Plans (HASPs).

Audits

1. Superfund cost documentation information must be available for audit or verification upon request of authorized auditing agencies.
2. If an audit determines that any direct or indirect cost charged to EPA are unallowable, EPA will be notified immediately following the resolution of the audit.

Other EPA Involvement

1. Payment to USACE contractors is contingent upon receipt of a USACE certified payment request. Reimbursement to USACE for in-house costs is contingent upon receipt of a USACE certified reimbursement for request (SF 1080). Final project payments for specific contracts and in-house cost shall be reviewed and approved by the EPA Regional program office.
2. EPA will hold title to all property acquired with Superfund monies. EPA will provide the USACE the property disposition instructions upon termination of the IAG. EPA will receive fair-market value for any property disposed of or used for non-Superfund activities.

Model for USACE Remedial Action IAG

United States Environmental Protection Agency Washington, DC 20460 **EPA** Interagency Agreement/ Amendment Part 1 – General Information	1. EPA IAG Identification Number DW 96 _____ 2. Other Agency IAG ID Number *(if known)* 3. Type of Action New Agreement	4. Funding Location by Region [As appropriate] 5. Program Office Abbreviation [As appropriate]
6. Name and Address of EPA Organization [Regional Address]	7. Name and Address of Other Agency U.S. Army Corps of Engineers (USACE) Engineering Division, Missouri River Omaha, Nebraska 68144-3869	
8. Project Title Design of Superfund Remedial Action at [site name, city, and state]		
9. EPA Project Officer (Name, Address, Telephone Number) [Regional Project Officer] U.S. Environmental Protection Agency [Regional Address] [Telephone Number]	10. Other Agency Project Officer (Name, Address, Telephone Number) U.S. Army Engineer, Missouri River Division ATTN: Lucy Harris 12565 West Center Road Omaha, NE 68144-3869 (402) 697-2422	
11. Project Period	12. Budget Period [same as project period]	

13. Scope of Work (Attach additional sheets, as needed)

This interagency agreement will allow the USACE and U.S. Environmental Protection Agency to utilize the Direct Fund Cite/Revised Reimbursable methods for costs incurred during this action. The funds are divided as follows:

Revised Reimbursable $_____
Direct Fund Cite $_____
Total $_____

Contracts financed under the Direct Fund Cite Procedure will cite the following accounting classification: 68/20X8145, (Account Number)

14. Statutory Authority for Both Transfer of Funds and Project Activities	15. Other Agency Type
CERCLA as amended (42 USCA 9601 et seq.) Executive Order 12580 and Economy Act of 1932 as amended (31 USC 1535)	Federal

Funds	Previous Amount	Amount This Action	Amended Total
16. EPA Amount			
17. EPA In-Kind Amount			
18. Other Agency Amount			
19. Other Agency In-Kind Amount			
20. Total Project Cost			

21. Fiscal Information

Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation/Deobligation Amt.
_____FAY9A	94	68/20X8145			25.76	

EPA Form 1610-1 (Rev. 10-88) Previous editions are obsolete.

51-043-34(1)A

Model for USACE Remedial Action IAG (cont.)

Part II – Approved Budget

EPA IAG Identification Number
DW

22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	$	$
(b) Fringe Benefits		
(c) Travel		
(d) Equipment		
(e) Supplies		
(f) Procurement/Assistance		
(g) USACE Division Costs		
(h) Other		
(i) Total Direct Charges		
(j) Indirect Cost: Rate: %		
(k) Total (EPA Share 100%) (Other Agency Share 0%)	$	$

23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Identify all equipment costing $1,000 or more) [X] Yes [ ] No

USACE equipment needs are unknown at this time. USACE shall report equipment acquisition in accordance with paragraph 3 of Attachment B - Special Provisions.

24. Are any of these funds being used on extramural agreements? (See item 22f) [X] Yes [ ] N

Type of Extramural Agreement [ ] Grant [ ] Cooperative Agreement [X] Procurement (Includes Small Purchase Order)

Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Unknown	[estimate]	100

Part III – Funding Methods and Billing Instructions

25. [X] Funds-Out Agreement **(Note: EPA Agency Location Code (ALC) – 68010727)**

[X] Disbursement Agreement

[X] Repayment — Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, EPA, Cincinnati, OH 45268:

[X] Monthly [ ] Quarterly [ ] Upon Completion of Work

[ ] Advance — Only available for use by Federal Agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.

[ ] Allocation Transfer-Out — Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Headquarters. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington D.C. 20460.

26. [ ] Funds-In Agreement

[ ] Reimbursement Agreement [ ] Repayment [ ] Advance

[ ] Allocation Transfer-In

Other Agency's IAG Identification Number	EPA Program Office Allowance Holder/Responsibility Center Number
	72E
Other Agency's Billing Address *(Include Agency Location Code or Station Symbol Number)*	Other Agency's Billing Instructions and Frequency

EPA Form 1610-1 (Rev. 10-88)

51-043-34(2)A

Model for USACE Remedial Action IAG (cont.)

Part IV – Acceptance Conditions	EPA IAG Identification Number DW 96 _____

27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

28. Special Conditions *(Attach additional sheets if needed)*

(See Attachment B)

Part V – Offer and Acceptance

Note: 1)For Funds-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in Item 29 after acceptance signature.

Receipt of written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of the offer by EPA. Any change to the agreement by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

2) For Funds-in actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)	EPA Program Office (for technical assistance)
29. Organization/Address [EPA IAG Administration Office] [Organization/Address]	30. Organization/Address [EPA Program Office] [Organization/Address]

Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Decision Official on Behalf of the Environmental Protection Agency Program Office		
31. Signature	Typed Name and Title	Date
Action Official on Behalf of the Environmental Protection Agency		
32. Signature	Typed Name and Title	Date
Authorizing Official on Behalf of the Other Agency		
33. Signature	Typed Name and Title	Date

EPA Form 1610-1 (Rev. 10-88)

51-043-34(3)A

Model for USACE Remedial Action IAG (cont.)

Part IV – Acceptance Conditions (continued)	EPA IAG Identification Number

28. Special Conditions (continued)

8. Minority Business Utilization

In accordance with CERCLA, as amended (P.L. 99-499), Section 105(f), any Federal agency awarding contracts, grants or cooperative agreements utilizing Superfund monies shall consider the availablility of minority contractors for participation in contracts. This includes, but is not limited to: contracts, subcontracts, SBA 8(a) awards and any subagreements.

The USACE, as a recipient of Superfund monies under this IAG, must report annually on minority contractor participation and efforts taken to encourage (outreach endeavors) the utilization of minority firms.

Reports will be forwarded annually (by November 15th) to the Minority Business Enterprise Coordinator, EPA-Region 3, Hazardous Waste Management Division (3HW43). Reports will be submitted on EPA Forms 6005-3, "Superfund Minority Contractors Utilization Report", 6005-3A, "Superfund Minority Contractors Utilization Report - Part 2".

9. As a recipient of monies under this IAG, the USACE must ensure to the fullest extent possible that at least 8% of funds for prime or subcontracts and subgrants for services are made available to businesses owned or controlled by socially and economically disadvantaged individuals, women-owned businesses, and Historically Black, Colleges and Universities.

The USACE must submit a report to EPA showing the actual amount and percentage of extramural funds awarded to DBEs on Forms 6005-3 and 67005-3a, by December 15, of each year. Reports should be submitted to:

Mr. George Mori, Senior Program Officer
Office of Small and Disadvantaged Business Utilization (A-149C)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

51-043-34(4)A

Attachment A • Scope of Work for Remedial Action IAG

Site

Name, City, State

Site/Spill Identifier

Purpose

The purpose of this agreement is to obtain assistance from the U.S. Army Corps of Engineers (USACE) for the implementation of a remedial action at site name.

Background

Briefly summarize the site in one or two paragraphs to include:

- location of site
- brief history of operations, releases, response actions, etc.
- quantity, types, and concentrations of hazardous substances
- extent of contamination
- operable unit name and number, event name and number, and project name, if applicable

A Record of Decision (ROD) was signed by the NAME OF AA-OSWER or Regional Administrator on date selecting description of remedy as the cost effective remedy for the site name. The remedial design (RD) for the remedy was performed by the USACE or other party. A Superfund State Contract was signed by the State of state name on date providing assurances, including cost share for the remedial action (RA), required by CERCLA Section 104(c).

Remedy

The remedy selected by EPA and the State of state name includes the following major components (list major components in bullet formal):

Work Statement

The USACE will be responsible for:

1. Managing the contract for the RA including procurement activities for any subsequent modifications and revisions to the original RA contract award.
2. Providing oversight and monitoring of construction in coordination with the EPA RPM to ensure compliance with all contract requirements.
3. Conducting final inspection and certification of completed remedial action in coordination with the EPA RPM.
4. Assessing submitted Value Engineering Construction Proposals (VECPs) in accordance with the Value Engineering clause in the Federal Acquisition Regulation 52.248-1. USACE shall consult with EPA on any VECP that may affect the site remedy before making any change.

Attachment B • Special Conditions for Remedial Action IAG

The USACE agrees to meet the site-specific financial management and recordkeeping responsibilities contained in EPA's "Superfund Financial Management and Recordkeeping Guidance for Federal Agencies" (January 1989).

Cost Documentation Requirements

EPA acting as manager of the Hazardous Substances Superfund requires current information on CERCLA response actions and related obligations of CERCLA funds for these actions. In addition, CERCLA, as amended, authorizes EPA to recover form responsible parties all government costs incurred during a response action. To assure oversight and successful recovery of CERCLA funds, both USACE and EPA have responsibilities under this agreement. The USACE accounting system reports must be supported by site- and activity-specific cost documentation. The USACE will organize and retain in a site file documentation of costs by site and activity (e.g. vouchers, billing statements, evidence of payment, audit reports) as follows.

1. Direct Costs
   - Payroll - timesheets or timecards to support hours charged to a particular site, including the signature of the employee and/or the employee's supervisor.
   - Travel - travel authorizations (including purpose of trip), local travel vouchers, traveler's reimbursement vouchers, carrier bills (including airline tickets), government-owned vehicle bills, appropriate receipts for hotel, car rental, etc., proof of payment. Proof of payment is satisfied by providing a copy of standard form (SF) 1166 "Voucher and Schedule of Payment" or equivalent.
   - Contractor services - copies of contracts, requests for proposals (RFPs), detailed evaluation of contractor bids, contractor invoices, USACE project officer approval of invoices, proof of payment. Proof of payment is satisfied by providing a copy of SF 1166 or equivalent.
   - Supplies and Equipment - EPA authorization to purchase non-expendable property of $1,000.00 or more, vendor invoices, proof of payments, and hourly records of equipment use, when applicable.
   - Any other direct costs not included in the above categories.
2. Indirect Costs

If indirect costs are not calculated by the USACE accounting system, a worksheet showing calculations of indirect costs charged to a site will be retained by the USACE.

Under this IAG, the USACE certifies that: 1) any indirect costs included in billings to EPA represent, in accordance with GAO principles, indirect costs that would not have been otherwise incurred by the USACE; or 2) explicit Congressional authority exists for charging other than incremental costs of performance.

Reporting Requirements

1. The USACE will provide monthly progress reports to the RPM listed on the IAG form containing:
   - Site name and IAG number
   - Summary of work performed
   - Estimate of the percentage of the project completed
   - Accounting of funds expended during the reporting period and on the project to date, which includes budget category cost breakdown
   - Summaries of all change orders and claims made on the contract during the reporting period

- Summaries of all contacts with representatives of the local community, public interest groups, or state government during the reporting period
- Summaries of all problems or potential problems encountered during the reporting period
- Projected work for the next reporting period
- Attachment of a copy of all certified contractor invoices for contract costs and request for reimbursement (SF 1080) for all USACE in-house cost submitted to the EPA Financial Management Center, Cincinnati, for payment during the reporting month

2. The USACE will submit certified contractor invoices and/or a completed and signed SF 1080, request for reimbursement, to the EPA Financial Management Center, Cincinnati, containing, as appropriate, USACE cost by budget category identified by site, site-specific account number, and IAG number.
3. USACE will provide a final inventory of property, (before final contract payment) within one month of the end of the IAG performance period, describing the condition of each item (and requesting disposition instructions). USACE will require all contractors to provide a final inventory before their final contract payment. If the duration of the project is greater than one year, USACE will provide an annual inventory or all property acquired by or furnished to USACE with EPA funds.

Cost Recovery

In the event of a contemplated cost recovery action, the USACE will provide to EPA or the Department of Justice (DOJ) a cost documentation package detailing site-specific costs and including copies of the back up documentation. In some cases, these requests from EPA or DOJ may require this documentation to be provided in less than thirty days. If additional time is required to comply with a request, USACE will negotiate with EPA or DOJ a schedule for responding. USACE will provide EPA with a contact for obtaining necessary site-specific accounting information and documentation.

Record Retention Requirements

The USACE will retain the documents described in these "Special Conditions" for a minimum of ten years after submission of a final SF 1080 for a site or sites, after which USACE must obtain written permission from the authorized EPA official before disposing of any of the records. USACE will require all contractors entering into cost reimbursable type contracts to establish and maintain cost documentation as described above.

Project Specific Conditions

1. The USACE will invite (with reasonable notice) the EPA RPM to participate in contractor meetings in which scope of the project or progress is discussed.
2. The USACE will invite the EPA RPM to participate in the contractor selection process, as appropriate.
3. The USACE will have final authority for RA bids, shop drawings and contract modifications (within [the 15%] contingency fund limitations).
4. The USACE Project Manager will regularly brief the EPA RPM on the current status of the project. Briefings will be monthly unless a different frequency is mutually agreed upon by both project managers. Emphasis shall be placed on project budget, expenditure rates, and schedule.
5. The USACE personnel and its contractors will have the appropriate safety training and be involved in a medical monitoring program as specified in 29 Code of Federal Regulations (CFR) Part 1910; 51 CFR 45663 - 45675; and Section 125(e) of CERCLA, as amended.
6. EPA will provide indemnification of USACE contractors for extraordinary risk to the extent that CERCLA funds are available in accordance with Section 119 of CERCLA and EPA implementing guidance.

7. The USACE will furnish to the EPA RPM for their information a copy of the Quality Assurance Management Plan.
8. The USACE will have final authority, with EPA comment, for approving Quality Assurance Project Plans (QAPjPs), Sampling Analysis Plans (SAPs) which reflect environmental sampling and laboratory analysis, and Health and Safety Plans (HASPs).

Audits

1. Superfund cost documentation information must be available for audit or verification upon request of authorized auditing agencies.
2. If an audit determines that any direct or indirect cost charged to EPA are unallowable, EPA will be notified immediately following the resolution of the audit.

Other EPA Involvement

1. Payment to USACE contractors is contingent upon receipt of a USACE certified payment request. Reimbursement to USACE for in-house costs is contingent upon receipt of a USACE certified reimbursement for request (SF 1080). Final project payments for specific contracts and in-house cost shall be reviewed and approved by the EPA Regional program office.
2. EPA will hold title to all property acquired with Superfund monies. EPA will provide the USACE the property disposition instructions upon termination of the IAG. EPA will receive fair-market value for any property disposed of or used for non-Superfund activities.

Decision Memorandum
Regional Superfund Interagency Agreement for Technical Assistance

SUBJECT: Superfund Interagency Agreement with the U.S. Army Corps of Engineers (USACE)

TO: Regional Administrator, Region ____

FROM: _____

I recommend that you, as the EPA Action Official, approve and sign the attached Interagency Agreement (IAG). Under the IAG, the USACE will provide EPA with technical assistance during EPA lead phases of remedial response activities.

The USACE will provide specialized support services to EPA. It may also utilize extramural agreements to carry out the Scope of Work.

The IAG's project (site) activities and provisions are in compliance with the following statutory and EPA policy requirements:

1) Statutory - Economy Act of 1932, as amended (31 USC 1535)
   - CERCLA, as amended (42 USCA 9601 et seq.)
2) Policy - Executive Order 12580
   - EPA IAG Policy and Procedures Compendium
   - Chapter 51. "Managing IAGs". EPA Assistance Administration Manual
   - SCAP
   - Memorandum of Understanding

NOTE: If an "increase-in-funds" amendment, add:

The increase in funds will cover costs for additional sites and activities related to the original Scope of Work under the IAG. These activities are necessary to maintain the progress towards the successful completion of the SCAP.

Model for USACE Technical Assistance

United States Environmental Protection Agency Washington, DC 20460 **EPA** Interagency Agreement/ Amendment Part 1 – General Information	1. EPA IAG Identification Number DW 96 _____ 2. Other Agency IAG ID Number *(if known)* 3. Type of Action New Agreement	4. Funding Location by Region [As appropriate] 5. Program Office Abbreviation [As appropriate]
6. Name and Address of EPA Organization [Regional Address]	7. Name and Address of Other Agency U.S. Army Corps of Engineers (USACE) Engineering Division, Missouri River Omaha, Nebraska 68144-3869	
8. Project Title Design of Superfund Remedial Action at [site name, city, and state]		
9. EPA Project Officer (Name, Address, Telephone Number) [Regional Project Officer] U.S. Environmental Protection Agency [Regional Address] [Telephone Number]	10. Other Agency Project Officer (Name, Address, Telephone Number) U.S. Army Engineer, Missouri River Division ATTN: Lucy Harris 12565 West Center Road Omaha, NE 68144-3869 (402) 697-2422	
11. Project Period	12. Budget Period [same as project period]	

13. Scope of Work (Attach additional sheets, as needed)

1. Reviewing work plans developed by EPA contractors and providing comments and suggestions on the proposed work
2. Technical review of remedial investigation/feasibility study.
3. Providing comments on all plans and specifications for the cleanup.
4. Attending status briefings. The USACE will participate in site-specific status briefings whenever such meetings are deemed necessary by the Regional Project Officer.
5. Reviewing other EPA contractor products. These products may include such things as sampling plans, plans and specifications for drum and bulk waste removal, and draft and final reports on the remedial investigation or the feasibility study.

14. Statutory Authority for Both Transfer of Funds and Project Activities	15. Other Agency Type
CERCLA as amended (42 USCA 9601 et seq.) Executive Order 12580 and Economy Act of 1932 as amended (31 USC 1535)	Federal

Funds	Previous Amount	Amount This Action	Amended Total
16. EPA Amount			
17. EPA In-Kind Amount			
18. Other Agency Amount			
19. Other Agency In-Kind Amount			
20. Total Project Cost			

21. Fiscal Information

Program Element	FY	Appropriation	Doc. Control No.	Account Number	Object Class	Obligation/Deobligation Amt.
_____FAY9A	94	68/20X8145			25.76	

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51-043-43(1)A)

Model for Technical Assistance (cont.)

Part II – Approved Budget	EPA IAG Identification Number DW

22. Budget Categories	Itemization of This Action	Itemization of Total Project Estimated Cost to Date
(a) Personnel	$	$
(b) Fringe Benefits		
(c) Travel		
(d) Equipment		
(e) Supplies		
(f) Procurement/Assistance		
(g) USACE Division Costs		
(h) Other		
(i) Total Direct Charges		
(j) Indirect Cost: Rate: % Base $		
(k) Total (EPA Share 100%) (Other Agency Share 0%)	$	$

23. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Identify all equipment costing $1,000 or more) [X] Yes [ ] No

See Special Conditions, Item 28 regarding documentation and disposition

24. Are any of these funds being used on extramural agreements? (See item 22f) [X] Yes [ ] No

Type of Extramural Agreement [ ] Grant [ ] Cooperative Agreement [X] Procurement (Includes Small Purchase Order)

Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project	Percent Funded by EPA (if known)
Unknown	[estimate]	100

Part III – Funding Methods and Billing Instructions

25. [X] Funds-Out Agreement **(Note: EPA Agency Location Code (ALC) – 68010727)**

[X] Disbursement Agreement

[X] Repayment — Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, EPA, Cincinnati, OH 45268:

[X] Monthly [ ] Quarterly [ ] Upon Completion of Work

[ ] Advance — Only available for use by Federal Agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.

[ ] Allocation Transfer-Out — Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Headquarters. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington D.C. 20460.

26. [ ] Funds-In Agreement

[ ] Reimbursement Agreement [ ] Repayment

[ ] Allocation Transfer-In [ ] Advance

Other Agency's IAG Identification Number	EPA Program Office Allowance Holder/Responsibility Center Number
	72E
Other Agency's Billing Address *(Include Agency Location Code or Station Symbol Number)*	Other Agency's Billing Instructions and Frequency

EPA Form 1610-1 (Rev. 10-88)

51-043-43(2)A

Model for Technical Assistance (cont.)

Part IV – Acceptance Conditions	EPA IAG Identification Number DW 96 _____

27. General Conditions

The other agency covenants and agrees that it will expeditiously initiate and complete the project for which funds have been awarded under this agreement.

28. Special Conditions *(Attach additional sheets if needed)*

(See Attachment A)

Part V – Offer and Acceptance

Note: 1)For Funds-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants Administration Division for Headquarters agreements or to the appropriate EPA Regional IAG administration office within 3 calendar weeks after receipt or within any extension of time as may be granted by EPA. The agreement/amendment must be forwarded to the address cited in Item 29 after acceptance signature.

Receipt of written refusal or failure to return the properly executed document within the prescribed time may result in the withdrawal of the offer by EPA. Any change to the agreement by the other agency subsequent to the document being signed by the EPA Action Official, which the Action Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

2) For Funds-in actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IAG administration office for acceptance signature on behalf of the EPA. One original copy will be returned to the other agency after acceptance.

EPA IAG Administration Office (for administrative assistance)	EPA Program Office (for technical assistance)
29. Organization/Address [EPA IAG Administration Office] [Organization/Address]	30. Organization/Address [EPA Program Office] [Organization/Address]

Certification

All signers certify that the statements made on this form and all attachments thereto are true, accurate, and complete. Signers acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Decision Official on Behalf of the Environmental Protection Agency Program Office		
31. Signature	Typed Name and Title	Date
Action Official on Behalf of the Environmental Protection Agency		
32. Signature	Typed Name and Title	Date
Authorizing Official on Behalf of the Other Agency		
33. Signature	Typed Name and Title	Date

EPA Form 1610-1 (Rev. 10-88)

51-043-43(3)

Attachment A · Special Conditions for Technical Assistance

The USACE agrees to meet the site-specific financial management and recordkeeping responsibilities contained in EPA's "Superfund Financial Management and Recordkeeping Guidance for Federal Agencies" (Draft August 1988).

1. Cost Documentation Requirements

EPA acting as manager of the Hazardous Substances Superfund requires current information on CERCLA response actions and related obligations of CERCLA funds for these actions. In addition, CERCLA, as amended , authorizes EPA to recover from responsible parties all government costs incurred during a response action. In order to help ensure oversight and successful recovery of CERCLA funds, both the USACE and EPA have responsibilities under this agreement. The USACE accounting system reports must be supported by site- and activity-specific cost documentation. The USACE will organize and retain in site file(s) documentation of costs by site and activity (e.g. vouchers, billing statements, evidence of payment, audit reports) as follows:

a. Direct Costs

- Payroll - timesheets or timecards to support hours charged to a particular site, including the signature of the employee and/or the employee's supervisor.
- Travel - travel authorizations (including purpose of trip), local travel vouchers, traveler's reimbursement vouchers, carrier bills, (including airline tickets), government owned vehicle bills, appropriate receipts for hotel, car rental, etc., proof of payment. Proof of payment is satisfied by providing a copy of the accomplished SF1166 "Voucher and Schedule of Payment" or equivalent.
- Contractor services - copies of contracts, requests for proposals (RFPs), detailed evaluation of contractor bids, contractor invoices, USACE project officer approval of invoices, proof of payment. Proof of payment is satisfied by providing a copy of the accomplished SF1166 or equivalent.
- Supplies and Equipment - EPA authorization to purchase non-expendable property of $1,000 or more, vendor invoices, proof of payment, and hourly records of equipment use, when applicable.
- Any other direct costs not included in the above categories.

b. Indirect Costs

If indirect costs are not calculated by the USACE accounting system, a worksheet showing calculations of indirect costs charged to site(s) will be retained by the USACE.

Under this IAG, the USACE certifies: 1) that any indirect costs included in billings to EPA represent, in accordance with GAO principles, indirect costs that would not have been otherwise incurred by the USACE, or 2) that explicit Congressional authority exists for charging other incremental costs of performance.

2. Reporting Requirements

a. The USACE will provide monthly progress reports to the Regional Project Officer and the Chief of the Design and Construction Management Branch (OS-220), EPA, Washington, DC, 20460, containing:

- Site name and IAG number
- Summary of work performed
- Estimate of the percentage of project completed
- Accounting of funds expended during the reporting period and on the project to date, which includes budget category cost breakdown
- Summaries of all problems or potential problems encountered during the reporting period
- Projected work for the next reporting period

b. The USACE will provide the EPA Financial Management Center, Cincinnati, with a completed and signed SF1080 (request for reimbursement) monthly containing, as appropriate: USACE costs by budget category identified by the site, site-specific account number, and IAG number.

c. USACE will provide a final inventory of property, within 30 days of project completion, describing the condition of each item and requesting disposition instructions. If the duration of the project is greater than one year, USACE will provide an annual inventory of all property acquired by or furnished to USACE with EPA funds.

3. Cost Recovery

In the event of a contemplated cost recovery action, the USACE will provide to EPA or the Department of Justice (DOJ) a cost documentation package detailing site-specific costs and including copies of the back up documentation. In some cases, these requests from EPA or DOJ may require that this documentation be provided in less than thirty days. If additional time is required to comply with a request, USACE will negotiate with EPA and DOJ a schedule for responding. USACE will provide EPA with a contact for obtaining necessary site-specific accounting information and documentation.

4. Record Retention Requirements

The USACE and its contractors will retain the documents described in these "Special Conditions" for a minimum of six years after submission of a final SF1080 for a site or sites, after which the USACE and its contractors must obtain written permission from the appropriate regional award official before disposing of any of the records.

5. Audits

a. Certain agencies are required by CERCLA, as amended, to perform annual audits of transactions involving the Superfund. The USACE may also be required to perform annual audits. Cost documentation information must be available for audit or verification upon request of the DOD Inspector General.

b. If an audit determines that any direct or indirect costs charged to EPA are unallowable, EPA will be notified immediately following the resolution of the audit and EPA will be credited with those costs.

6. Other EPA Involvement

a. EPA's substantial involvement in this IAG will include reimbursement to the USACE contingent upon:

- Receipt and approval by the EPA regional program office of the monthly progress reports and any other technical reports described in the Scope of Work.
- Acceptance and approval of requests for reimbursement (SF1080) by the authorized representatives of the EPA regional program office and the EPA regional IAG administration office (optional).

b. EPA will hold title to all property acquired with Superfund monies. EPA will provide the USACE with property disposal instructions upon termination of the IAG and receive fair-market value for any property disposed of or used for non-Superfund activities.

Appendix E

Model RD, RD Oversight, RA, and RA Oversight SOWs

_____
(date)

MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN

_____ SITE, _____ COUNTY, _____ STATE

ATTACHMENTS

Attachment 1. Summary of Major Submittals for the Remedial Design at ___ (Site) 24
Attachment 2. Work Breakdown Structure 28
Attachment 3. Regulation and Guidance Documents 34
Attachment 4. Transmittal of Documents for Acceptance by EPA 36
Attachment 5. Transmittal Register 37

Points for the Work Assignment Manager or Remedial Project Manager (WAM/RPM) to consider in preparing the Statement of Work (SOW) for Remedial Design (RD):

The purpose of this SOW is twofold:

1. **To tell the contractor what you want done.** Be as specific as possible in describing what you want the contractor to do. The contractor will write a work plan and budget describing how and at what cost the requirements will be met and ultimately will be responsible for performing those requirements. Whenever there is an absolute requirement (e.g., prepare the Quality Assurance Project Plan (QAPP) in accordance with QAMS-005/80 (December 29, 1980)), state it. Add the attachments to the SOW: (1) Summary of Major Submittals for the Remedial Design at _____(Site), (2) Work Breakdown Structure, and (3) Transmittal of Documents for Acceptance by EPA.

2. **To give the contractor a work breakdown structure for recording costs.** In this manner, work plan costs and final costs of different remedial design projects can be compared and analyzed.

Use of a Work Breakdown Structure (WBS)

1. A WBS has been developed for this model work assignment for EPA to track the initial and final costs of each element used for preparing future cost estimates and to share this data with other Federal agencies. The WBS is, essentially, the outline for this work assignment and is included as Attachment 2 to the SOW.

2. If an element is not to be used, do not change the numbering system; instead, insert "not used" or "N/A" after the element number after deleting the text for that element.

3. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and WAM/RPM to develop estimated costs on a common basis

3.0 Introduction

.0.1 Site Description

Provide a brief site description and site history.

.0.2 Purpose

The purpose of this Statement of Work (SOW) is to set forth the requirements for the Remedial Design (RD) of the selected remedy as defined in the Record of Decision (ROD) issued on

_____ (date). The RD is generally defined as those activities to be undertaken by the contractor to develop the final plans and specifications, general provisions, and special requirements necessary to translate the ROD into the remedy to be constructed under the remedial action (RA) phase. The RA is generally defined as the implementation phase of site remediation or construction of the remedy, including necessary operation and maintenance, performance monitoring, and special requirements. The RA is based on the RD to achieve the remediation goals specified in the ROD. This SOW is designed to provide the framework for conducting the RD activities at _____ (site). The goal is to complete and deliver the final plans and specifications within _____ months after approval of the work plan. The estimated completion date for this work assignment is _____.

.0.3 General Requirements

.0.3.1 The contractor shall conduct the RD in accordance with this SOW and consistent with the ROD issued on _____(date), the *Remedial Design/Remedial Action (RD/RA) Handbook* (U.S. EPA Office of Solid Waste and Emergency Response (OSWER), 9355.0-04B, EPA 540/R-95/059, June 1995), and all other guidance used by EPA in conducting an RD. The primary contact for this work assignment is _____, Tel. _____; the secondary contact is _____; Tel. _____.

.0.3.2 A summary of the major deliverables and a suggested schedule for submittals are attached (Attachment 1). The contractor shall submit the major deliverables using the form Transmittal of Documents for Acceptance by EPA, Attachment _____.

The attachments to this model SOW may be copied and completed for a given RD. Attachment 4 is a form for use by the contractor in the transmittal of documents to EPA and should be an attachment to the completed SOW. Attachment 5 is a transmittal register log for use by the WAM/RPM in tracking documents submitted by the contractor.

.0.3.3 Specifically, the RD involves the design of _____.

.0.3.4 The contractor shall furnish all necessary and appropriate personnel, materials, and services needed for, or incidental to, performing and completing the RD.

.0.3.5 A list of primary guidance and reference material is attached (Attachment 3). In all cases, the contractor shall use the most recently issued guidance.

.0.3.6 The estimated cost of the RA, as outlined in the ROD, is $_____.

.0.3.7 The contractor shall communicate at least weekly with the Work Assignment Manager or Remedial Project Manager (WAM/RPM), either in face-to-face meetings or through conference calls.

.0.3.8 The contractor shall notify the WAM/RPM when 75 percent of the approved work assignment budget has been expended and when 95 percent has been expended.

.0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA. The contractor shall forward this documentation to the WAM/RPM within two working days of the meeting or conversation.

It is the WAM's responsibility to document fully all decisions made. The contractor's documentation is used for confirmation only.

.0.3.10 EPA will provide oversight of contractor activities throughout the RD. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment. EPA will review deliverables to assess the likelihood that the RD will achieve its remediation goals and that its performance and operations requirements have been correctly identified. Acceptance of plans and specifications by EPA does not relieve the contractor of responsibility for the adequacy of the design.

.0.4 Record-Keeping Requirements

The contractor shall maintain all technical and financial records for the RD in accordance with the contract. At the completion of the RD, the contractor shall submit _____ copies of the official record of the RD in _____ (format) to the WAM/RPM.

1. Technical and financial records must support decisions made during the RD as well as cost recovery.

2. Check with the Regional Records Manager and with Regional Counsel regarding the distribution, number of copies, and preferred format (i.e., hard copy, microform, CD-ROM) for the official records of the RD.

.0.5 Equipment Transfer

At the completion of the RD work assignment, the contractor shall transfer to the EPA Equipment Coordinator all equipment purchased with contract funds in accordance with the contract.

.0.6 Project Closeout

At the completion of the RD work assignment, the contractor shall perform all necessary project closeout activities as specified in the contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files as required in Paragraph 0.4 above, and providing a technical and financial closeout report to EPA. Final costs shall be reported to EPA (on disk) broken down into the cost for each element of the Work Breakdown Structure (WBS) (Attachment 2) for this work assignment.

3.1 Project Planning and Support

The purpose of this task is to determine how the site-specific remediation goals, as specified in the ROD, will be met. The following activities shall be performed as part of the project planning task:

.1.1 Project Planning

.1.1.1 Attend Scoping Meeting. Before or concurrent with developing the Work Plan, the contractor shall attend a scoping meeting to be held at the EPA Regional Office.

Location of meetings and RPM expectations for the number of contractor personnel to attend should be specified for cost estimation purposes.

.1.1.2 Conduct Site Visit. The contractor shall conduct a site visit with the EPA WAM/RPM during the project planning phase to assist in developing a conceptual understanding of the RD requirements for the site. Information gathered during the visit shall be used to better scope the project and to help determine the extent of additional data necessary to implement the RD. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a report that documents all EPA, contractor, and site personnel present at the visit; all decisions made during the visit; any action items assigned, including person responsible and due date; any unusual occurrences during the visit; and any portions of the site that were not accessible to the contractor and the effect of this on the RD. This report shall be submitted to the EPA WAM/RPM within 10 calendar days of the site visit.

.1.1.3 Evaluate Existing Information. The contractor shall obtain, copy (if necessary), and evaluate existing data and documents, including the Remedial Investigation/Feasibility Study (RI/FS), the ROD, and other data and documents as directed by EPA. This information shall be used to determine if any additional data are needed for RD implementation. The documents available for review are listed in Attachment _____.

The WAM/RPM will create an attachment to this SOW. Additional documents to list in the attachment could include the summary of the "Information Collection" effort (see Chapter 3 of the Guidance for Scoping the Remedial Design), Focused Feasibility Studies (FFSs), State documentation, hydrogeological information, and RPM file data. However, to control expenses, limit review to pertinent documents specific to the site.

.1.1.4 Develop Work Plan. The contractor shall present the general approach that will be used for the RD at a Work Plan scoping meeting with the WAM/RPM. This meeting will be held at the Region _____ office.

If the RD will be complex, consider modifying subtask 3.1.1.4(1) to include a scoping meeting. A scoping meeting held before the contractor finalizes the technical approach ensures that the government and the contractor agree on the approach to be taken and that the work plan reflects the agreed-upon approach. The contractor may not have to rewrite the work plan if this is done.

(1) Develop Draft Work Plan. The contractor shall prepare and submit a draft RD Work Plan within 30 calendar days after Work Assignment (WA) initiation. The contractor submits the original to the Contracting Officer (CO), one copy to the Project Officer (PO), and one copy to the WAM/RPM. The Work Plan shall include a comprehensive description of the additional data collection and evaluation of activities to be performed, if any, and the plans and specifications to be prepared. A comprehensive design management schedule for completion of each major activity and submittal shall also be included. The Work Plan shall be developed in conjunction with the Sampling and Analysis Plan (SAP) and HASP, although each plan shall be delivered under separate cover within 30 days after WA initiation.

1. The submittal requirements in this SOW must be in accordance with the submittal requirements for the contract.

2. An independent government cost estimate (IGCE) for the RD must be prepared before the work assignment (WA) is issued to the contractor.

3. Verify the work plan submittal timeframe with the PO.

4. Additional copies of the work plan can be submitted to the WAM/RPM, if specified, for distribution to other technical staff.

(a) Develop Narrative. Specifically, the Work Plan shall present the following:

- A statement of the problem(s) and potential problem(s) posed by the site and how the objectives of the RD will address the problem(s).
- A background summary setting forth: (1) a brief description of the site including the geographic location and a description of the physiographic, hydrologic, geologic, demographic, ecological, cultural, and natural resource features of the site; (2) a brief synopsis of the history of the site including a summary of past disposal practices and a description of previous responses that have been conducted by local, State, Federal, or private parties at the site; (3) a summary of the existing data including physical and chemical characteristics of the contaminants identified and their distribution among the environmental media at the site.
- The contractor's technical and management approach to each task to be performed, including a detailed description of each task; the assumptions used;

the identification of any technical uncertainties (with a proposal for the resolution of those uncertainties); the information needed for each task; any information to be produced during and at the conclusion of each task; and a description of the work products that will be submitted to EPA. The contractor shall identify any subcontractors it plans to use to accomplish all or part of a task's objectives. Tasks and subtasks shall be presented in the same WBS format as provided in this work assignment.

- A schedule for specific dates for the start and completion of each required activity and submission of each deliverable required by this SOW. (See Attachment 1 for format.) This schedule shall also include information about timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.

For schedule development, the WAM/RPM should indicate to the contractor whether design activity will continue concurrent with EPA design review or whether work will stop until the contractor receives design review comments. In deciding which to prescribe, weigh the trade off between the cost of possible rework versus a shortened schedule.

(b) Develop Cost Estimate. The contractor's estimated cost to complete the work assignment shall be broken down into the Level of Effort (by P-level) and cost for each element of the Work Breakdown Structure (Attachment 2) and submitted to EPA on disk.

(c) Internal QA and Submission of Draft Work Plan.

(2) Prepare Final Work Plan

(a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the Region _____ office.

(b) Modify Draft Work Plan and Cost Estimate. If the contractor finds that the remedial action being designed differs significantly from the ROD or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memo to the WAM/RPM. The contractor shall make revisions to the Work Plan as a result of EPA's comments and/or negotiation agreements. The final work plan shall be submitted within 15 days after receipt of EPA comments.

(c) Internal QA and Submission of Final Work Plan.

.1.2 Preparation of Site-Specific Plans

.1.2.1 Develop Site Management Plan. After EPA approval of the RD Work Plan, the contractor shall prepare a Site Management Plan (SMP) that provides EPA with a written understanding of how access, security, contingency procedures, management responsibilities, and waste disposal are to be handled.

(1) Develop Pollution Control and Mitigation Plan

(2) Develop Transportation and Disposal Plan (Waste Management Plan)

.1.2.2 Develop Health and Safety Plan. Prepare a site-specific HASP that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with [40 CFR 300.150 of the NCP and] 29 CFR 1910.120 1(1) and (1)(2). Whenever possible, refer to the HASP developed for the RI/FS when preparing the HASP for the RD. A task-specific HASP must also be prepared to address health and safety requirements for site visits.

.1.2.3 Develop Sampling and Analysis Plan (Chemical Data Acquisition Plan)

(1) Quality Assurance Project Plan. The contractor shall prepare a Quality Assurance Project Plan (QAPP) in accordance with EPA QA/R-5 (latest draft or revision). The QAPP shall describe the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols that shall be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination

consistent with the levels for remedial action objectives identified in the National Contingency Plan. The QAPP developed for the RI/FS should be referenced or adapted whenever possible when preparing the QAPP for the RD.

(2) Field Sampling Plan. Prepare a Field Sampling Plan (FSP) that defines the sampling and data collection methods that shall be used for the project. The FSP shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and a breakdown of samples to be analyzed through the Contract Laboratory Program (CLP) and through other sources, as well as the justification for those decisions. The FSP shall consider the use of all existing data and shall justify the need for additional data whenever existing data will meet the same objective. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS must be referenced or adapted whenever possible when the FSP is prepared for the RD; the contractor shall document any required changes to the FSP in a memorandum to the WAM/RPM.

1. Depending on the complexity of the sampling effort needed to support the RD, the FSP and QAPP can be combined into a single Sampling and Analysis Plan (SAP).

2. Minimize the duplication of data collection by requiring the contractor to use existing data whenever practicable. Contractors tend to "mistrust" data collected by others regardless of the quality. Limiting date collection can shorten the design period.

3. Reduce time and costs by using an on-site laboratory to analyze routine samples rather than going through the CLP.

4. Identify whether audits will be performed and specify contractor response items.

(3) Data Management Plan

(4) Develop Other Plan(s)

.1.3 Project Management

.1.3.1 Prepare Periodic Status Reports. The contractor shall prepare Monthly Progress Reports.

(1) Document Cost and Performance Status. The contractor shall document the status of each task and report costs and level of effort (by P-level) expended to date.

(2) Prepare and Submit Invoices

.1.3.2 Meeting Participation and Routine Communications. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the WAM by telephone on a weekly basis to report project status.

.1.3.3 Perform Engineering Network Analysis

.1.3.4 Manage, Track, and Report Equipment Status. The contractor shall manage, track, and report the status of all site-specific equipment.

.1.3.5 Work Assignment Closeout

The RPM/WAM should specify the format for submissions (e.g., Monthly Progress Reports) if there are Region-specific requirements or other specific requirements.

.1.4 Subcontract Procurement and Support Activities

.1.4.1 Identification and Procurement of Subcontractors. Procure and administer the necessary subcontracts, including, but not limited to the following:

(1) Drilling Subcontractor

(2) Surveying Subcontractor

(3) Geophysical Subcontractor

(4) Site Preparation Subcontractor
(5) Analytical Services Subcontractor(s)
(6) Waste Disposal Subcontractor
(7) Treatability Subcontractor(s)
(8) Other(s)

.1.4.2 Establish and Carry Out a QA Program for Subcontracts

.1.4.3 Perform Subcontract Management

3.2 Community Relations

The contractor shall provide community relations support to EPA throughout the RD. The contractor shall provide community relations support in accordance with *Community Relations in Superfund: A Handbook*, June 1988. Community relations shall include the following subtasks:

Listed below are a number of possible community relations activities the RPM/WAM may require

.2.1 Develop Community Relations Plan (CRP)
The contractor shall develop an RI/FS CRP to address community relations requirements during the RD. This CRP may be modified from an existing CRP to meet site-specific requirements.

.2.1.1 Conduct Community Interviews

.2.1.2 Prepare the CRP
(1) Draft CRP
(2) Final CRP

.2.2 Prepare Fact Sheets
The contractor shall prepare a fact sheet that informs the public about activities related to the final design, a schedule for the RA, activities to be expected during construction, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during the RA.

.2.3 Public Hearing, Meetings, and Availability Support
The contractor shall support and assist in public hearings, meetings, and open houses. The contractor shall prepare presentation materials and provide support as needed for public meetings.

1. The number and location of anticipated public meetings should be identified in the SOW. 2. The RPM should specify the number of contractor personnel expected to attend the public meetings

.2.3.1 Technical Support. The contractor shall provide technical support for community relations. This support may include preparing technical input to news releases, briefing materials, and other community relations vehicles, and helping the WAM/RPM to coordinate with local agencies.

.2.3.2 Logistical and Presentation Support

.2.3.3 Public Notice Support

.2.4 Maintain Information Repository and Mailing Lists
The contractor shall develop or revise site mailing lists and maintain a repository of information on activities related to the site-specific remedial design as described in Appendix A.8, page A-19, of *Community Relations in Superfund: A Handbook*, June 1988.

The RPM/WAM should specify the format for Community Relations submissions (e.g., fact sheets, news releases) if there are Region-specific requirements or other specific requirements.

3.3 Data Acquisition

Data acquisition entails collecting environmental samples and information required to support the RD. The planning for this task is accomplished in Task 3.1, Project Planning and Support, which results in the plans required to collect the field data. Data acquisition starts with EPA's approval of the FSP and ends with the demobilization of field personnel and equipment from the site.

The contractor shall perform the following field activities or combination of activities for data acquisition in accordance with the EPA-approved FSP and QAPP developed in Task 3.1.

Before beginning field activities, consider specifying a kickoff meeting with all principal personnel to clarify objectives, communication channels, etc., to ensure the efficient use of available funds.

.3.1 Mobilization and Demobilization
Provide the necessary personnel, equipment, and materials for mobilization and demobilization to and from the site for the purpose of conducting the sampling program under subtask 3.3.2, Field Investigation.

.3.1.1 Identify Field Support Equipment, Supplies, and Facilities

.3.1.2 Mobilization. Mobilize and set up a field laboratory to facilitate rapid turnaround times for analytical results and identification of sample locations for subsequent sampling rounds.

(1) Site Preparation
  (a) Perform Demolition
  (b) Clearing and Grubbing
  (c) Perform Earthwork
    - Provide Borrow Pit
    - Construct Haul Roads
    - Construct Roads, Parking, Curbs, and Walks
    - Install Storm Drainage and Subdrainage
    - Install Fencing and Site Security

(2) Installation of Utilities
  (a) Install Electrical Distribution
  (b) Install Telephone and Communication System(s)
  (c) Install Water, Sewage, and Gas Distribution
  (d) Install Fuel Line Distribution

(3) Construction of Temporary Facilities
  (a) Construct Decontamination Facilities
  (b) Construct Sample and Derived Waste Storage Facility
  (c) Construct Field Offices
  (d) Construct Mobile Laboratory
  (e) Construct Other Temporary Facilities

.3.1.3 Demobilization. Demobilize the field laboratory.

(1) Removal of Temporary Facilities

(2) Site Restoration

.3.2 Field Investigation. Conduct environmental sampling to include the following:

.3.2.1 Perform Site Reconnaissance. The contractor shall conduct site surveys including property, boundary, utility rights-of-way, and topographic information. These surveys are to refine the survey data from the RI/FS and to ensure the accuracy of the information for the RD.

For items of this Model Statement of Work that are not needed for a given project, please retain the numbers for the items, but enter "Not Used" or "N/A" after the numbers of those items. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and RPM/WAM to develop estimated costs on a common basis.

(1) Ecological Resources Reconnaissance
  (a) Well Inventory
  (b) Residential Well Sampling
  (c) Land Survey
  (d) Topographic Mapping
  (e) Field Screening

.3.2.2 Conduct Geological Investigations (Soils and Sediments)
(1) Collect Surface Soil Samples
(2) Collect Subsurface Soil Samples
(3) Soil Boring and Permeability Sampling
(4) Collect Sediments Samples
(5) Survey Soil Gases
(6) Test Pit

.3.2.3 Conduct Air Investigations
(1) Sample Collection
(2) Air Monitoring Station

.3.2.4 Conduct Hydrogeological Investigations: Ground Water
(1) Install Well Systems
  (a) Accomplish Mobilization
  (b) Develop Wells
  (c) Conduct Downhole Geophysics
  (d) Install Monitoring Wells
  (e) Install Test Wells
  (f) Install Gas Wells
(2) Collect Samples
(3) Collect Samples During Drilling (e.g., HydroPunch or Equivalent)
(4) Conduct Tidal Influence Study
(5) Perform Hydraulic Tests (Pump Tests)
(6) Measure Ground-Water Elevation

.3.2.5 Conduct Hydrogeological Investigations: Surface Water
(1) Collect Samples
(2) Study Tidal Influence
(3) Measure Surface-Water Elevation

.3.2.6 Conduct Waste Investigation
(1) Collect Samples (Gas, Liquid, Solid)
(2) Dispose of Derived Waste (Gas, Liquid, Solid)

.3.2.7 Conduct Geophysical Investigation
(1) Surface Geophysical Activity [can just list these]
(2) Magnetometer
(3) Electromagnetics
(4) Ground-Penetrating Radar
(5) Seismic Refraction
(6) Resistivity
(7) Site Meteorology
(8) Cone Penetrometer Survey
(9) Remote Sensor Survey
(10) Radiological Investigation

.3.2.8 Conduct Ecological Investigation
(1) Wetland and Habitat Delineation
(2) Wildlife Observations
(3) Community Characterization
(4) Identification of Endangered Species
(5) Biota Sampling and Population Studies

.3.2.9 Collect Contaminated Building Samples.

.3.2.10 Dispose of Investigation-Derived Waste. Characterize and dispose of investigation-derived wastes in accordance with local, State, and Federal regulations as specified in the FSP (see the Fact Sheet, *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS (January 1992)).

1. The WAM/RPM must determine the types of sampling that will be needed and select from the list above.

2. The numbers of samples anticipated should be specified so that both the contractor and the WAM/RPM can develop the cost estimates.

3. The WAM/RPM should consult with the Technical Review Team to determine the types and numbers of samples to be collected. The numbers may be refined upon negotiation with the contractor.

4. The WAM/RPM should specify the expected written and/or photographic documentation to be recorded in the field.

5. The WAM/RPM should specify the type of field activity reports that are expected, the frequency, and required distribution (RPM, State representative, etc.).

3.4 Sample Analysis

The contractor shall arrange for the analysis of environmental samples collected during the previous task. The sample analysis task begins with reserving sample slots in the CLP and the completion of the field sampling program. This task ends with the contractor validating the analytical data received from the laboratory.

1. The RPM/WAM should consider adding a subtask for on-site laboratory analysis. The purpose of this new subtask would be to perform screening analyses only.

2. If special analytical services (SAS) are required, they must be specified in a subtask.

The contractor shall perform the following activities or combination of activities to analyze test results:

.4.1 Screening-Type Laboratory Sample Analysis
- .4.1.1 Analyze Air and Gas Samples
  - (1) Organic
  - (2) Inorganic
  - (3) Radiochemistry
- .4.1.2 Analyze Ground-Water Samples
  - (1) Organic
  - (2) Inorganic
  - (3) Radiochemistry
- .4.1.3 Analyze Surface-Water Samples
  - (1) Organic
  - (2) Inorganic
  - (3) Radiochemistry
- .4.1.4 Analyze Soil and Sediment Samples
  - (1) Organic
  - (2) Inorganic
  - (3) Radiochemistry
- .4.1.5 Analyze Waste (Gas) Samples
  - (1) Organic
  - (2) Inorganic

(3) Radiochemistry
.4.1.6 Analyze Waste (Liquid) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.1.7 Analyze Waste (Solid) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.1.8 Analyze Biota Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.1.9 Analyze Bioassay Samples
.4.1.10 Perform Bioaccumulation Studies
.4.2 CLP-Type Laboratory Sample Analysis
.4.2.1 Analyze Air and Gas Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.2 Analyze Ground-Water Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.3 Analyze Surface-Water Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.4 Analyze Soil and Sediment Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.5 Analyze Waste (Gas) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.6 Analyze Waste (Liquid) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.7 Analyze Waste (Solid) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.8 Analyze Biota Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry
.4.2.9 Analyze Bioassay Samples
.4.2.10 Perform Bioaccumulation Studies

3.5 Analytical Support and Data Validation

The contractor shall arrange for the validation of environmental samples collected during the previous task. The sample validation task begins with reserving sample slots in the CLP and the completion of the

field sampling program. This task ends with the contractor validating the analytical data received from the laboratory.

Perform appropriate data validation to ensure that the data are accurate and defensible.

1. For RD, full data validation procedures are usually not necessary. The WAM/RPM may want to specify the level of data validation required.

2. The WAM/RPM should specify the format for submissions if there are Region-specific requirements or if you have specific requirements.

The contractor shall perform the following activities or combination of activities to validate test results:

.5.1 Prepare and Ship Environmental Samples
- .5.1.1 Ground-Water Samples
- .5.1.2 Surface and Subsurface Soil Samples
- .5.1.3 Surface-Water and Sediment Samples
- .5.1.4 Air Samples
- .5.1.5 Biota Samples
- .5.1.6 Other Types of Media Sampling and Screening

.5.2 Coordinate with Appropriate Sample Management Personnel

.5.3 Implement EPA-Approved Laboratory QA Program.

.5.4 Provide Sample Management (Chain of Custody, Sample Retention, and Data Storage)
Ensure the proper management of samples. Ensure accurate chain-of-custody procedures for sample tracking, protective sample packing techniques, and proper sample-preservation techniques.

.5.5 Validate Data
- .5.5.1 Review Analysis Results Against Validation Criteria
- .5.5.2 Provide Written Documentation of Validation Efforts

The WAM/RPM should specify the format for submissions if there are Region-specific requirements or if the WAM/RPM has specific requirements.

3.6 Data Evaluation

The contractor shall organize and evaluate existing data and data gathered during the previous tasks that will be used later in the RD effort. Data evaluation begins with the receipt of analytical data from the data acquisition task and ends with the submittal of the Data Evaluation Summary Report. Specifically, the contractor shall perform the following activities or combination of activities during the data evaluation effort:

.6.1 Data Usability Evaluation and Field QA/QC

.6.2 Data Reduction, Tabulation, and Evaluation.
Evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables. Design and set up an appropriate database for pertinent information collected that will be used during the RD.
- .6.2.1 Evaluate Geological Data (Soils and Sediments)
- .6.2.2 Evaluate Air Data
- .6.2.3 Evaluate Hydrogeological Data: Ground Water
- .6.2.4 Evaluate Hydrogeological Data: Surface Water
- .6.2.5 Evaluate Waste Data
- .6.2.6 Evaluate Geophysical Data
- .6.2.7 Evaluate Ecological Data

.6.3 Modeling
- .6.3.1 Contaminant Fate and Transport

.6.3.2 Water Quality
.6.3.3 Ground Water
.6.3.4 Air
.6.3.5 Other Modeling

.6.4 Develop Data Evaluation Report. Evaluate and present results in a Data Evaluation Summary Report and submit to the WAM/RPM for review and approval. After the WAM/RPM's review, attend a meeting with EPA to discuss data evaluation results and next steps.

The WAM/RPM should specify the format for submissions if there are Region-specific requirements or if the WAM/RPM has specific requirements.

The WAM/RPM should specify that the contractor shall prepare and submit a Technical Memorandum to the WAM/RPM if new analytical data needs or significant data problems are identified during the evaluation.

3.7 Treatability Study and Pilot Testing

The purpose of the treatability study is to provide sizing and operations criteria that are used in design drawings and specifications and in the engineer's cost estimate to optimize the RD. The task begins with the preparation of a Treatability Study Work Plan that provides the technical specifics of the study and ends with the contractor's submittal of the Treatability Study Evaluation Report. In some instances, information on technology performance can be found in the current literature and should be reviewed before the Treatability Study is designed.

The three levels of treatability studies are laboratory screening, bench-scale testing, and pilot-scale testing. The laboratory screening is used to establish the validity of a technology to treat waste and is normally conducted during the FS. Bench-scale testing is used to identify the performance of the technology specific to a type of waste for an operable unit. Often bench-scale tests are conducted during the FS. Pilot-scale testing is used to provide quantitative performance, cost, and design information for remediation and is typically performed during RD (see the Fact Sheet, *Guide for Conducting Treatability Studies Under CERCLA*, November, 1993).

In accordance with the design management schedule established in the approved RD Work Plan, the contractor shall perform the following activities:

.7.1 Literature Search

.7.2 Develop Treatability and Pilot Work Plan

Prepare the Treatability Study Work plan and submit to the WAM/RPM for review and approval. The Treatability Study Work Plan shall describe the technology to be tested, test objectives, test equipment or systems, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety procedures, and residual waste management. The DQOs for the treatability study shall also be documented. The Treatability Study Work Plan shall also describe pilot plant installation and startup, pilot plant operation and maintenance procedures, and operating conditions to be tested.

If testing is to be performed off-site, permitting requirements shall be addressed. A schedule for performing the treatability study shall be included with specific dates for each task and subtask, including EPA review periods. Key milestones that should have completion dates specified included, but are not limited to, the procurement of contractors and the completion of sample collection, the performance period, sample analysis, and report preparation.

In the SOW, the WAM/RPM should be clear about the expected schedule, and specify deadlines for each activity to maintain the overall RD schedule. When reviewing the contractor's Work Plan, check to see that the schedule in the Treatability Study Work Plan is consistent with the schedule in the RD Work Plan.

The Treatability Study Work Plan shall describe in detail the treatment process and how the proposed vendor or technology will meet the performance standards for the site. The Treatability Study Work Plan shall address how the contractor will meet all discharge or disposal requirements for any and all treated material, air, water, and expected effluents. Additionally, the Work Plan shall explain the proposed final treatment and disposal of all material generated by the proposed treatment system.

1. List the treatment train and components of the system if possible.

2. Where do treated water and residuals go?

3. Will there be discharges to air? Is an air pathway analysis needed to ensure the protection of workers and the public?

4. Does the contractor need to consider land disposal restrictions?

5. Consider having a contingency plan in case problems develop.

Conduct the Treatability Studies, as necessary, to determine whether the remediation technology or vendor of the technology can achieve the performance standards. Treatability studies shall be conducted as described in the EPA-approved Final Treatability Study Work Plan.
The following activities may be required during the performance of the treatability study and pilot testing:

.7.3 Bench Test

- .7.3.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
- .7.3.2 Provide Vendor and Analytical Service
- .7.3.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.
- .7.3.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.
- .7.3.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.
- .7.3.6 Characterize and Dispose of Residuals

.7.4 Pilot-Scale Test

- .7.4.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
- .7.4.2 Provide Vendor and Analytical Service
- .7.4.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.
- .7.4.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.
- .7.4.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.
- .7.4.6 Characterize and Dispose of Residuals

.7.5 Field Test

- .7.5.1 Procure Test Facility and Equipment. The contractor shall procure test facility and equipment, including the procurement procedures necessary to acquire the vendor, equipment, or facility to execute the tests.
- .7.5.2 Provide Vendor and Analytical Service

.7.5.3 Test and Operate Equipment. The contractor shall test equipment to ensure operation, then start up and operate equipment.

.7.5.4 Retrieve Sample for Testing. The contractor shall obtain samples for testing as specified in the Treatability Work Plan.

.7.5.5 Perform Laboratory Analysis. The contractor shall establish a field laboratory to facilitate fast-turnaround analysis of test samples, or, if necessary, shall procure outside laboratory services to analyze the test samples and evaluate test results.

.7.5.6 Characterize and Dispose of Residuals

.7.6 Develop Treatability Study Report.

_____ days after completion of the Treatability Study, the contractor shall prepare and submit the Treatability Study Evaluation Report that describes the performance of the technology. The study results shall clearly indicate the performance of the technology or vendor compared with the performance standards established for the site. The report shall also evaluate the treatment technology's effectiveness, implementability, cost, and final results compared with the predicted results. The report shall also evaluate full-scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

Specify the format for submissions if there are Region-specific requirements or if there are other specific requirements.

Consider holding a project review meeting with the Technical Review Committee and other team members after completing the above task to present treatability study results and to summarize the RD status.

3.8 Preliminary Design

Preliminary Design begins with the initial design and ends with the completion of approximately 30 percent of the design effort. At this stage, the contractor shall have field-verified the existing conditions of the site, as necessary. The contractor shall provide supporting data and documentation with the design documents defining the functional aspects of the project to prove that the completed project will be effective in meeting the remediation goals and applicable or relevant and appropriate requirements (ARARs). For projects where the U.S. Army Corps of Engineers (USACE) is responsible for RA performance, the contractor shall prepare design submittals to conform to the format prescribed in *Technical Requirements for Pre-Design and Design Submittals*, USACE, ETL 1006. In accordance with the schedule established in the RD Work Plan, the contractor shall submit to EPA the Preliminary Design, which shall consist of the following subtasks:

Depending on the RA complexity, the WAM/RPM may require design submittals at 30 percent and again at 95 to 100 percent, eliminating the intermediate design submittal at 60 percent design completion.

.8.1 Preliminary Design

The contractor shall prepare a Design Criteria Report that defines in detail the technical parameters upon which the design will be based. Specifically, the Design Criteria Report shall include the preliminary design assumptions and parameters, including (1) waste characterization; (2) pretreating requirements; (3) volume and types of each medium requiring treatment; (4) treatment schemes (including all media and byproducts), rates, and required qualities of waste streams (i.e., input and output rates, influent and effluent qualities, potential air emissions, and so forth); (5) performance standards; (6) long-term performance monitoring and operations and maintenance (O&M) requirements; (7) compliance with all ARARs, pertinent codes, and standards; (8) technical factors of importance to the design and construction including use of currently accepted environmental control measures, constructability of the design, and use of currently acceptable construction

practices and techniques. In addition to a Design Criteria Report, the contractor shall do the following:

It is recommended that a Design Criteria Report be submitted at approximately 10 percent completion.

.8.1.1 Recommend Project Delivery Strategy and Scheduling. The schedule shall include an evaluation of a phased approach to expedite the RA.

.8.1.2 Prepare Preliminary Construction Schedule. A preliminary RA schedule appropriate to the size and complexity of the project shall be included in the plans and specifications.

.8.1.3 Prepare Specifications Outline. The general specifications outline shall include all specification sections to be used. Format and organization shall be as described in Chapter 10 of the *Architect Engineer Manual*, USACE, AEIM-14, Omaha District, July 1989, which incorporates the Construction Specification Institute (CSI) format. USACE also developed standardized specifications for RDs that should be used whenever possible. Ms. Tommian McDaniel at EPA Headquarters (Tel. 202-761-4363) may be contacted for more information.

The need for performance specifications in lieu of a detailed design is determined under this subtask.

.8.1.4 Prepare Preliminary Drawings. The drawings and schematics shall reflect organization and clarity. This submittal should include (1) an outline or listing of proposed drawings and schematics; (2) facility representations including a revised process flow diagram and a preliminary piping and instrumentation diagram; (3) a general arrangement diagram; and (4) site drawings. Engineering drawings shall be submitted in full size and half size reproductions. Standard formats for use in preparing design drawings shall be those described in the *USACE Architect Engineer Manual.*

The character of the drawings and schematics will vary according to the remedy. Formatting requirements for the drawings should be specified in this subtask.

.8.1.5 Prepare Basis of Design Report. The contractor shall submit a detailed description of the evaluations conducted to select the design approach as part of the Basis of Design Report. This report shall include a Summary and Detailed Justification of Assumptions. This summary shall include (1) calculations supporting the assumptions; (2) a draft process flow diagram; (3) a detailed evaluation of how all ARARs will be met; (4) a plan for minimizing environmental and public impacts; and (5) a plan for satisfying permitting requirements.

.8.1.6 Prepare Preliminary Cost Estimate. The preliminary RA cost estimate shall be a preliminary evaluation of the costs of all the elements of the RA. The estimate should be accurate within plus _____ percent and minus _____ percent and be prepared by using the M-CACES Gold cost estimating system for remedial action. Results of the value engineering (VE) screening are presented as part of the RA cost estimate. (See subtask 3.8.4.)

1. In the subtask above, use plus 40 percent and minus 20 percent for simple projects; plus 50 percent and minus 30 percent for complex projects.

2. M-CACES Gold Estimating System is the computer software currently used for estimating construction costs by the U.S. Army of Corps of Engineers (USACE) for its RA projects and will facilitate its review of the cost estimate. The use of this system is required under Response Action Contracts (RACs) but is optional under ARCS contracts.

.8.2 Describe Variances with the ROD
If the contractor finds that the RA being designed differs from the ROD or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memorandum to the WAM/RPM.

.8.3 Land Acquisition and Easement Requirements
The need for land acquisition for access and easement requirements shall be identified and submitted as part of the Basis of Design Report.

.8.3.1 Identify Need and Locations

.8.3.2 Provide Technical Support for Land Acquisition Efforts

.8.4 Conduct and/or Assist in Value Engineering Screening
The VE screening shall include an evaluation of cost and function relationships, concentrating on high-cost areas. The VE screening shall be performed by an independent Value Engineering group that is not otherwise participating in the RD. The outcome of the screening shall be a recommendation for or against a full-scale VE study (a subtask performed during intermediate design) based on the potential for cost savings as a result of design changes. [Value Engineering Fact Sheet, May 1990.]

.8.5 Respond to Design Review Comments
The contractor shall consolidate and respond to design review comments. A written response to each comment shall be provided. The response shall indicate whether the contractor has decided to implement a design change as a result of the comment, and how the change will impact the selected remedy, RD/RA costs, and/or schedule. A summary of the responses to comments shall be submitted to the WAM prior to initiation of Intermediate Design. The design changes shall be incorporated under Intermediate Design (Task 3.10).

.8.6 Participate in Preliminary Design Review or Briefing
The contractor shall participate in design review meetings to be held at Region _____ offices.

The WAM/RPM should specify the format for submissions if there are Region-specific requirements or other specific requirements.

The contractor shall implement QC procedures to ensure the quality of all reports and submittals to EPA. These procedures shall include, but are not limited to, internal technical and editorial review; the independent verification of all calculations used in the design; and the documentation of all reviews, the problems identified, and corrective actions taken.

[NOTE: ITEMS 3.8.2 THROUGH 3.8.6, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

3.9 Equipment, Services, and Utilities

This task includes all efforts necessary to procure long-lead equipment and/or services.

.9.1 Identify Long-Lead Equipment Services and/or Utilities
The contractor shall prepare a list of any elements or components of the facility that will require custom fabrication or long lead time for procurement. The list shall also state the basis for such need, and list the recognized sources of such procurement.

This task does not include contract award. Contract award should normally be conducted as part of a separate RA work assignment.

.9.2 Procure Long-Lead Equipment Services and/or Utilities
The contractor shall prepare necessary plans and specifications, advertise for, and evaluate bids for equipment and services.

3.10 Intermediate Design

The intermediate design begins at the completion of the preliminary design phase and ends with the completion of approximately 60 percent of the total design effort. The contractor shall submit to EPA the Intermediate Design submittal which shall consist of a continuation and expansion of the Preliminary Design submittal. Review comments on the Preliminary Design shall be reflected in the Intermediate Design. A Value Engineering Study shall be performed based on approved recommendations from the VE screening submitted with the preliminary design. The Intermediate Design documents shall be submitted in accordance with the approved design management schedule and shall consist of the following subtasks:

.10.1 Update Construction Schedule
The schedule for implementation of the RA shall identify the timing for initiation and completion of all critical path tasks. The schedule shall specifically identify duration for completion of the project and major milestones.

.10.2 Prepare Intermediate Specifications
Plans and specifications shall conform to acceptable standards and shall be formatted in accordance with CSI requirements. Plans and specifications shall include preliminary specifications for construction, installation, site preparation, and field work standards, including an equipment startup and operator training plan. A table of contents for the general specifications shall be provided with this submittal. All specifications shall conform to CSI format.

.10.3 Prepare Intermediate Drawings
The contractor shall submit an outline or listing of drawings: facility representations containing a process flow diagram, a piping and instrumentation diagram, and a control logic table; and continuation and expansion of drawings submitted with the Preliminary Plans and Specifications. Include engineering drawings for grading/paving, foundation, and electrical, structural, and mechanical elements, etc.

.10.4 Prepare and Submit Revised Basis of Design Report
The contractor shall submit a revised summary of the evaluations conducted to select the design approach as part of the revised Basis of Design Report. The report shall include the following components:

- Summary and Detailed Justification of Assumptions. This summary shall include: (1) design calculations supporting the assumptions; (2) a revised process flow diagram; (3) a detailed evaluation of how ARARs will be met; (4) a plan for minimization of environmental and public impacts; and (5) heat and mass balances.
- Recommended RA Contracting Strategy. The contractor shall address the management approach for procuring the RA contractor, including procurement methods, phasing alternatives, and contractor and equipment availability concerns.
- Plan for Satisfying Permitting Requirements. EPA comments shall be incorporated into an updated Permits Plan.
- Identification of Easement and Access Requirements. The need for land acquisitions for access and easement requirements shall be identified and submitted as part of the Intermediate Design.

Identification of the projected O&M requirements and development of an estimate of annual O&M costs.

.10.5 Prepare Revised RA Cost Estimate
This revised estimate of the RA shall be developed using flow sheets, layouts, and equipment details. The estimate shall be accurate within plus ___ percent and minus___ percent and be prepared using the M-CACES Gold Cost Estimating System for Remedial Action.

1. In the subtask above, use plus 30 percent and minus 15 percent for simple projects; plus 40 percent and minus 20 percent for complex projects.

2. Use of M-CACES Gold Estimating System computer software for the cost estimate is required for EPA RD work assignments under RACs and is recommended for ARCS. This system is used by USACE for construction cost estimating and will enable contractor-prepared construction estimates to be reviewed more readily for accuracy.

.10.6 Participate in Intermediate Design Review or Briefing

The contractor shall participate in a variety of design review activities, including design review meetings to be held at Region ___. The contractor shall also perform and submit a report describing the results of the following design reviews:

.10.6.1 Initial Constructability Review. The contractor shall review and provide written comments for the Initial Constructability Review. The constructability review shall be conducted to evaluate the suitability of the proposed project and its components in relation to the project size.

.10.6.2 Initial Biddability Review. The contractor shall review and provide written comments for the initial biddability review.

.10.6.3 Initial Operability Review. The contractor shall review and provide written comments for the Initial Operability Review. The operability review shall assure that the completed project will conform to applicable performance and operations requirements.

.10.6.4 Initial Environmental Review. The contractor shall review and provide written comments for the Initial Environmental Review.

.10.6.5 Initial Claims Prevention Screening. The contractor shall review and provide written comments for the Initial Claims Prevention Screening. The claims prevention review is to be conducted to eliminate conflicts, inconsistencies, ambiguities, errors, omissions, or other identifiable problems in the plans, specifications, and contract documents that are subject to change orders and contractor claims.

.10.7 Perform VE Study and Report Recommendations

The VE Study shall be conducted and the Report prepared by an independent Value Engineering group that is not otherwise participating in the RD (as in subtask 3.8.4).

.10.8 Describe Variances with the ROD

If the contractor finds that the remedial action being designed differs from the ROD, or that an ARAR cannot be met, the contractor shall describe the issue and recommend technical solutions in a memorandum to the WAM/RPM.

.10.9 Respond to Design Review Comments

A written response to each comment shall be provided. The response shall indicate whether the contractor has decided to implement a design change as a result of the summary of the responses to comments shall be submitted to the WAM prior to initiation of Intermediate Design. The design changes shall be incorporated under Intermediate Design (Task 3.10).

[NOTE: ITEMS 3.10.6 THROUGH 3.10.9 ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

3.11 Prefinal and Final Design

The contractor shall submit the Prefinal Design according to the design management schedule. The Prefinal Design shall function as the draft version of the Final Design. The Prefinal Design shall address comments generated from the Intermediate Design Review and clearly show any modifications of the design as a result of incorporation of the comments. After EPA review and comment on the Prefinal Design, the Final Design shall be submitted. All Final Design documents shall be approved by a Professional Engineer registered in _____ (state where site is located). EPA approval of the Final Design is required before initiating the RA, unless specifically authorized by EPA.

.11.1 Prepare Prefinal Design Specifications

A complete set of construction drawings and specifications (general specifications, drawings, and schematics) shall be submitted at the prefinal stage. All specifications shall conform to CSI format. Value engineering report recommendations (submitted with the intermediate design) that have been approved by EPA shall be incorporated into the prefinal design drawings and specifications. The final design plans and specifications must be consistent with the technical requirements of all ARARs. Any off-site disposal shall be in compliance with the policies stated in the Procedure for Planning and Implementing Off-Site Response Actions (*Federal Register*, Volume 50, Number 214, November 1985 pages 45933–45937) and other applicable guidance.

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the contractor shall coordinate and cross-check the specifications and drawings; and complete the proofing of the edited specifications and the cross-checking of all drawings and specifications.

.11.2 Prepare Prefinal Drawings

The final submittals shall include a complete set of construction drawings and specifications as well as a set of one-half size reductions of drawings. All specifications shall conform to CSI format.

.11.3 Prepare Final Basis of Design Report that incorporate any changes since the intermediate design submittal.

.11.4 Prepare Revised RA Cost Estimate

The contractor shall prepare a definitive cost estimate of the offers to be received for RA for each work item from definitive engineering data, within an accuracy of plus 15 percent to minus 5 percent. The definitive cost estimate should be accompanied by a range estimate and analysis of the project's potential scope, cost, and schedule change during RA, broken down by work activity. One copy of the quantity takeoff sheets, including the appropriate items, shall be included with each estimate submitted. All work items shall be broken down into labor, materials, and equipment. The contractor shall provide the basis for development of all unit prices used in the estimate. Unit prices, overhead, profit, and other categories shall be shown as separate items. The final estimate will be based on the advertised plans and specifications including amendments. It should reflect current prices for labor, materials, and equipment. The estimate shall separately identify contingencies within the defined project scope. The contractor shall prepare the RA cost estimates by using the M-CACES Gold Estimating System.

The use of M-CACES Gold Estimating System for the cost estimate is required for RD work assignments under RACs and is recommended under ARCS.

.11.5 Prepare 100-Percent Design Submittal

.11.6 Participate in Prefinal/Final Design Review

The contractor shall participate in a Prefinal Design review meeting. The meeting shall be held at Region ___ headquarters. The contractor shall also consolidate and respond to Intermediate and Prefinal Design review comments. A written response for each comment shall be provided before incorporating the changes into the design. The changes shall be incorporated as part of the 100-Percent Design submittal.

.11.7 Prepare Subcontract Award Documents

The contractor shall prepare complete contract documents, including (1) complete RA SOW including, wherever appropriate, drawings and specifications, complete cost proposal, and the required schedule; (2) terms and conditions of the contract including payments, delivery schedule, point of delivery, and acceptance criteria; (3) method of procurement including evaluation, basis, and method of awarding contract; (4) criteria to be employed in evaluating bids and offers; (5) prevailing wage determinations (DBA); (6) deadline and location for submitting bids and offers, if applicable; and (7) appropriate contract clauses.

.11.8 Perform Biddability, Operability, and Constructability Reviews

The contractor shall conduct final constructability, biddability, operability, environmental, and claims prevention reviews and document results.

.11.9 Prepare Revised Project Delivery Strategy

.11.10 Document VE Modifications

.11.11 Draft Operations and Maintenance (O&M) Manual

The manual should include the following:

.11.11.1 An operations and maintenance plan that includes a description of normal operation and maintenance including start-up procedures, tasks for operation, tasks for maintenance, prescribed treatment or operation conditions, and schedule for each O&M task

.11.11.2 A description of potential operating problems including common and/or anticipated remedies and useful-life analysis of significant components and replacement costs

.11.11.3 Quality Assurance Plan for O&M including a description of routine monitoring tasks, description of required laboratory tests and their interpretation, required data collection, and location of monitoring points comprising the points of compliance monitoring

.11.11.4 Alternate procedures to prevent releases or threatened releases of hazardous substances, pollutants, or contaminants, which may endanger health and the environment or cause an exceedance of any cleanup standard

.11.11.5 Corrective action to be implemented in the event that cleanup standards for ground water, surface water discharges, and air emissions are exceeded and a schedule for implementing these corrective actions

.11.11.6 Safety Plan for O&M including a description of precautions and necessary equipment for site personnel, safety tasks required in event of systems failure, and safety tasks necessary to address protection of nearby residents.

.11.11.7 Description of equipment including the equipment identification numbers, installation of monitoring components, maintenance of site equipment, and replacement schedule for equipment and installed components

[NOTE: ITEMS 11.6 THROUGH 11.10, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS.]

.11.11.8 Records and reporting mechanisms required including daily operating logs, laboratory records, records for operating costs, mechanism for reporting emergencies, personnel and maintenance records, and reports to U.S. EPA, its designates, and the State.

If RA does not require O&M, delete the text and insert "not used" or "N/A" after line item 3.11.11.

.11.12 Construction Quality Assurance Plan

The contractor shall submit as part of the Prefinal Design a draft Construction Quality Assurance (CQA) Plan. The CQA Plan shall be prepared in accordance with "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA, October, 1986). The CQA Plan shall then be finalized and submitted with the Final Design. At a minimum, the draft QA Plan shall provide requirements for the following elements:

.11.12.1 Responsibility and authority of all organization and key personnel involved in the remediation action construction

.11.12.2 CQA Personnel Qualifications. The contractor shall establish the minimum qualifications of the CQA Officer and supporting inspection personnel.

.11.12.3 Inspection Activities. The contractor shall establish the observations and tests that will be required to monitor the construction and/or installation of the components of the Remedial Action(s). The plan shall include the scope and frequency of each type of inspection to be conducted. Inspections shall be required to verify compliance with environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. Inspections shall also ensure compliance with all health and safety procedures.

.11.12.4 Sampling requirements. The contractor shall establish the requirements for sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection, and plans for correcting problems as addressed in the project specifications.

.11.12.5 Documentation. The contractor shall describe the reporting requirements for CQA activities. This shall include such items as daily summary reports and inspection data sheets.

3.12 Postremedial Design Support

This task consists of support required to prepare contract bidding documents and issue the Invitation for Bids or the Request for Proposals. The task starts with EPA's approval of contract documents developed under Task 11 and ends with the submittal of construction contractors' bids. The contractor shall perform the following postremedial design activities:

.12.1 Prebid (Presolicitation) Activities

.12.1.1 Printing and Distribution of Contract Documents. Print and distribute to prospective bidders the contract documents that were finalized in Task 11.

.12.1.2 Advertising and Soliciting of Bids. Advertise and solicit bids for construction services. An advertisement shall be prepared and published in

_____.

(1) Prebid (Presolicitation) Meetings. The contractor shall arrange and attend prebid meetings to provide clarification on plans, specifications, and contract documents to all bidders.

(2) Resolution of Inquiries and/or Issuing Addenda. The contractor shall resolve bidder inquires and document all contact with potential bidders, and issue amendments to contract documents if additional information becomes available that all bidders should be made aware of after solicitation.

(3) On-Site Visits. The contractor shall participate in on-site visits that may be required to further clarify the services required.

.12.2 Preaward Activities

.12.2.1 Receipt of Bids (Offers)

(1) Determination of Responsive, Responsible Bidders (Offerors)

(2) Perform Reference Checks

(3) Prepare Bid (Offer) Tabulation

(4) Perform Bid (Offer) Analysis

.12.2.2 Receipt and review of Followup Items from Lowest Responsible Bidder (Offeror)

.12.2.3 Review of EEO and MBE Requirements and SDB Subcontracting Plans

.12.3 Update Site-Specific Plans

.12.3.1 Modify Site Management Plan (if necessary)

.12.3.2 Modify Sampling and Analysis Plan (if necessary)

.12.3.3 Modify Health and Safety Plan (if necessary)

.12.3.4 Modify Community Relations Plan (if necessary)

In some cases, it may be advisable to use this task to initiate the procurement process, although these services can be procured as part of the RA work assignment.

3.13 Work Assignment Closeout

.13.1 Return Documents to Government
.13.2 Duplicate, Distribute, and Store Files
.13.3 Archive Files
.13.4 Prepare Microfiche, Microfilm, and Optical Disk
.13.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and Level of Effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

Attachment 1
Summary of Major Submittals for the Remedial Design at _____(Site)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
3.1.1.2	Site Visit Report		3	10 days after site visit	7 days after receipt of report
3.1.1.4	RD Work Plan		3	30 days after initiation of work assignment (WA)	21 days after receipt of Work Plan
3.1.1.4	Final RD Work Plan		3	15 days after receipt of EPA comments	NA
3.1.2.1	Draft Site Management Plan (SMP)		3	(#) days after approval of RD Work Plan	10 days after receipt of SMP
3.1.2.1	Final SMP		3	(#) days after receipt of EPA comments	NA
3.1.2.3(1)	Draft QAPP	21 8	3	30 days after initiation of WA	21 days after receipt of QAPP
3.1.2.3(2)	Draft FSP	5	3	30 days after initiation of WA	21 days after receipt of FSP
3.1.2.2	Draft HASP	36 19	3	30 days after initiation of WA	21 days after receipt of HASP
3.1.2.3(2)	Final QAPP	21 8	3	15 days after receipt of EPA comments	NA
3.1.2.3(1)	Final FSP	5	3	15 days after receipt of EPA comments	NA
3.1.2.2	Final HASP	36 19	3	15 days after receipt of EPA comments	NA
3.2.1	Draft Revised CRP	4	3	(#) days after initiation of WA	14 days after receipt of revised CRP
3.2.1	Final Revised CRP	4	3	(#) days after receipt of EPA comments	NA

Attachment 1
Summary of Major Submittals for the Remedial Design at _____(Site) (continued)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
3.2.2	Fact Sheets		3	As needed	10 days after receipt of fact sheet
3.6.4	Data Evaluation Summary Report		3	10 days after receipt of analytical results from laboratory	15 days after receipt of report
3.7.2	Treatability Study Work Plan	16 41 (FS)	3	45 days after RD Work Plan approved	21 days after receipt of Treatability Study Work Plan
3.7.2	Final Treatability Study Work Plan	16 41 (FS)	3	15 days after receipt of EPA comments	NA
3.7.6	Treatability Study Evaluation Report	16 42 (FS)	3	30 days after completion of Treatability Study	21 days after receipt of report
3.7.6	Final Treatability Study Evaluation Report	16 41 (FS)	3	15 days after receipt of EPA comments	NA
3.8.1	Design Criteria Report		3	45 days after RD Work Plan approved	21 days after receipt of report
3.8.1.5	Basis of Design Report		3	45 days after RD Work plan approved	21 days after receipt of report
3.8.1.5	Basis of Design Report (Revision)		3	Revised and distributed as necessary (dynamic document)	15 days after receipt of report
3.8.1	Preliminary Plans and Specifications**		3	60 days after RD Work Plan approved	30 days after receipt of plans & specs
3.8.4	VE Screening Report		3	(#) days after RD Work Plan approved	21 days after receipt of report

Attachment 1
Summary of Major Submittals for the Remedial Design at _____(Site) (continued)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
3.8.5	Response to Design Review Comments		3	(#) days after design review meeting	15 days after receipt of response
3.9.1	List of Long-Lead Procurement Items		3	(#) days after Preliminary Design approved	10 days after receipt of list
3.9.2	Plans and Specifications for Procurement of Long-Lead Procurement Items		3	(#) days after receipt of EPA comments on the Long-Lead Procurement Item List	15 days after receipt of plans & specs
3.10	Intermediate Plans and Specifications†		3	30 days after Preliminary Design approved	21 days after receipt of int. plans & specs
3.10.7	Value Engineering Report		3	(#) days after initiation of VE Study	21 days after receipt of report
3.10.9	Response to Design Review comments		3	(#) days after Intermediate Design Review Meeting	15 days after receipt of response
3.11	Prefinal Plans and Specifications††		3	(#) days after Intermediate Design approved	21 days after receipt of plans & specs
3.11.5	100-Percent Design		3	(#) days after prefinal design comments received	NA
3.11.6	Response to Prefinal Design review comments		3	(#) days after design review meeting	15 days after receipt of response
3.11.7	Draft RA contract documents		3	(#) days after Final Design approved	21 days after receipt of RA documents
3.11.7	Final RA contract documents		3	(#) days after receipt of EPA comments on Draft RA contract documents	NA

*See Attachment 3 for list of references.

**Preliminary Plans and Specifications Submittal Items:

Attachment 1
Summary of Major Submittals for the Remedial Design at _____(Site) (continued)

3.8.1.1 Project Delivery Strategy and Scheduling
3.8.1.2 Preliminary RA Schedule
3.8.1.3 Specifications Outline
3.8.1.4 Preliminary Drawings and Schematics
3.8.1.5 Basis of Design Report
3.8.1.6 Preliminary RA Cost Estimate
3.8.2 Variances from the ROD

†Intermediate Plans and Specifications Submittal Items:
3.10.1 Update Construction Schedule
3.10.2 Intermediate Specifications
3.10.3 Intermediate Drawings and Schematics
3.10.4 Revised Basis of Design Report
3.10.5 RA Cost Estimate
3.10.8 Variances from the ROD

††Prefinal Plans and Specifications Submittal Items:
3.11.1 Prefinal Drawings and Specifications
3.11.2 Prefinal Drawing Reductions
3.11.3 Final Basis of Design Report
3.11.4 Revised RA Cost Estimate
3.11.7 Subcontract Award Documents
3.11.8 Biddability, Operability, and Constructability Reviews Reports
3.11.9 Revised Project Delivery Strategy and Schedule
3.11.10 Document VE Modifications
3.11.11 Draft Operations and Maintenance (O&M) Manual
3.11.12 Construction Quality Assurance Plan

Attachment 2
Work Breakdown Structure (WBS) for Remedial Design (RD)

3.0 Remedial Design
- .01 Project Planning and Support
  - .01 Project Planning
    - .01 Attend Scoping Meeting
    - .02 Conduct Site Visit
    - .03 Evaluate Existing Information
    - .04 Work Plan Development
      - .01 Draft Work Plan Development
        - .01 Develop Narrative
        - .02 Develop Cost Estimate
        - .03 Internal QA & Submission
      - .02 Final Work Plan Preparation
        - .01 Attend Negotiation Meeting
        - .02 Modify Draft Work Plan/Cost Estimate
        - .03 Internal QA & Submission
  - .02 Preparation of Site-Specific Plans
    - .01 Develop Site Management Plan
      - .01 Develop Pollution Control & Mitigation Plan
      - .02 Transportation & Disposal Plan (Waste Management Plan)
    - .02 Develop Health & Safety Plan
    - .03 Sampling & Analysis Plan (Chemical Data Acquisition Plan)
      - .01 Quality Assurance Project Plan
      - .02 Field Sampling Plan
      - .03 Data Management Plan
    - .04 Other Plan(s)
  - .03 Project Management
    - .01 Prepare Periodic Status Reports
      - .01 Document Cost and Performance Status
      - .02 Prepare/Submit Invoices
    - .02 Meeting Participation/Routine Communications
    - .03 Perform Engineering Network Analysis
    - .04 Manage, Track, and Report Equipment Status
    - .05 Work Assignment Closeout
  - .04 Subcontract Procurement/Support Activities
    - .01 ID and Procurement of Subcontractors
      - .01 Drilling Subcontractor
      - .02 Surveying Subcontractor
      - .03 Geophysical Subcontractor
      - .04 Site Preparation Subcontractor
      - .05 Analytical Services Subcontractor(s)
      - .06 Waste Disposal Subcontractor
      - .07 Treatability Subcontractor
      - .08 Other(s)
    - .02 Establish and Carry Out a QA Program
    - .03 Perform Subcontract Management
- .02 Community Relations
  - .01 Community Relations Plan (CRP) Development
    - .01 Conduct Community Interviews
    - .02 Prepare CRP
      - .01 Draft CRP
      - .02 Final CRP
  - .02 Prepare Fact Sheets
  - .03 Public Hearing, Meetings, & Availability Support
    - .01 Technical Support
    - .02 Logistical & Presentation Support
    - .03 Public Notice Support (writing, or placement of)

.04 Maintain Information Repository/Mailing List
.03 Data Acquisition
.01 Mobilization/Demobilization
.01 ID field support equipment/supplies/facilities
.02 Mobilization
.01 Site Preparation
.01 Perform Demolition
.02 Clearing and Grubbing
.03 Perform Earthwork
.01 Provide Borrow Pit
.02 Construct Haul Roads
.04 Construct Roads/Parking/Curbs/Walks
.05 Install Storm Drainage/Subdrainage
.06 Install Fencing/Site Security
.02 Installation of Utilities
.01 Install Electrical Distribution
.02 Install Telephone/Communication System(s)
.03 Install Water/Sewer/Gas Distribution
.04 Install Fuel Line Distribution
.03 Construction of Temporary Facilities
.01 Construct Decontamination Facilities
.02 Construct Sample/Derived Waste Storage Facility
.03 Construct Field Offices
.04 Construct Mobile Laboratory
.05 Construct Other Temporary Facilities
.03 Demobilization
.01 Removal of Temporary Facilities
.02 Site Restoration
.02 Field Investigation
.01 Perform Site Reconnaissance
.01 Ecological Resources Reconnaissance
.02 Well Inventory
.03 Residential Well Sampling
.04 Land Survey
.05 Topographic Mapping
.06 Field Screening
.02 Conduct Geological Investigations (Soils/Sediments)
.01 Surface Soil Sample Collection
.02 Subsurface Soil Sample Collection
.03 Soil Boring/Permeability Sampling
.04 Sediments Sample Collection
.05 Soil Gas Survey
.06 Test Pit
.03 Conduct Air Investigations
.01 Sample Collection
.02 Air Monitoring Station
.04 Conduct Hydrogeological Investigations—Ground Water
.01 Well Systems Installation
.01 Accomplish Mobilization
.02 Perform Well Development
.03 Conduct Downhole Geophysics
.04 Install Monitoring Wells
.05 Install Test Wells
.06 Install Gas Wells
.02 Collect Samples
.03 Hydro Punch
.04 Conduct Tidal Influence Study
.05 Conduct Hydraulic Tests (Pump Tests)
.06 Perform Ground-Water Elevation Measurement
.05 Conduct Hydrogeological Investigations—Surface Water

.01 Collect Samples
.02 Conduct Tidal Influence Study
.03 Perform Surface Water Elevation Measurement
.06 Conduct Waste Investigation
.01 Collect Samples (Gas, Liquid, Solid)
.02 Derived Waste Disposal (Gas, Liquid, Solid)
.07 Conduct Geophysical Investigation
.01 Surface Geophysical Activity
.02 Magnetometer
.03 Electromagnetics
.04 Ground Penetrating Radar
.05 Seismic Refraction
.06 Resistivity
.07 Site Meteorology
.08 Cone Penetrometer Survey
.09 Remote Sensor Survey
.10 Radiological Investigation
.08 Conduct Ecological Investigation
.01 Wetland and Habitat Delineation
.02 Wildlife Observations
.03 Community Characterization
.04 Identification of Endangered Species
.05 Biota Sampling/Population Studies
.09 Collect Contaminated Building Samples
.10 Disposal of Investigation-Derived Waste
.04 Sample Analysis
.01 Screening-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Ground-Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples

.10 Perform Bioaccumulation Studies
.02 CLP-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Ground-Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies
.05 Analytical Support and Data Validation
.01 Prepare and Ship Environmental Samples
.01 Ground-Water Samples
.02 Surface and Subsurface Soil Samples
.03 Surface Water & Sediment Samples
.04 Air Samples
.05 Biota Samples
.06 Other types of media sampling and screening
.02 Coordinate with appropriate Sample Management personnel
.03 Implement EPA-approved Laboratory QA program
.04 Provide Sample Management (Chain of Custody, sample retention, & data storage)
.05 Perform Data Validation
.01 Review analysis results against validation criteria
.02 Provide written documentation of validation efforts
.06 Data Evaluation
.01 Data Useability Evaluation/Field QA/QC
.02 Data Reduction, Tabulation and Evaluation
.01 Evaluate Geological Data (Soils/Sediments)
.02 Evaluate Air Data
.03 Evaluate Hydrogeological Data—Ground Water
.04 Evaluate Hydrogeological Data—Surface Water
.05 Evaluate Waste Data
.06 Evaluate Geophysical Data
.07 Evaluate Ecological Data

.03 Modeling
.01 Contaminant Fate and Transport
.02 Water Quality
.03 Ground Water
.04 Air
.05 Other Modeling
.04 Develop Data Evaluation Report
.07 Treatability Study/Pilot Testing
.01 Literature Search
.02 Develop Treatability/Pilot Work Plan
.03 Bench Test
.01 Procure Test Facility and Equipment
.02 Provide Vendor & Analytical Service
.03 Test and Operate Equipment
.04 Retrieve Sample for Equipment
.05 Perform Laboratory Analysis
.06 Characterize and Dispose of Residuals
.04 Pilot-Scale Test
.01 Procure Test Facility and Equipment
.02 Provide Vendor & Analytical Service
.03 Test and Operate Equipment
.04 Retrieve Sample for Testing
.05 Perform Laboratory Analysis
.06 Characterize and Dispose of Residuals
.05 Field Test
.01 Procure Test Facility and Equipment
.02 Provide Vendor & Analytical Service
.03 Test and Operate Equipment
.04 Retrieve Sample for Testing
.05 Perform Laboratory Analysis
.06 Characterize and Dispose of Residuals
.06 Develop Treatability Study Report
.08 Preliminary Design
.01 Preliminary Design
.01 Recommend Project Delivery Strategy and Scheduling
.02 Prepare Preliminary Construction Schedule
.03 Prepare Specifications Outline
.04 Prepare Preliminary Drawings
.05 Prepare Basis of Design Report/Design Analysis
.06 Prepare Preliminary Cost Estimate
.02 Describe Variances with ROD
.03 Land Acquisition/Easement Requirements
.01 Identify need for, and locations
.02 Provide Technical Support in Land Acquisition Efforts
.04 Conduct and/or assist in Value Engineering (VE) screening
.05 Respond to Design Review Comments
.06 Participate in Preliminary Design Reviews/Briefing

[NOTE: ITEMS 8.02 THROUGH 8.06, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

.09 Equipment/Services/Utilities
.01 Identify long-lead equipment services, and/or utilities
.02 Procure long-lead equipment services, and/or utilities
.10 Intermediate Design
.01 Update Construction Schedule
.02 Prepare Preliminary Specifications
.03 Prepare Intermediate Drawings
.04 Prepare Basis of Design Report/Design Analysis
.05 Prepare Revised Cost Estimate

.06 Participate in Intermediate Design Review/Briefing
.07 Perform VE Study and Report Recommendations
.08 Describe Variances with ROD
.09 Respond to Design Review Comments

[NOTE: ITEMS 10.06 THROUGH 10.09, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

.11 Prefinal/Final Design
.01 Prepare Prefinal Design Specifications
.02 Prepare Prefinal Drawings
.03 Prepare Basis of Design Report/Design Analysis
.04 Prepare Revised Cost Estimate
.05 Prepare 100-Percent Design Submittal
.06 Participate in Prefinal/Final Design Review
.07 Prepare Subcontract Award Document(s)
.08 Perform Biddability (offerability) and Constructability Reviews
.09 Prepare Revised Project Delivery Strategy
.10 Document VE Modifications
.11 Draft O&M Manual
.12 Prepare Construction QA Plan

[NOTE: ITEMS 11.06 THROUGH 11.10, INCLUSIVE, ARE NOT INCLUDED IN THE 6-PERCENT DESIGN LIMITATION CALCULATIONS]

.12 Post Remedial Design Support
.01 Prebid (Presolicitation) Activities
.01 Printing & Distribution of Contract Documents
.02 Advertising/Soliciting of Bids
.01 Prebid (presolicitation) meetings
.02 Resolution of inquiries/Issuing Addenda
.03 On-site visits
.02 Preaward Activities
.01 Receipt of Bids (offers)
.01 Determination of responsive, responsible bidders (offerors)
.02 Perform Reference checks
.03 Bid (offer) Tabulation
.04 Bid (offer) Analysis
.02 Receipt of follow-up items from lowest responsible bidder (offeror)
.03 Review of EEO, MBE requirements, SDB subcontracting plans
.03 Update Site-Specific Plans
.01 Modify Site Management Plan (if necessary)
.02 Modify Sampling & Analysis Plan (if necessary)
.03 Modify Health & Safety Plan (if necessary)
.04 Modify Community Relations Plan (if necessary)
.13 Work Assignment Close Out
.01 Return Documents to Government
.02 File Duplication/Distribution/Storage
.03 File Archiving
.04 Microfiche/Microfilm/Optical Disk
.05 Prepare Closeout Report

Attachment 3
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. The Data Quality Objectives Process for Superfund: Interim Final Guidance, U.S. EPA, EPA/540/R-93/071, September 1993.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.

28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. *Remedial Design/Remedial Action (RD/RA) Handbook*, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER), 9355.0-04B, EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.

Attachment 4

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE:	TRANSMITTAL NO.
TO:	FROM:		☐ New Transmittal ☐ Resubmittal of Transmittal No. _____

SUBTASK NO.	DELIVERABLE	NO. OF COPIES	REMARKS

ACCEPTANCE ACTION	
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)	NAME/TITLE/SIGNATURE OF REVIEWER DATE

Attachment 5

TRANSMITTAL REGISTER								
PROJECT TITLE AND LOCATION				CONTRACT NO.			WORK ASSIGNMENT NO.	
Subtask No.	DELIVERABLE	No. of Copies	Due Date	Transmittal No.	Date Received	Date Comments Sent to Contractor	EPA Acceptance Date	REMARKS

_____
(date)

MODEL STATEMENT OF WORK FOR REMEDIAL DESIGN OVERSIGHT

_____ SITE, _____ COUNTY, _____ STATE

ATTACHMENTS

Attachment 1. Summary of Major Submittals for the Remedial Design at ___ (Site) 15
Attachment 2. Work Breakdown Structure 17
Attachment 3. Regulation and Guidance Documents 22
Attachment 4. Transmittal of Documents for Acceptance by EPA 24
Attachment 5. Transmittal Register 25

Points for the WAM/RPM to consider in preparing the Statement of Work for Remedial Design Oversight:

The purpose of this Statement of Work is twofold:

1. **To tell the contractor what you want done.** Be as specific as possible in describing what you want the contractor to do. The contractor will write a work plan and budget describing how and at what cost the requirements will be met and ultimately will be responsible for performing those requirements. Whenever there is an absolute requirement (e.g., that the contractor prepare the QAPP in accordance with QAMS-005/80, December 29, 1980), state it. Add the attachments to the SOW: (1) Summary of Major Submittals for the Remedial Design at _____(Site), (2) Work Breakdown Structure, and (3) Transmittal of Documents for Acceptance by EPA.

2. **To give the contractor a work breakdown structure for recording costs.** Work plan costs and final costs of different RD oversight projects can be compared and analyzed with a work breakdown structure.

Use of a Work Breakdown Structure (WBS)
1. A WBS has been developed for this model work assignment so EPA may track the initial and final costs of each element used for preparing future cost estimates. The WBS is, essentially, the outline for this work assignment and is included as SOW Attachment 2 .

2. If an element is not used, do not change the numbering system; instead, insert "not used" or "N/A" after the element number after deleting the text for that element.

3. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and RPM/WAM to develop estimated costs on a common basis.

6.0 Introduction

.0.1 Site Description

Provide a brief site description that contains information relative to RD oversight planning and implementation such as location, operational history, remedial response history, waste types, quantities, and milestones specified within the ROD.

.0.2 Purpose

The purpose of this work assignment is to obtain contractor support for the oversight of the remedial design (RD) at the _____(site). Implementation of the RD shall be performed by the Potentially Responsible Parties (PRPs). The estimated completion date for this work assignment is _____.

.0.2.1 Description of the RD

Describe the specific RD for which oversight is required. Provide a summary of the general response objectives, description of the remedy, and expected period of performance of the RD.

.0.2.2 Objectives of Oversight. The primary objective of PRP oversight is to ensure that the remedies specified in the RD and used in the remedial action (RA) protect public health and the environment during the life of the project and are implemented in compliance with the terms of the Settlement Agreement. Oversight meets its objectives by observing and documenting that the PRP has complied with all applicable laws, regulations, and requirements, and has met all performance standards specified in the Settlement Agreement.

.0.3 General Requirements

.0.3.1 The contractor shall conduct the RD Oversight in accordance with this Statement of Work (SOW) and to ensure consistency with the ROD issued on _____ (date), the Consent Decree, the *Remedial Design/Remedial Action (RD/RA) Handbook* (U.S. EPA Office of Solid Waste and Emergency Response (OSWER), 9355.0-04B, EPA 540/R-95/059, June 1995) and all other guidance used by EPA in conducting an RD/RA. See references listed in Attachment 3. The primary contact for this work assignment is _____, Tel. _____; the secondary contact is _____, Tel. _____.

.0.3.2 A summary of the major deliverables and the schedule for submittal is attached. See Attachment 1. The contractor shall submit the major deliverables using the form Transmittal of Documents for Acceptance by EPA, Attachment ___4____.

The attachments to this model SOW may be copied and completed for a given RD. Attachment 4 is a form for use by the contractor in the transmittal of documents to EPA. Attachment 5 is a transmittal register log for use by the WAM/RPM in tracking documents submitted by the contractor.

.0.3.3 Specifically, the RD involves the design of _____
_____.

.0.3.4 The contractor shall furnish all necessary and appropriate personnel, materials, and services needed, or incidental to, performing and completing the RD oversight.

.0.3.5 A list of primary guidance and reference material is attached. See Attachment 2. In all cases, the contractor shall use the most recently issued guidance.

.0.3.6 The contractor shall maintain oversight files as specified in the contract and by the Work Assignment Manager or Remedial Project Manager (WAM/RPM). The WAM/RPM may periodically audit the site files and record-keeping procedures.

.0.3.7 The contractor shall communicate at least weekly with the WAM/RPM, either in person or through conference calling, to report on oversight progress.

.0.3.8 The contractor shall notify the WAM/RPM when 75 percent and when 95 percent of the approved work assignment budget has been expended.

.0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA or the PRP. The contractor shall forward this documentation to the WAM/RPM within 2 working days of the meeting or conversation.

It is the WAM's responsibility to document fully all decisions made. The contractor's documentation is used for confirmation only.

.0.3.10 EPA will provide oversight of contractor activities throughout the RD oversight efforts. EPA review and approval of the contractor's deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment during the Contractor's oversight of the PRP's remedial activities. EPA will review the deliverables prepared during the oversight to assess the likelihood that the RD will achieve its remediation goals and that all performance requirements applicable to the

_____.

RD have been correctly identified and implemented. However, acceptance of deliverables by EPA does not relieve the contractor of responsibility for the adequacy of the deliverable.

.0.4 Oversight Official

The contractor shall designate one or more Oversight Officials to work directly with the WAM/RPM during the RD oversight. The Oversight Official(s) is (are) the individual(s) responsible under this Statement of Work for providing technical support in monitoring PRP compliance with the Settlement Agreement.

.0.5 Equipment Transfer

At the completion of the work assignment, the contractor shall transfer all equipment purchased with contract funds to the EPA Equipment Coordinator in accordance with the contract.

.0.6 Project Closeout

At the completion of the work assignment, the contractor shall perform all necessary project closeout activities as specified in the Contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files as required in 6.0.3.6 above, and providing a technical and financial closeout report to EPA.

The task structure that follows has been drafted to support the development of a comprehensive RD Oversight SOW to execute a well-defined RD, but can be tailored to support a phased RD SOW to which amendments will be made over the project life cycle as more specific requirements for RD oversight activities are determined.

6.1 Project Planning and Support

.1.1 Project Planning. This task includes efforts related to project initiation.

.1.1.1 Attend Scoping Meeting. The contractor shall attend a scoping meeting to be held at the EPA Regional Office before or concurrent with developing the oversight Work Plan.

The location of meetings (and approximate number of contractor attendees) should be specified for cost-estimating purposes.

.1.1.2 Conduct Site Visit. The contractor shall conduct a 1-day site visit with the EPA WAM/RPM during the project planning phase to develop a conceptual understanding of the site and the RD scope and requirements. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a letter report that documents all EPA, contractor, and site personnel present at the visit; all decisions made during the visit; any action items assigned, including person responsible and due date; any unusual occurrences during the visit; and any portions of the site that were not accessible to the contractor and the impact of this on oversight of the remedial design. This report shall be submitted to the EPA WAM/RPM within 10 calendar days of the site visit.

.1.1.3 Evaluate Existing Information. The contractor shall obtain, copy (if necessary), and review available information pertaining to the site from EPA. The contractor shall evaluate the existing data and documents, including the Record of Decision (ROD), the Consent Decree (CD), the PRP Work Plan for the RD/RA, and other data and documents as directed by EPA. The specific documents to be reviewed are listed in Attachment 3.

The RPM will create an attachment to this SOW that lists site-specific information that the contractor may use in oversight of the remedial design (see Chapter 3 of the Guidance for Scoping the Remedial Design). To streamline this task and control expenses, limit the review to documents that help the contractor to scope the project accurately and optimize oversight tasking. Specify reports and other documentation that establish the nature and extent of contamination: a summary of risk(s), a list of cleanup targets, and the basis for design. At a minimum, this should include the ROD, the CD, and the PRP work plan. Additional documents that may be appropriate include the Remedial Investigation/Feasibility Study (RI/FS), Focused Feasibility Studies (FFS), State documentation, applicable or relevant and appropriate requirements (ARARs), evaluations, hydrogeological information, and other material located in the site file.

.1.1.4 (Not Used)

.1.1.5 Develop RD Oversight Work Plan

(1) Develop Draft Oversight Work Plan. The contractor shall prepare and submit a Draft RD Oversight Work Plan within 30 calendar days after initiation of the work assignment (WA). The contractor shall use information from the EPA-approved PRP Work Plan, appropriate guidance, and direction provided by the EPA WAM/RPM as the basis for preparing the RD Oversight Work Plan. RD oversight work must be coordinated and properly sequenced with EPA and PRP RD activities. Submit the original to the Contracting Officer (CO), one copy to the Project Officer (PO), and one copy to the WAM/RPM.

1. The RPM/WAM should verify the draft and final work plan submittal timeframes with the PO.

2. Additional copies of the work plan can be submitted to the WAM/RPM, if specified, for distribution to other technical staff.

(a) Develop Narrative. The RD Oversight Work Plan shall include a comprehensive description of project tasks, the procedures to accomplish them, quality assurance/quality control (QA/QC) systems and project-specific QA/QC procedures to be followed, project documentation, and project schedule. Specifically, the Work Plan shall include the following:

- Identification of RD project elements and the associated oversight tasking including review of PRP planning, design, and activity reporting documentation; field sampling and analysis activities, and treatability study activities. Output of this task will be a detailed work breakdown structure of the RD oversight project.
- The contractor's technical and management approach to each task to be performed, including a detailed description of each task; the assumptions used; the identification of any technical uncertainties (with a proposal for the resolution of those uncertainties); the information needed for each task; any information to be produced during and at the conclusion of each task; and a description of the work products that will be submitted to EPA. Information

shall be presented in a sequence consistent with the work breakdown structure format defined in the standard WBS. See Attachment ___.

- A schedule with specific dates for the start and completion of each required activity and submission of each deliverable required by this SOW. (See Attachment 1 for format.) This schedule shall also include information regarding timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.
- A project communications and management plan, including a data management plan and contractor reporting requirements, such as meetings and presentations to EPA at the conclusion of major phases of the project. The data management plan shall address the requirements for project management systems including tracking, storing, and retrieving data and also shall identify software to be used, minimum data requirements, data format, and backup data management. The plan shall address both data management and document control for all oversight activities conducted during the RD.

The WAM/RPM should consider issuing the RD oversight WA in phases and modifying the SOW for funding as more information is available. This will enable the WAM/RPM to prepare a more detailed and accurate SOW and IGCE for each tasked phase.

The oversight contractor may be tasked to conduct oversight activities in the following steps:

1. Review documents, including the PRP work plan, to develop the oversight work plan. If the PRP work plan is unavailable, then the WAM/RPM may want to task the contractor to review background information and to provide general startup support.

2. Develop the oversight work plan.

3. Modify the scope of work for funding to include RA oversight activities.

(b) Develop Cost Estimate. The contractor's estimated cost to complete the work shall be broken down into the Level of Effort (by P-level) and cost for each element of the Work Breakdown Structure (Attachment 2) and submitted to EPA on disk.

(c) Perform Internal QA and Submit Draft Oversight Work Plan

(2) Prepare Final Oversight Work Plan

(a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the Region ___ office. EPA and the Oversight Contractor will refine the SOW requirements and funding issues related to the Oversight Work Plan.

(b) Modify Draft Oversight Work Plan and Cost Estimate

If the RD project is implemented using a phased approach to develop additional information throughout the RD phase, the WAM/RPM should specify the anticipated number of modifications and, to the extent possible, the scope of the modification(s).

Examples:
1. If the extent of contamination is not fully defined, indicate that the length of field work is not fully delineated and a modification may be required to accommodate this unquantified field element.

2. If treatability testing is ongoing and may significantly affect RD activities, but oversight is required for treatability activities, specify that the RD Oversight Work Plan will be completed in multiple phases

(c) Perform Internal QA and Submit Final Oversight Work Plan within 15 days after receipt of EPA comments on the draft work plan.

.1.1.6 Review PRP Plans. The contractor shall review the following PRP-developed work plans for conformance with applicable EPA standards and guidance (see also Task 6.7 for review instructions) and provide written review comments to the WAM/RPM.

(1) Review PRP Site Management Plan
  (a) Review PRP Pollution Control & Mitigation Plan
  (b) Review PRP Transportation and Disposal (of site-derived wastes) Plan
(2) Review PRP Health and Safety Plan
(3) Review PRP Sampling and Analysis Plan (Chemical Data Acquisition Plan)
  (a) Review PRP Quality Assurance Project Plan (QAPP)
  (b) Review PRP Field Sampling Plan (FSP)
  (c) Review PRP Data Management Plan
(4) Review Other PRP Plan(s)

.1.2 Preparation of Site-Specific Plans

.1.2.1 (Not used)

.1.2.2 Develop Health and Safety Plan. Prepare a site-specific HASP that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with 29 CFR 1910.120 1(1) and (1)(2). Whenever possible, use the HASP developed for the Remedial Investigation/Feasibility Study (RI/FS) in preparing the HASP for the RD.

1. The HASP may not constitute an Emergency Response Plan. Site conditions may warrant a separate deliverable.

2. EPA does not approve the contractor's HASP, but reviews it to ensure that it is complete and adequately protective.

.1.2.3 Develop Sampling and Analysis Plan (Chemical Data Acquisition Plan). Prepare an FSP that defines the oversight sampling and information-collection methods that shall be used for the project. It shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and which samples are to be analyzed through the Contract Laboratory Program (CLP), which through other sources, and the justification for those decisions. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS should be used whenever possible in preparing the FSP for the RD oversight activities.

1. Depending on the complexity of the sampling effort needed to support the RD, the FSP and QAPP can be combined into a single Sampling and Analysis Plan (SAP).

2. Minimize FSP preparation costs by requiring the oversight contractor to utilize the RI/FS FSP as a reference during the development of its sampling plan.

(1) Quality Assurance Project Plan. Prepare a QAPP in accordance with QAMS-005/80 (December 29, 1980). The QAPP shall describe the project objectives and organization, functional activities, and QA/QC protocols that shall be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for remedial action objectives identified in the National Contingency Plan.

(2) Field Sampling Plan. The contractor shall prepare an FSP that defines the oversight sampling and information-collection methods that shall be used for the project. It shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and description of which samples are to be analyzed through the CLP, which through other sources, and the justification for those decisions. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS should be used whenever possible in preparing the FSP for the RD/RA Oversight activities.

(3) Data Management Plan

1.2.4 Other Plan(s)

.1.3 Project Management

The contractor shall perform general work assignment management including management and tracking of costs, preparation of Monthly Progress Reports, attendance at project meetings, and preparation and submittal of invoices.

If the contractor finds that the RA being designed differs significantly from the ROD, the construction or implementation is not consistent with the design, requirements delineated within the Consent Decree are not being met, or that there are compliance issues with applicable or relevant and appropriate requirements (ARARs) at any point in the process, the contractor shall notify the WAM/RPM immediately to describe the issue. The contractor shall then recommend technical solutions in a memorandum ASAP.

.1.3.1 Prepare Periodic Status Reports. The contractor shall prepare monthly progress reports.

(1) Document Cost and Performance Status. The contractor shall document the status of each task and report costs and Level of Effort (by P-level) expended to date.

(2) Prepare and Submit Invoices

.1.3.2 Participate in Meetings and Communicate Routinely. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the WAM/RPM by telephone on a weekly basis to report project status.

.1.3.3 (Not used)

.1.3.4 (Not used)

.1.3.5 (Not used)

.1.3.6 Manage, Track, and Report Equipment Status

.1.3.7 Work Assignment Closeout

.1.4 Subcontract Procurement and Support Activities

.1.4.1 Identify and Procure Subcontractors

(1) (Not used)—Drilling Subcontractor

(2) (Not used)—Surveying Subcontractor

(3) (Not used)—Geophysical Subcontractor
(4) (Not used)—Site Preparation Subcontractor
(5) Analytical Services Subcontractor(s)
(6) (Not used)—Waste Disposal Subcontractor
(7) (Not used)—Treatability Subcontractor(s)
(8) Other(s)

.1.4.2 Develop Subcontractor QA Program

.1.4.3 Perform Subcontract Management

6.2 Community Relations

This task includes efforts related to the update and implementation of the Community Relations Plan (CRP) for the site. The contractor shall provide community relations support to EPA throughout the RD in accordance with *Community Relations in Superfund — A Handbook*, June 1988. Community relations shall encompass the following subtasks:

> Listed below are a number of possible community relations activities the WAM/RPM may require. The WAM/RPM should determine the community relations activities the PRP is conducting and coordinate to the extent practical to avoid duplication of effort.

.2.1 Develop Community Relations Plan

.2.1.1 Conduct Community Interviews

.2.1.2 Update CRP. The contractor shall update the RI/FS CRP to address community relations requirements during the RD.

(1) Draft CRP
(2) Final CRP

.2.2 Prepare Fact Sheets

The contractor shall prepare a fact sheet to inform the public about activities related to the final design, a schedule for the RD and later for the RA, activities to be expected during construction, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during onsite activities.

.2.3 Public Hearing, Meetings, and Availability Support

The contractor shall prepare presentation materials and provide support as needed for public meetings. The contractor shall assist in communication and coordination with local agencies. The contractor shall attend citizen advisory group meetings

> The number and location of anticipated public meetings should be identified in the SOW for cost estimating purposes.

.2.3.1 Technical Support. The contractor shall prepare technical input to news releases, briefing materials, and other community relations vehicles.

.2.3.2 Logistical and Presentation Support

.2.3.3 Writing and Placement of Public Notice Support

.2.4 Maintain Information Repository/Mailing List

The contractor shall maintain a repository of information on activities related to the RD as described in Appendix A.8, page A-19, of *Community Relations in Superfund—A Handbook*, June 1988. The contractor shall also maintain and update mailing lists to ensure that all companies, persons, and/or agencies are notified of site activities and scheduled public meetings as required.

The WAM/RPM should specify the format for submissions if there are Region-specific or other requirements.

6.3 Data Acquisition Oversight

This task involves oversight of work efforts related to sampling during both RD and RA. The purpose of the sampling is to compare results with PRP data. The planning for this task is accomplished in Task 6.1, Project Planning, whereby all of the necessary plans required to collect the field data are determined and arranged. This task begins with EPA's approval of the FSP prior to RD and ends with the demobilization of field personnel and equipment from the site after RA is complete.

The contractor shall perform the following field activities or a combination of activities for the data acquisition effort in accordance with the EPA-approved FSP and QAPP developed in Task 6.1:

Before beginning field activities, consider specifying a kickoff meeting with all principal personnel to clarify objectives and communication channels to ensure the efficient use of available funds.

.3.1 Mobilization and Demobilization Oversight

The contractor shall oversee procurement of the necessary personnel, equipment, and materials for efficient mobilization and demobilization to and from the site.

.3.1.1 (Not used)

.3.1.2 Mobilization Oversight

(1) (Not used)
(2) Installation of Utilities
(3) Construction of Temporary Facilities
  (a) Construct Decontamination Facilities
  (b) Construct Sample or Derived Waste Storage Facility
  (c) Construct Field Offices
  (d) Construct Mobile Laboratory
  (e) Construct Other Temporary Facilities

.3.1.3 Demobilization Oversight

(1) Removal of Temporary Facilities
(2) Site Restoration

.3.2 Perform Field Investigation Oversight

The contractor shall collect a percentage of split samples for analysis during RD. Split sampling during RD is required for comparison with the remediation contractor's data.

The WAM/RPM should specify the expected written and/or photographic documentation to be recorded in the field as well as the type of field activity reports expected by the RPM, the frequency, and the required distribution (RPM, State representative, etc.).

Ensure the proper management of samples by the PRP, including accurate chain-of-custody procedures for sample tracking, protective sample-packing techniques, and proper sample-preservation techniques. Ensure that the PRP characterizes and disposes of investigation-derived wastes in accordance with local, State and Federal regulations as specified in the FSP (see the Fact Sheet *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS, January 1992).

.3.2.1 Perform Site Reconnaissance Oversight

(1) Ecological Resources Reconnaissance

(2) Well Inventory
(3) Residential Well Sampling
(4) Land Survey
(5) Topographic Mapping
(6) Field Screening

.3.2.2 Perform Geological Investigations Oversight (Soils and Sediments)

.3.2.3 Perform Air Investigations Oversight

.3.2.4 Perform Hydrogeological Investigations Oversight—Ground Water
(1) Well Systems Installation
(2) Sample Collection
(3) Samples collected during drilling (e.g., hydro punch or equivalent)
(4) Tidal Influence Study
(5) Hydraulic Tests (Pump Tests)
(6) Ground-Water Elevation Measurement

.3.2.5 Perform Hydrogeological Investigations Oversight—Surface Water

.3.2.6 Perform Waste Investigation Oversight

.3.2.7 Perform Geophysical Investigation Oversight

.3.2.8 Perform Ecological Investigation Oversight

.3.2.9 Perform Contaminated Building Samples Oversight

.3.2.10 Perform Disposal of Investigation-Derived Waste Oversight

.3.2.11 Perform Prepare Data Acquisition Oversight Reports

6.4 Analysis of Split Samples

.4.1 Perform Screening-Type Laboratory Sample Analysis

.4.1.1 Analyze Air and Gas Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.2 Analyze Ground-Water Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.3 Analyze Surface-Water Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.4 Analyze Soil and Sediment Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.5 Analyze Waste (Gas) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.6 Analyze Waste (Liquid) Samples
(1) Organic
(2) Inorganic
(3) Radiochemistry

.4.1.7 Analyze Waste (Solid) Samples
(1) Organic
(2) Inorganic

(3) Radiochemistry

.4.1.8 Analyze Biota Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.1.9 Analyze Bioassay Samples

.4.1.10 Perform Bioaccumulation Studies

.4.2 CLP-Type Laboratory Sample Analysis

The contractor shall request CLP analytical services in accordance with procedures outlined in the *User's Guide to the Contract Laboratory Program*, EPA, December 1986.

.4.2.1 Analyze Air/Gas Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.2 Analyze Ground-Water Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.3 Analyze Surface-Water Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.4 Analyze Soil and Sediment Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.5 Analyze Waste (Gas) Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.6 Analyze Waste (Liquid) Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.7 Analyze Waste (Solid) Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.8 Analyze Biota Samples

(1) Organic

(2) Inorganic

(3) Radiochemistry

.4.2.9 Analyze Bioassay Samples

.4.2.10 Perform Bioaccumulation Studies

6.5 Analytical Support and Data Validation of Split Samples

The contractor shall arrange for the analysis and validation of environmental split samples collected. The sample analysis and validation task begins with reserving sample slots in the CLP and the completion of the RD field sampling program. This task ends with contractor validation of the analytical data received from the laboratory. The contractor shall perform the following activities or combination of activities to analyze and validate test results:

.5.1 Prepare and Ship Environmental Samples
- .5.1.1 Ground-Water Samples
- .5.1.2 Surface and Subsurface Soil Samples
- .5.1.3 Surface-Water and Sediment Samples
- .5.1.4 Air Samples
- .5.1.5 Biota Samples
- .5.1.6 Other Types of Media Sampling and Screening

.5.2 Coordinate With Appropriate Sample Management Personnel

.5.3 Implement EPA-Approved Laboratory QA Program

.5.4 Provide Sample Management (chain of custody, sample retention, and data storage)

.5.5 Perform Data Validation

The contractor shall perform appropriate data validation to ensure that the data are accurate and defensible. Complete the necessary summary tables, validation worksheets, and DQO summary forms.

For the RD, full data validation procedures are usually not necessary. The WAM/RPM may want to specify the level of data validation required.

- .5.5.1 Review Analysis Results Against Validation Criteria
- .5.5.2 Provide Written Documentation of Validation Efforts

Implement quality control procedures to ensure the quality of all reports and submittals to EPA.

The WAM/RPM should specify the format for submissions if there are Region-specific or other specific requirements.

6.6 Data Evaluation of Split Samples

This task involves comparison of the PRP's data that will be used in the remedial design effort with data resulting from the analysis of split samples. Data evaluation begins with the receipt of analytical data from the data acquisition task and ends with the submittal of a Data Evaluation Summary Report. Specifically, the contractor shall compare, evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables.

.6.1 Data Useability Evaluation and Field QA/QC

.6.2 Data Reduction, Tabulation, and Evaluation
- .6.2.1 Evaluate Geological Data (Soils and Sediments)
- .6.2.2 Evaluate Air Data
- .6.2.3 Evaluate Hydrogeological Data—Ground Water
- .6.2.4 Evaluate Hydrogeological Data—Surface Water
- .6.2.5 Evaluate Waste Data
- .6.2.6 Evaluate Geophysical Data
- .6.2.7 Evaluate Ecological Data

.6.3 Modeling
- .6.3.1 Contaminant Fate and Transport
- .6.3.2 Water Quality
- .6.3.3 Ground Water
- .6.3.4 Air
- .6.3.5 Other Modeling

.6.4 Develop Data Evaluation Report

The contractor shall evaluate and present results in a Data Evaluation Summary Report to submit to the WAM/RPM for review and approval. The report will include a comparison of the split sample data collected with PRP data. After the WAM/RPM's review, attend a meeting with EPA to discuss data evaluation results and next steps.
Implement quality control procedures to ensure the quality of all reports and submittals to EPA. These procedures shall include, but are not limited to, internal technical and editorial review; and the documentation of all reviews, the problems identified, and corrective actions taken.

The WAM/RPM should specify that the contractor prepare and submit a Technical Memorandum to the WAM/RPM if new analytical data needs or significant data problems are identified during the evaluation.

6.7 Review of PRP Remedial Design Documents

This task involves work efforts to review PRP RD submittals. The contractor shall perform reviews to focus on the technical and engineering merit. Letter reports will be submitted upon the completion of each
review by the oversight contractor within 21 calendar days of the start of the review, identifying specific issues and suggested corrective action. The following factors are to be considered during the review of all PRP submittals:

- Technical requirements of the ROD, Unilateral Administrative Order (UAO), Administrative Order of Consent (AOC), CD, and compliance with ARARs
- Standard professional engineering practices
- Applicable statutes, EPA policies, directives, and regulations (see Attachment 3)
- Spot checking design calculations to assess accuracy and quality of design activities
- Examination of planning and construction schedules for meeting project completion goals

The oversight contractor shall review the PRP-prepared planning, predesign, and design project documentation to ensure professional quality, technical accuracy, compliance with the PRP RD Work Plan, the ROD and Consent Decree, CERCLA, and all ARARs.

.7.1 Review PRP Remedial Design Documents

.7.1.1 Review Preliminary Design

(1) Project Delivery Strategy and Scheduling
(2) Preliminary Construction Schedule
(3) Specifications Outline
(4) Preliminary Drawings
(5) Basis of Design Report/Design Analysis
(6) Preliminary Cost Estimate
(7) PRP Description of Variances with ROD
(8) PRP Response to Design Review Comments
(9) Participate in Preliminary Design Review/Briefing

.7.1.2 Review (PRP Remedial) Intermediate Design Documents

(1) Construction Schedule
(2) Preliminary Specifications
(3) Intermediate Drawings
(4) Basis of Design Report/Design Analysis
(5) Revised Cost Estimate
(6) PRP Description of Variances with ROD
(7) PRP Response to Design Review Comments
(8) Participate in Intermediate Design Review/Briefing

.7.1.3 Review Prefinal/Final Design
(1) Prefinal Design Specifications
(2) Prefinal Drawings
(3) Basis of Design Report/Design Analysis
(4) Revised Cost Estimate
(5) Final Design Submittal
(6) Participate in Prefinal/Final Design Review
(7) Subcontract Award Document(s)
(8) Biddability (Offerability) and Constructability Reviews
(9) Revised Project Delivery Strategy

.7.2 (Not used)

6.8 Technical Meeting Support

This task includes work efforts related to attendance at and documentation of meetings with EPA, PRPs, the PRP contractor, and the State Agency. The contractor shall attend meetings and provide documentation of meeting results. Within ___ days after a meeting, the contractor will submit to the WAM/RPM a written report summarizing the meeting results. Meetings may be scheduled to coincide with the following specific milestones during the RD/RA:

- At PRP RD Work Plan Review
- At Design Submittal Reviews
- Before initiating onsite field sampling and treatability study during design
- At completion of all sampling during design

6.9 Work Assignment Closeout

.9.1 Return Documents to Government
.9.2 Duplicate, Distribute, and Store Files
.9.3 Archive Files
.9.4 Prepare Microfiche, Microfilm, and/or Optical Disk
.9.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and Level of Effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

Attachment 1
Summary of Major Submittals for the Remedial Design Oversight at _____(Site)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
6.1.1.2	Site Visit Report		3	10 days after site visit	7 days after receipt of report
6.1.1.5	Draft RD Oversight Work Plan		3	30 days after initiation of work assignment (WA)	21 days after receipt of Work Plan
6.1.1.5	Final RD Oversight Work Plan		3	15 days after receipt of EPA comments	NA
6.1.1.6	Comments on Reviews of PRP Plans	5 8 19 21 36	3	21 days after receipt of work plans from EPA	NA
6.1.2.2	Draft HASP	36 19	3	30 days after initiation of WA	21 days after receipt of HASP
6.1.2.3(1)	Draft QAPP	21 8	3	30 days after initiation of WA	21 days after receipt of QAPP
6.1.2.3(2)	Draft FSP	5	3	30 days after initiation of WA	21 days after receipt of FSP
6.1.2.2	Final HASP	36 19	3	15 days after receipt of EPA comments	NA
6.1.2.3(1)	Final QAPP	21 8	3	15 days after receipt of EPA comments	NA
6.1.2.3(2)	Final FSP	5	3	15 days after receipt of EPA comments	NA
6.2.1	Draft Revised CRP	4	3	(#) days after initiation of WA	14 days after receipt of revised CRP
6.2.1	Final Revised CRP	4	3	(#) days after receipt of EPA comments	NA

Attachment 1
Summary of Major Submittals for the Remedial Design Oversight at _____(Site) (continued)

TASK	DELIVERABLE	REF NO.*	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
6.2.2	Fact Sheets		3	As needed	10 days after receipt of fact sheet
6.6.4	Data Evaluation Summary Report		3	10 days after receipt of analytical results from laboratory	15 days after receipt of report
6.7	Letter Reports		3	21 days after receipt of PRP design submittal	14 days after receipt of letter report

*See Attachment 3 for list of references

Attachment 2
Work Breakdown Structure (WBS) for
Remedial Design Oversight (RDO)

6.0 Remedial Design Oversight
- .01 Project Planning and Support
  - .01 Project Planning
    - .01 Attend Scoping Meeting
    - .02 Conduct Site Visit
    - .03 Evaluate Existing Information
    - .04 Oversight Work Plan Development
      - .01 Draft Oversight Work Plan Development
        - .01 Develop Narrative
        - .02 Develop Cost Estimate
        - .03 Internal QA & Submission
      - .02 Final Oversight Work Plan Preparation
        - .01 Attend Negotiation Meeting
        - .02 Modify Draft Work Plan and Cost Estimate
        - .03 Internal QA & Submission
    - .05 Review PRP Plans
      - .01 Review PRP Site Management Plan
        - .01 Review PRP Pollution Control & Mitigation Plan
        - .02 Review PRP T&D Plan
      - .02 Review PRP Health & Safety Plan
      - .03 Review PRP Sampling & Analysis Plan (Chemical Data Acquisition Plan)
        - .01 Review PRP Quality Assurance Project Plan
        - .02 Review PRP Field Sampling Plan
        - .03 Review PRP Data Management Plan
      - .04 Other PRP Plan(s)
  - .02 Preparation of Site-Specific Plans
    - .01 Not used
    - .02 Develop Health & Safety Plan
    - .03 Sampling & Analysis Plan (Chemical Data Acquisition Plan)
      - .01 Quality Assurance Project Plan
      - .02 Field Sampling Plan
      - .03 Data Management Plan
    - .04 Other Plan(s)
  - .03 Project Management
    - .01 Prepare Periodic Status Reports
      - .01 Document Cost and Performance Status
      - .02 Prepare/Submit Invoices
    - .02 Meeting Participation/Routine Communications
    - .03 Maintain Cost/Schedule Control System
    - .04 Perform Value Engineering
    - .05 Perform Engineering Network Analysis
    - .06 Manage, Track, and Report Equipment Status
    - .07 Work Assignment Closeout
  - .04 Subcontract Procurement/Support Activities
    - .01 ID and Procurement of Subcontractors
      - .01 Not used –Drilling Subcontractor
      - .02 Not used –Surveying Subcontractor

.03 Not used–Geophysical Subcontractor
.04 Not used–Site Preparation Subcontractor
.05 Analytical Services Subcontractor(s)
.06 Not used–Waste Disposal Subcontractor
.07 Not used–Treatability Subcontractor(s)
.08 Other(s)
.02 Contractor QA Program
.03 Perform Subcontract Management
.02 Community Relations
.01 Community Relations Plan (CRP) Development
.01 Conduct Community Interviews
.02 Update CRP
.01 Draft CRP
.02 Final CRP
.02 Prepare Fact Sheets
.03 Public Hearing, Meetings, & Availability Support
.01 Technical Support
.02 Logistical & Presentation Support
.03 Public Notice Support (writing, or placement of)
.04 Maintain Information Repository/Mailing List
.03 Data Acquisition Oversight
.01 Mobilization/Demobilization Oversight
.01 Not used–ID field support equipment/supplies/facilities
.02 Mobilization Oversight
.01 Site Preparation
.01 Perform Demolition
.02 Clearing and Grubbing
.03 Perform Earthwork
.01 Provide Borrow Pit
.02 Construct Haul Roads
.04 Construct Roads/Parking/Curbs/Walks
.05 Install Storm Drainage/Subdrainage
.06 Install Fencing/Site Security
.02 Installation of Utilities
.01 Install Electrical Distribution
.02 Install Telephone/Communication System(s)
.03 Install Water/Sewer/Gas Distribution
.04 Install Fuel Line Distribution
.03 Construction of Temporary Facilities
.01 Construct Decontamination Facilities
.02 Construct Sample/Derived Waste Storage Facility
.03 Construct Field Offices
.04 Construct Mobile Laboratory
.05 Construct Other Temporary Facilities
.03 Demobilization Oversight
.01 Removal of Temporary Facilities
.02 Site Restoration
.02 Field Investigation
.01 Site Reconnaissance Oversight
.01 Ecological Resources Reconnaissance
.02 Well Inventory
.03 Residential Well Sampling
.04 Land Survey
.05 Topographic Mapping
.06 Field Screening

.02 Geological Investigations Oversight (Soils/Sediments)
.01 Surface Soil Sample Collection
.03 Air Investigations Oversight
.04 Hydrogeological Investigations Oversight–Ground Water
.01 Well Systems Installation
.02 Collect Samples
.03 Hydro Punch
.04 Tidal Influence Study
.05 Hydraulic Tests (Pump Tests)
.06 Ground-Water Elevation Measurement
.05 Hydrogeological Investigations Oversight–Surface Water
.06 Waste Investigation Oversight
.07 Geophysical Investigation Oversight
.08 Ecological Investigation Oversight
.09 Contaminated Building Samples Oversight
.10 Disposal of Investigation-Derived Waste Oversight
.11 Prepare Data Acquisition Oversight Reports
.04 Sample Analysis of Splits
.01 Screening-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Ground-Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies
.02 CLP-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples

.01 Organic
.02 Inorganic
.03 Radiochemistry

.02 Analyze Ground-Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry

.09 Analyze Bioassay Samples

.10 Perform Bioaccumulation Studies

.05 Analytical Support and Data Validation of Split Samples

.01 Prepare and Ship Environmental Samples
.01 Ground-Water Samples
.02 Surface and Subsurface Soil Samples
.03 Surface Water & Sediment Samples
.04 Air Samples
.05 Biota Samples
.06 Other types of media sampling and screening

.02 Coordinate with appropriate Sample Management personnel

.03 Implement EPA-approved Laboratory QA program

.04 Provide Sample Management (Chain of Custody, sample retention, & data storage)

.05 Perform Data Validation
.01 Review analysis results against validation criteria
.02 Provide written Documentation of validation efforts

.06 Data Evaluation of Split Samples

.01 Data Useability Evaluation/Field QA/QC

.02 Data Reduction, Tabulation and Evaluation
.01 Evaluate Geological Data (Soils/Sediments)
.02 Evaluate Air Data
.03 Evaluate Hydrogeological Data –Ground Water
.04 Evaluate Hydrogeological Data –Surface Water
.05 Evaluate Waste Data

.06 Evaluate Geophysical Data
.07 Evaluate Ecological Data

.03 Modeling
.01 Contaminant Fate and Transport
.02 Water Quality
.03 Ground Water
.04 Air
.05 Other Modeling

.04 Develop Data Evaluation Report

.07 Review PRP Remedial Design Documents

.01 Review Preliminary Design
.01 Project Delivery Strategy and Scheduling
.02 Preliminary Construction Schedule
.03 Specifications Outline
.04 Preliminary Drawings
.05 Basis of Design Report/Design Analysis
.06 Preliminary Cost Estimate
.07 PRP Description of Variances with ROD
.08 PRP Response to Design Review Comments
.09 Participate in Preliminary Design Review/Briefing

.02 Review Intermediate Design
.01 Construction Schedule
.02 Preliminary Specifications
.03 Intermediate Drawings
.04 Basis of Design Report/Design Analysis
.05 Revised Cost Estimate
.06 PRP Description of Variances with ROD
.07 PRP Response to Design Review Comments
.08 Participate in Intermediate Design Review/Briefing

.03 Review Prefinal/Final Design
.01 Prefinal Design Specifications
.02 Prefinal Drawings
.03 Basis of Design Report/Design Analysis
.04 Revised Cost Estimate
.05 Final Design Submittal
.06 Participate in Prefinal/Final Design Review
.07 Subcontract Award Document(s)
.08 Biddability (offerability) and Constructability Reviews
.09 Revised Project Delivery Strategy
.10 Document VE Modifications

.07.02 (Not Used)

.08 Technical Meeting Support

.09 Work Assignment Close Out
.01 Return Documents to Government
.02 File Duplication/Distribution/Storage
.03 File Archiving
.04 Microfiche/Microfilm/Optical Disk
.05 Prepare Closeout Report

Attachment 3
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980,March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01and -02.
4. Community Relations in Superfund –A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. The Data Quality Objectives Process for Superfund: Interim Final Guidance, U.S. EPA, EPA/540/R-93/071, September 1993.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS,January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.

25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.

27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. Remedial Design/Remedial Action (RD/RA) Handbook, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER), 9355.0-04B,EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02,May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User 's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS,May 1990.

Attachment 4

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA			DATE:	TRANSMITTAL NO.
TO:		FROM:		☐ New Transmittal ☐ Resubmittal of Transmittal No. _____
SUBTASK NO.	DELIVERABLE		NO. OF COPIES	REMARKS
ACCEPTANCE ACTION				
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)		NAME/TITLE/SIGNATURE OF REVIEWER _____ DATE _____		

Attachment 5

TRANSMITTAL REGISTER

PROJECT TITLE AND LOCATION				CONTRACT NO.			WORK ASSIGNMENT NO.	
Subtask No.	DELIVERABLE	No. of Copies	Due Date	Transmittal No.	Date Received	Date Comments Sent to Contractor	EPA Acceptance Date	REMARKS

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User name:   KD_ (183)                    Queue:  DCVIAR02/PRINTQ_8
File name:                                Server: P_PRINTQ_8
Directory:
Description:
             June 5, 1995                          12:00pm


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      WW WW o   o r     d   d P     e     r      f    e     c   c  t  t
      W   W  ooo  r      dddd P      eeee r      f     eeee  ccc    tt
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_____
(Date)

MODEL STATEMENT OF WORK FOR REMEDIAL ACTION

_____ SITE, _____ COUNTY, _____ STATE

ATTACHMENTS

Attachment 1. Summary of Major Submittals for the Remedial Action at ___ (Site) 22
Attachment 2. Work Breakdown Structure 24
Attachment 3. Regulation and Guidance Documents 30
Attachment 4. Transmittal of Documents for Acceptance by EPA 32
Attachment 5. Transmittal Register 33

1. **To tell the contractor what EPA wants done.** The WAM/RPM should be as specific as possible in describing what you want the contractor to do. The contractor will write a work plan and budget describing how and at what cost the requirements will be met and ultimately will be responsible for performing to those requirements. Whenever there is an absolute requirement (e.g., prepare the QAPP in accordance with QAMS-005/80 (December 29, 1980 **or** prepare the Remedial Action Report in accordance with OSWER Publication 9355.0-39FS (June 1992)), state it.

2. **To give the contractor a structure for recording costs.** Work plan costs and final costs of different remedial action projects can be compared and analyzed.

Use of a Work Breakdown Structure (WBS)

1. A WBS has been developed for this model work assignment in order for EPA to track the initial and final costs of each element used and share this data with other Federal agencies. The WBS is, essentially, the outline for this work assignment and is included as Attachment 2 to this SOW.

2. If an element is not to be used, do not change the numbering system; instead, insert "not used" or "N/A" after the element number and then delete the text for that element.

3. For the items used for a given project, additional descriptions (e.g., type of samples and estimated number) should be added in order for the contractor and RPM/WAM to develop estimated costs on a common basis.

7.0 Introduction

.0.1 Site Description

Provide a brief site description and site history.

.0.2 Purpose

The purpose of this Statement of Work (SOW) is to set forth the framework and requirements for implementing the Remedial Action (RA) at _____ (site) in accordance with the objectives of the Remedial Design (RD). The Record of Decision (ROD) issued on _____ (date) defines the selected remedy. The RA is the implementation phase of site remediation or construction of the remedy, including

necessary operation and maintenance, performance monitoring, and special requirements. The RA is based on the RD to achieve the remediation goals specified in the ROD. The goal for completion of this RA is _____ months after work plan approval. The estimated completion date for this work assignment is _____.

For the purposes of this model SOW, the **RA contractor**, also referred to as "**the contractor**", is defined as the firm responsible for performing the SOW. The RA contractor is under contract to EPA through the Alternate Remedial Contracting Strategy (ARCS) or Remedial Action Contractor (RAC) contracting vehicles. The **construction contractor**, also referred to as the "**constructor**" is responsible for planning and managing the construction activities in accordance with the contract documents. In most cases, the constructor is a subcontractor to the RA contractor and will utilize the services of specialty subcontractors in order to accomplish the RA.

During the RA, there are many participating team members that will have specific roles and responsibilities throughout the RA. Up front in the SOW, the RPM may consider defining the nomenclature used to refer to the different participants. Defining the RA contractor, the construction contractor, and other subcontractors will ensure that the terms are used consistently throughout the SOW and Work Plan and will facilitate a clear understanding of whom is expected to do what parts of the SOW. The RPM may consider adding appropriate definitions to section 0.2.

.0.3 General Requirements

.0.3.1 The contractor shall conduct the RA in accordance with this SOW and the final plans and specifications developed during the RD. The RA shall also be consistent with the ROD issued on _____(date), the *Remedial Design/Remedial Action (RD/RA) Handbook* (U.S. EPA Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995), and all other guidance used by EPA in conducting an RA. The primary contact for this work assignment is _____, tel. (___)_____; the secondary contact is _____, tel. (___)_____.

.0.3.2 A summary of the major deliverables and a suggested schedule for submittals is attached. See Attachment 1.

.0.3.3 Specifically, the RA involves the construction and implementation of _____ (briefly explain the major components of the RA).

.0.3.4 The contractor shall furnish all necessary and appropriate personnel, including subcontractors, materials, and services needed for, or incidental to, performing and completing the RA.

.0.3.5 A list of primary guidance and reference material is attached. See Attachment 2. In all cases, the contractor shall use the most recently issued guidance.

.0.3.6 The estimated cost of the RA, as outlined in the RD cost estimate, is $_____.

.0.3.7 The contractor shall communicate at least weekly with the Work Assignment Manager or Remedial Project Manager (WAM/RPM), either in face-to-face meetings or through conference calls.

.0.3.8 The contractor shall notify the WAM/RPM when 75 percent of the approved work assignment budget has been expended and when 95 percent has been expended.

.0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA. The contractor shall forward this documentation to the WAM/RPM within two working days of the meeting or conversation.

.0.3.10 EPA will provide oversight of contractor activities throughout the RA. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment. EPA will review deliverables, including specific deliverables from the constructor to the RA contractor, to assess the likelihood that the constructed remedy will

achieve its remediation goals and that its performance and operations requirements have been met. Acceptance of plans and design-required submittals (i.e., shop drawings, design details) by EPA does not relieve the RA contractor, the constructor, or any subcontractors from their professional responsibilities.

.0.4 Record-Keeping Requirements

The contractor shall maintain all technical and financial records for the RA in accordance with the contract. At the completion of the RA, the contractor shall submit _____ copies of the official record of the RA in _____ (format) to the WAM/RPM.

1. Technical and financial records must support decisions made during the RA as well as to support cost recovery.

2. The WAM/RPM should check with the Regional Records Manager and with Regional Counsel regarding the distribution, number of copies, and preferred format (i.e., hard copy, microfilm, microfiche, CD-ROM) for the official records of the RA.

.0.5 Equipment Transfer

At the completion of the RA work assignment or when government personal property is no longer required at the site, the contractor shall arrange for the proper disposition of government-furnished or contract-acquired property (purchased with contract funds) in accordance with the contract requirements. The disposition (transfer, sale, or abandonment) of government personal property and the tracking of such equipment (see item .1.2.4) shall be coordinated with the Contract Property Administrator. For additional information, refer to *Contractor's Guide for Control of Government Property*, Office of Administration and Resources Management, December 1988.

.0.6 Project Closeout

At the completion of the RA work assignment, the contractor shall perform all necessary project closeout activities as specified in the contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files as required in Paragraph 0.4 above, and providing a technical and financial closeout report to EPA. Final costs shall be reported to EPA (on disk) broken down into the cost for each element of the WBS for this work assignment (see item .1.2.5, Project Management, Work Assignment Closeout).

7.1 Project Planning and Support

.1.1 Project Planning

The purpose of this task is to plan for the execution and overall management of this work assignment. The technical and managerial activities required to implement the RA and the associated costs are developed during the planning phase and are detailed in the RA Work Plan. Activities required for general work assignment management that will occur throughout the duration of the project are included in this task. This task may begin before or after the approval of the final design package and will continue through work assignment closeout. The following activities shall be performed as part of the project planning and support task:

1. Depending on project status and if the designer will continue as the RA contractor, the WAM/RPM may not need to task some of the following tasks (e.g. conduct site visit [1.1.2] or evaluate existing information [1.1.3]) that are needed to familiarize a new contractor with the site.

2. Before developing the RA SOW, the WAM/RPM should review the RD SOW or RD work plan to confirm if any RA planning or pre-construction activities were tasked during the RD work assignment. Some activities may have been conducted by the RD contractor in Task 12, Post RD Support)

3. In order to expedite the RA, initial planning for the RA may start before final approval of the design package and therefore, overlap with RD or post-RD activities tasked to the designer. This is possible when the designer will oversee the construction as the RA contractor.

.1.1.1 Attend Scoping Meeting. Before or concurrent with developing the RA Work Plan, the contractor shall attend a scoping meeting to be held at the EPA Regional Office.

The meeting location and the RPM's expectations for the number of contractor personnel to attend should be specified for cost estimation purposes. Consider having the designer, if different than the RA contractor, attend the meeting to present any special considerations and to facilitate the transfer of site and design information prior to work plan development.

.1.1.2 Conduct Site Visit. The contractor shall conduct a site visit with the EPA WAM/RPM and designer's representative (if appropriate) during the RA planning phase to assist in developing an understanding of the site and any construction logistics. Information gathered during the visit shall be used to better scope the project and to implement the RA. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a report that documents the site visit and any required action items or decisions. This report shall be submitted to the EPA WAM/RPM within 10 calendar days of the site visit.

.1.1.3 Evaluate Existing Information. The contractor shall obtain, copy (if necessary), and evaluate existing data and documents, including the final Design Package, the RD Work Plan, the ROD, Remedial Investigation/Feasibility Study (RI/FS), and other data and documents as directed by WAM/RPM. This information shall be used to determine if any additional data are needed prior to procuring the constructor. The documents available for review are listed in Attachment 3.

The WAM/RPM should specify the following key documents for the RA contractor to review:

- Final Drawings and Specifications (100% Design)
- Final Basis of Design and Design Analysis
- RA Cost Estimate
- Construction Quality Assurance Plan
- Project Delivery Strategy
- VE Modifications
- Draft O&M Manual
- Quality Assurance Plan for O&M

Additional documents to list in Attachment 3 could include the summary of the "Predesign Information Collection" Effort (see Chapter 3 of the *Guidance for Scoping the Remedial Design*), Focused Feasibility Studies (FFS), State documentation, hydrogeological information, and RPM file data. However, to control expenses, limit review to pertinent documents specific to the site and construction of the remedy.

.1.1.4 Develop Work Plan. The contractor shall prepare and submit a RA Work Plan which includes a detailed description of construction activities, operations and maintenance, performance monitoring, and an overall management strategy for the RA. The contractor shall present the general approach that will be used for the RA at a Work Plan scoping meeting with the WAM/RPM. This meeting will be held at the Region _____ office.

If the RA will be complex, consider modifying subtask 3.1.1.4 (1) to include an additional scoping meeting to be held before the contractor finalizes the technical approach. This will ensure that the WAM/RPM and the contractor are in agreement as to the approach to be taken and that the agreed-upon approach is reflected in the Work Plan. The contractor may not have to rewrite the Work Plan if this is done.

.1.1.4 Develop Work Plan (continued)

(1) Develop Draft Work Plan. The contractor shall prepare and submit a draft RA Work Plan within 30 calendar days after initiation of the work assignment (WA). Submit the original to the Contracting Officer (CO), one copy to the Project Officer (PO), and one copy to the WAM/RPM or in accordance with contract requirements. The Work Plan shall include a detailed description of the technical approach for the remediation and construction activities in accordance with the final design and ROD. The necessary procedures, inspections, deliverables, and schedules shall be specified. A comprehensive construction management schedule for completion of each major activity and submittal shall also be included.

1. The WAM/RPM should verify the work plan submittal timeframe with the PO. Additional copies of the work plan can be submitted to the WAM/RPM, if specified, for distribution to other technical staff.

2. The WAM/RPM should ensure that the submittal requirements in this SOW are in accordance with the submittal requirements for the RA contract as specified in the plans and specifications.

3. The WAM/RPM must prepare an Independent Government Cost Estimate (IGCE) for the RA before the WA is issued to the contractor. The WAM/RPM should use the designer's final RA cost estimate, prepared as part of the final design (RD SOW, Task 11) as a starting point and add the costs associated with the construction management and oversight activities performed by the RA contractor, as specified in this SOW. Contact Regional IGCE Coordinators for assistance.

(a) Develop Narrative. Specifically, the Work Plan shall present the following:

- A statement of the problem(s) and potential problem(s) posed by the site and how the objectives of the completed RA will address the problem(s).
- The contractor's technical approach to each task to be performed, including a detailed description of each task; the assumptions used; the information needed for each task; any information to be produced during and at the conclusion of each task; and a description of the work products that will be submitted to EPA. Tasks and subtasks shall be presented in the same WBS format as provided in this work assignment SOW. The technical descriptions shall include enough detail to back up the costs and level of effort presented in .1.1.4(1)(b).
- A schedule for specific dates for completion of each required activity and submission of each deliverable required by this SOW. (See Attachment 1). This schedule shall also include information about timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.

- An organizational structure which outlines the responsibilities and authority of all organizations and key personnel involved in the RA. A description of key project personnel's qualifications (project manager, resident engineer, quality assurance official, etc.) shall be provided.

(b) Develop Cost Estimate. The contractor's estimated cost to complete the work assignment, including subcontractors' costs, shall be prepared for each element of the WBS (Attachment 2) and submitted to EPA on disk [specify format]. The contractor shall provide a breakdown of the cost and Level of Effort (LOE), by professional levels, for each subtask of the Work Assignment.

(c) Internal QA and Submission of Work Plan.

(2) Prepare Final Work Plan

(a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the Region _____ office. Any technical issues and possible solutions shall be discussed at this meeting. The contractor shall confirm these discussions and suggested plan of action in a memorandum to the WAM/RPM within 2 days of the meeting.

(b) Modify Draft Work Plan and Cost Estimate. The contractor shall make revisions to the Work Plan as a result of EPA's comments and/or negotiation agreements.

(c) Internal QA and Submission of Final Work Plan within 15 days after receipt of EPA comments on the draft Work Plan.

.1.2 Project Management

1. The WAM/RPM should specify the format for submissions (e.g., Monthly Progress Reports) if there are Region-specific or other requirements.
2. During construction, there may be especially active periods. The WAM/RPM should specify additional communication requirements or status reports from the RA contractor. Also, the WAM/RPM should arrange for personal visits to the site during these times.

.1.2.1 Prepare Periodic Status Reports. The contractor shall prepare Monthly Progress Reports.

(1) Document Cost and Performance Status. The contractor shall document the technical progress and status of each task in the WBS for the reporting period in accordance with contract requirements. The contractor shall report costs and level of effort (by P-level) for the reporting period as well as cumulative amounts expended to date.

(2) Prepare and Submit Invoices. Monthly invoices will be prepared and submitted in accordance with the level of detail as specified in the contract.

.1.2.2 Meeting Participation and Routine Communications. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the RPM by telephone on a weekly basis to report project status.

.1.2.3 Maintain Cost/Schedule Control System. The contractor shall develop and maintain a system to monitor and control the costs and schedule of the Work Assignment. The contractor shall specify the process to continuously update the information in the system as a result of engineering network analyses and changing field conditions. The system shall have the capability to compare technical progress with expenditures and predict completion dates and cost to complete information. In addition to reporting cost and progress of the elements of this SOW, the cost/schedule control system must report and control costs within Task 8, RA Implementation, in sufficient detail to control construction costs.

.1.2.4 Manage, Track, and Report Equipment Status. The contractor shall manage, track, and report the status of all government-furnished equipment and contract-acquired property in accordance with contract requirements. Labelling and record keeping requirements for government personal property are outlined in the *Contractor's Guide for Control of*

Government Property, Office of Administration and Resources Management, December 1988.

.1.2.5 Work Assignment Closeout. The contractor shall perform the necessary activities to closeout the work assignment in accordance with contract requirements.

.1.2.6 Coordinate with Local Emergency Response Teams. The contractor shall coordinate with local emergency responders to ensure the proper implementation of the HASP and specifically the Emergency Response Plan. The contractor shall review and complete the emergency responder agreement, if necessary, conduct a kickoff meeting at the site with all local emergency responders, and notify the responders of any changes to the Emergency Response Plan throughout the RA. [For more information, refer to *Emergency Responders Agreements for Fund-Lead Remedial Actions*, publication 9285.6-04FS, March 1994]

7.2 Community Relations

The contractor shall provide community relations support to EPA throughout the RA. The contractor shall provide community relations support in accordance with *Community Relations in Superfund: A Handbook*, June 1988. This task begins with the approval of the RA Work Plan and continues throughout the duration of the work assignment. Community relations shall include the following subtasks:

1. Listed below are a number of possible community relations activities the WAM/RPM may require, depending on the specific situation. Refer to the *Community Relations in Superfund: A Handbook, Chapter 7 and Appendix A*, for suggested community relations activities during RA.

2. With implementation of the remedy, site activity increases and so does the likelihood of community concerns and questions. In addition to the community relations activities listed below in the WBS, the WAM/RPM may consider the following activities to communicate progress during construction: arranging site tours and workshops; establishing observation decks; and videotaping cleanup activities. These activities may be tasked in items .2.3.1. Technical Support, or added to the WBS under as a separate item and numbered accordingly (i.e., .2.3.5). The WAM/RPM should plan for and develop a proactive and effective program with the assistance of the Regional Community Relations Specialist.

3. The WAM/RPM should review the current community relations plan, if one exists, and direct the RA contractor to update the existing CRP to address activities and concerns specific to the RA.

4. The WAM/RPM should specify the format for Community Relations submissions (e.g., fact sheets, news releases) if there are Region-specific or other requirements.

.2.1 Develop Community Relations Plan (CRP)

.2.1.1 Conduct Community Interviews. The contractor shall assist the WAM/RPM in conducting community interviews to identify community concerns associated with the RA. The contractor shall assist the WAM/RPM in identifying key community members, establishing an interview schedule, conducting interviews, and summarizing the results.

.2.1.2 Prepare the CRP. The contractor shall update the existing CRP to address community relations requirements and community concerns during the RA.

(1) Draft CRP. The contractor shall update the CRP and submit a draft version within 14 days after completion of the community interviews.

(2) Final CRP. Within 7 days of receipt of EPA comments, the contractor shall submit a final CRP.

.2.2 Prepare Fact Sheets

1. This subtask may have been completed during the RD. In that case, the WAM/RPM may task the RA contractor to revise the fact sheet before construction begins with the current schedule, expected conditions, and relevant points of contact.

2. Depending on the complexity of the RA, the WAM/RPM should consider communicating construction progress by sending out regular fact sheets. Specify to the contractor the anticipated number of fact sheets, topics, and number of copies required.

The contractor shall assist the WAM/RPM in preparing a fact sheet that informs the public about activities related to the final design, the schedule for the RA, activities to be expected during construction, measures to be taken to protect the community, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during the RA.

.2.3 Public Meetings and Availability Support

The number and location of anticipated public meetings should be identified in the SOW for cost estimation purposes. Similarly, the RPM should specify the number of contractor personnel expected to be in attendance at the public meetings.

.2.3.1 Technical Support. The contractor shall assist the WAM/RPM in providing technical support for community meetings that may be held during the RA. This support may include preparing technical input to news releases, briefing materials, arranging other community relations vehicles (i.e., site tours), and helping the WAM/RPM to coordinate with local agencies.

.2.3.2 Logistical and Presentation Support. The contractor shall assist the WAM/RPM in preparing technical briefing materials and in arranging for the logistical details for the meeting(s).

.2.3.3 Public Notice Support. The contractor shall assist the WAM/RPM in drafting public notices, announcing the public meetings and placing the notice in a local paper of general circulation.

.2.4 Maintain Information Repository and Mailing Lists

The contractor shall assist the WAM/RPM in developing or revising site mailing lists and maintaining a repository of information on activities related to the site-specific remedial action as described in Appendix A.8, page A-19, of *Community Relations in Superfund: A Handbook*, June 1988.

7.3 Site Specific Plans

The purpose of this task is to review the existing site-specific plans that were prepared during RD, and update, as necessary, for the RA contractor to implement the RA. Typical plans include a health and safety plan, sampling and analysis plan, and construction quality assurance plan. This task begins with approval of the RA Work Plan and will occur throughout the duration of the work assignment. The RA contractor has the overall responsibility to prepare, update, and/or maintain the necessary site-specific plans for implementation of the RA. Since the constructor and any subcontractors will prepare their own RA plans, the RA contractor will incorporate the plans and procedures received from any subcontractors into the overall site plans. Construction plans and procedures are living documents and the contractor shall update the appropriate plans, as necessary, throughout the RA.

1. The RPM/WAM should check to see if the update and/or preparation of RA site specific plans were tasked during the RD (Task 12, Post Remedial Design Support).

2. The RA Contractor is tasked in this section to update any necessary plans for RA implementation. It should be noted that the Constructor and any subcontractors will prepare their own plans. The WAM/RPM should budget for the RA contractor to modify site plans to incorporate plans and procedures received from any subcontractors and to account for changing field conditions.

3. Typical sampling and analysis activities by the RA contractor include confirmatory sampling (i.e., take split samples with the constructor) to ensure cleanup standards have been met; air sampling and analysis to monitor air quality around the site perimeter; and wastewater discharge sampling to monitor National Pollutant Discharge Elimination System (NPDES) requirements.

.3.1 Update Site Management Plan. After EPA approval of the RA Work Plan (see Item 3.1.1.4), the contractor shall update the Site Management Plan (SMP) that was prepared during RD. This plan provides EPA with a written understanding of how access, security, health and safety, contingency procedures, management responsibilities, and waste disposal are to be handled during construction. The contractor shall update the plan, as necessary, to incorporate any subcontractors' plans.

.3.1.1 Update Health and Safety Plan. Prepare a site-specific HASP that addresses overall health and safety considerations for all personnel onsite. The contractor shall incorporate the constructor's and any subcontractors' HASPs into the overall site plan. The RA contractor shall provide the overall framework for site safety and ensure that adequate warning systems and notifications are understood by all parties. The HASP shall specify employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with [40 CFR 300.150 of the NCP and] 29 CFR 1910.120 1(1) and (1)(2). Whenever possible, refer to the HASP developed for the RI/FS or RD when preparing the HASP for the RA. For any site visits, a task-specific HASP must also be prepared to address health and safety requirements.

.3.1.2 Update Sampling and Analysis Plan (Chemical Data Acquisition Plan). Prepare a sampling and analysis plan to reflect the specific objectives of any data acquisition conducted during construction. The SAP will outline the data collection and quality assurance requirements of any sampling and analysis conducted by the contractor.

(1) Quality Assurance Project Plan. The contractor shall prepare a Quality Assurance Project Plan (QAPP) in accordance with EPA QA/R-5 (latest draft or revision). The QAPP shall describe the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols that shall be used to achieve the desired data quality objectives (DQOs). The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for remedial action objectives identified in the National Contingency Plan. The QAPP developed for the RD and/or RI/FS should be referenced or adapted whenever possible when preparing the QAPP for the RA.

(2) Field Sampling Plan. Prepare a Field Sampling Plan (FSP) that defines the sampling and data collection methods that shall be used for the project. The FSP shall include sampling objectives; sample locations and frequency; sampling equipment and procedures; sample handling and analysis; and a breakdown of samples to be analyzed through the Contract Lab Program (CLP) and through other sources, as well as the justification for those decisions. The FSP shall consider the use of all existing data and shall justify the need for additional data whenever existing data will meet the same objective. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RD and/or RI/FS must be referenced or adapted whenever possible;

the contractor shall document any required changes to the FSP in a memorandum to the WAM/RPM.

1. The Sampling and Analysis Plan (SAP) may be optional during certain RAs. It is prepared and updated from the SAP prepared during RD if the RA contractor has sampling and analysis responsibilities outside of those required of the constructor. In most cases, the RA contractor will split samples with the constructor to confirm and validate cleanup actions. These samples will be analyzed through the CLP (Level 4 data are required).

2. The WAM/RPM should reduce time and costs by using an onsite laboratory to analyze routine samples as construction proceeds (i.e., to delineate excavation limits) rather than going through the CLP. This is usually the constructor's responsibility and is included in the contract documents.

3. The WAM/RPM may consider requesting a plan for acquiring permits throughout the construction process. This plan could be part of the Construction Management Plan, and may avoid timely and costly construction delays.

4. The WAM/RPM should identify whether audits will be performed and specify contractor response items.

.3.1.2 Update Sampling and Analysis Plan (continued)

(3) Data Management Plan. Prepare a Data Management Plan that outlines the procedures for storing, handling, accessing, and securing data collected during the RA.

(4) Develop Other Plan(s)

.3.2 Update Pollution Control & Mitigation Plan. Prepare a Pollution Control & Mitigation Plan that outlines the process, procedures, and safeguards that will be used to ensure contaminants or pollutants are not released off-site during the implementation of the RA. Any plans and procedures prepared during the RD should be referenced or adapted whenever possible (i.e, sediment and erosion control plan and air monitoring plan).

.3.2.1 Update Transportation & Disposal Plan (Waste Management Plan). Prepare a Transportation & Disposal Plan that outlines how wastes that are encountered during the RA will be managed and disposed of. The contractor shall specify the procedures that will be followed when wastes will be transported off-site for storage, treatment, and/or disposal.

.3.3 Update Construction Quality Assurance (CQA) Plan. The contractor shall review and update the final Construction Quality Assurance (CQA) Plan as submitted as part of the final design documents. The CQA Plan shall outline the necessary steps to inspect and sample construction materials (i.e., membranes, concrete) and to ensure the overall quality of the constructed project. The CQA Plan shall be in accordance with "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA, October, 1986) and will include the following elements:

- Responsibility and authority of all organization and key personnel involved in the remediation action construction.
- CQA Personnel Qualifications. The contractor shall establish the minimum qualifications of the CQA Officer and supporting inspection personnel.
- Inspection Activities. The contractor shall establish the observations and tests that will be required to monitor the construction and/or installation of the components of the RA(s). The plan shall include the scope and frequency of each type of inspection to be conducted. Inspections shall be required to verify compliance with environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. Inspections shall also ensure compliance with all health and safety procedures.

- Sampling requirements. The contractor shall establish the requirements for sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection, and plans for correcting problems as addressed in the project specifications.
- Documentation. The contractor shall describe the reporting requirements for CQA activities. This shall include such items as daily summary reports and inspection data sheets.

7.4 Procurement of Subcontract

The purpose of this task is to solicit, evaluate, select, and award the necessary subcontracts to construct and implement the RA. This task begins with the approval of the RA Work Plan and review and modification of the contract documents prepared during the RD. After advertising and evaluating bids, this task ends with the award of one or more construction contracts to implement the RA. The contractor shall perform the following procurement activities:

1. The prebid and preaward activities may have been tasked to the RD contractor during Task 12, Post Remedial Design Support. The RA contractor will need to update the general conditions and dates prior to printing and distribution.

2. The WAM/RPM should consider having a project meeting with the RA contractor early in this task to review procedures and schedules for evaluating bids. It is important for the WAM/RPM to be involved during this process to ensure that the Contracting Officer's requirements for consent are met. This will help ensure that construction proceeds on schedule.

3. The WAM/RPM's role during this task is to oversee the technical information that is provided to bidders, monitor the overall procurement process and schedule, review written questions and responses, and attend any prebid and preconstruction conferences.

4. In an Invitation for Bid (IFB) or low bid procurement, the successful bidder is referred to as the lowest responsible bidder (offeror). If a request for cost and technical proposal (RFP) is used instead of the IFB, the procurement process and associated terminology for successful bidders are different (i.e., proposals in the competitive range versus lowest responsible bidder). The WAM/RPM should refer to the *Remedial Design/Remedial Action (RD/RA) Handbook* (U.S. EPA Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995) for more information on the different types of procurement.

.4.1 Prebid (Pre-Solicitation) Activities

.4.1.1 Printing & Distribution of Contract Documents. Print and distribute to prospective bidders the contract documents that were finalized during RD.

.4.1.2 Advertising/Soliciting of Bids. Advertise and solicit bids for construction services. An advertisement shall be prepared and published in _____.

(1) Prebid (pre-solicitation) Meetings. The contractor shall arrange and attend prebid meetings to provide clarification on plans, specifications, and contract documents to all bidders.

(2) Resolution of Inquiries/Issuing Addenda. The contractor shall resolve bidder inquires and document all contact with potential bidders, and issue amendments to contract documents if additional information becomes available that all bidders should be made aware of after solicitation.

(3) On-site Visits. The contractor shall participate in onsite visits that may be required to further clarify the services required.

.4.1.3 Readvertise/Resolicit Bids, if necessary. The contractor shall readvertise and resolicit bids in accordance with the Federal Acquisition Regulations (FAR) requirements.

.4.2 PreAward Activities

.4.2.1 Receipt of Bids (offers). After receipt of all bids within the solicitation period, the contractor shall perform the necessary activities to review, compile, and evaluate all bids received. The contractor shall conduct any necessary reference checks to ensure qualifications of responsible bidders.

(1) Determination of Responsive, Responsible Bidders (offerors) or proposals in the competitive range.
(2) Perform Reference Checks
(3) Bid (offer) Tabulation
(4) Bid (offer) Analysis

.4.2.2 Receipt of Follow-up Items from Responsible Bidder(s) (offerors). The contractor shall request the necessary follow-up items (i.e., subcontracting plan), from the responsible bidder(s), if the follow-up items are evaluated as part of the selection criteria.

.4.2.3 Review of Equal Employment Opportunities (EEO), MBE Requirements, Small Disadvantaged Business (SDB) Subcontracting Plans. The contractor shall review the bidder(s) plans to ensure that the successful bidder meets the requirements set forth in the bidding documents.

.4.2.4 Request for Consent from EPA. After a comprehensive review of the lowest responsible bidder's submittals, the contractor shall request EPA's consent to award.

.4.3 Post Award Activities

.4.3.1 Attend Post Award Meetings/Preconstruction Conference. The contractor shall arrange and conduct the necessary post award meetings with the successful bidder, including the preconstruction conference. The purpose of the preconstruction meeting(s) is to develop common goals, lines of communication, and construction-specific procedures. The contractor shall prepare a meeting agenda, invite key personnel, and prepare minutes of the meeting.

.4.3.2 Review Permits, Insurance, Bonds. The contractor shall review the successful bidder's permit plan, insurance coverage, warranties, and bond to minimize site risks and potential financial damages.

.4.3.3 Review and Approve RA Subcontractor's Schedule. The contractor shall review the successful bidder's schedule and evaluate that schedule in regards to the overall project schedule.

.4.3.4 Review and Approve RA Subcontractor's Measurement and Payment Schedule

.4.3.5 Review RA Subcontractor's Submittals - Issue Notice to Proceed (NTP)

.4.3.6 Review Revisions/Addendum of RA Subcontractor's Submittals

7.5 Subcontract Management Support

The purpose of this task is to provide management and oversight of the subcontractor(s) responsible for remedial construction. This task begins with the RA contractor issuing a Notice to Proceed to the constructor and ends with the completion of the RA and final payment to the constructor. The contractor shall institute procedures, monitor progress, and maintain systems and records to ensure that the work proceeds according to requirements specified in the contract documents. The contractor shall perform the following subtasks:

1. EPA is required to perform technical and cost analyses for any changes to the construction contracts. Refer to ARCS Construction Contract Modification Procedures, OSWER Directive 9355.5001/FS, September 1989

2. The WAM/RPM may specify EPA review of any non-conformance reports to assess the status of construction activities.

3. The WAM/RPM should evaluate if value engineering support is required (see items .5.4.2 and .6.3.2) and then consult with the Project Officer or Contracting Officer for the latest guidance regarding value engineering proposals under the RAC contracts.

.5.1 Financial Management.

.5.1.1 Review/Approve Invoices. The contractor shall promptly review and approve progress payments as determined prior to construction in the Measurement and Payment Schedule (see item .4.3.4).

.5.1.2 Review/Approve Subcontract Modifications. The contractor shall promptly review any necessary subcontract modifications, confer with the WAM/RPM, and approve appropriate changes.

.5.1.3 Maintain Tracking Systems. The contractor shall maintain the necessary tracking systems to monitor quality of work, resource requirements, and cost and schedule status.

(1) Construction Codes of Accounts
(2) Work Breakdown Structure (WBS)
(3) Schedule (CPM, PERT)

.5.2 Cost Monitoring.

.5.2.1 Weekly/Monthly Tracking

.5.2.2 Analyze Progress Payments. The contractor shall monitor costs of the constructor and all subcontractor(s) in relation to the status of construction or percentage of work completed. The contractor shall track and project progress payments to ensure the overall financial progress of the RA.

.5.2.3 Monitor RA Subcontractor for Compliance with Davis-Bacon Act

.5.3 Engineering Support

.5.3.1 Review Field Logs. On a weekly basis, the contractor's design team shall review field logs that document the daily activities and inspections. The contractor shall provide recommendations to improve site operations and inspections, if required.

.5.3.2 Periodic Attendance at Meetings. At the subcontractor's request, the RA contractor shall attend any construction-related meetings to provide design clarification and technical support.

.5.4 Engineering Support Option

.5.4.1 Review Field Change Requests. The contractor's design team shall review any changes to the construction documents and specifications due to actual field conditions and submit to EPA for review and approval.

.5.4.2 Review VE Proposals. The contractor shall review any VE proposal submitted by the RA subcontractor.

.5.4.3 Review Non-Conformance Reports

.5.4.4 Review Re-Design Proposals

7.6 Detailed Resident Inspection (Resident Engineer)

This task includes the field supervision and documentation of the RA constructor's work as it proceeds onsite. The task begins with the constructor's mobilization to the site and ends with the final inspection. The contractor will provide the necessary personnel to observe the constructor's daily activities, procedures, and inspections on behalf of EPA.

1. The WAM/RPM must carefully review the design package to assure coordination and compatibility of Resident Engineer's inspection activities with construction contract documents.

2. The WAM/RPM should specify the expected written and/or photographic documentation to be recorded in the field.

3. The WAM/RPM should specify the required frequency and distribution for any field activity reports (RPM, State representative, etc.).

.6.1 Attend Periodic Meetings. The contractor shall attend any meetings, at the request of the constructor, to provide clarification on contract documents and specifications.

.6.2 Provide Field Presence and Oversight. The contractor shall provide a Resident Engineer to observe and document the daily field activities of the constructor. Specific subtasks may include:

- .6.2.1 Maintain Field Logs and Daily Diaries
- .6.2.2 Interpret Subcontract Documents
- .6.2.3 Develop Sketches Reflecting Field Conditions
- .6.2.4 Review Submitted Construction Drawings
- .6.2.5 Prepare Reports on Inspections
- .6.2.6 Monitor, Update, and Report Construction Progress
- .6.2.7 Review/Recommend Time Extensions
- .6.2.8 Coordinate with Home Office/Management Support
- .6.2.9 Perform Davis-Bacon Act Inspections
- .6.2.10 Conduct Final Inspection
  - (1) Conduct Site Walkover
  - (2) Prepare Draft Final Inspection Report
  - (3) Respond to Comments
  - (4) Prepare Final Inspection Report

.6.3 Provide Engineering Support to Design Team

- .6.3.1 Recommend Actions on Health and Safety Considerations
- .6.3.2 Provide Support on VE Proposals.
- .6.3.3 Review/Recommend Design Changes
- .6.3.4 Provide Support on Change Order Requests. The Resident Engineer shall assist in the evaluation and processing of change order requests.
- .6.3.5 Provide Support in Claims Resolution. The Resident Engineer shall maintain records to support the resolution of any claims filed by the constructor.
- .6.3.6 Provide Support for Construction Schedule Changes

.6.4 Perform Field Testing. The contractor shall provide the necessary personnel and equipment to collect any confirmatory samples, perform any necessary field testing, and conduct inspections of work.

.6.5 Monitor Quality Assurance/Quality Control Procedures

7.7 Cleanup Validation

The purpose of this task is for the RA contractor to perform confirmatory sampling of any data collected by the constructor during construction and to verify that final cleanup levels or standards, as specified in the ROD,

have been achieved. This task may also include regular confirmatory testing of materials used during construction to determine if they are consistent with the requirements of the construction contract documents (i.e., soils testing, materials testing, chemical or biochemical testing of water). Analyses of confirmatory samples, validation of data, and evaluation of results are included in this task. This task may begin during the early stages of construction, continue throughout construction, and end with the final inspection to ensure cleanup levels have been met.

1. The Work Breakdown Structure for field investigations, sampling, and analyses presented below was compiled for all phases of a remedial project from Remedial Investigation through final construction of the remedy. The detailed list is included to preserve the WBS. The WAM/RPM should specify in the SOW only the investigations that are required for RA.

2. Confirmatory sampling is usually quite focused and limited depending on the site and remedy-specific conditions. The WAM/RPM, in conference with the Technical Review Team, should determine the level of confirmatory sampling and specify the number of samples so both the contractor and the WAM/RPM can develop accurate cost estimates. The actual numbers may be refined upon negotiation with the contractor.

3. The cleanup validation activities may serve as the basis for site delisting and therefore, it is critical that the data quality objectives defined in the RA Work Plan and Sampling and Analysis Plan are met. In order to document construction procedures and results, which are defensible, Contract Laboratory Program data (level 4) are required.

.7.1 Mobilization/Demobilization
- .7.1.1 Mobilize. The contractor shall acquire all necessary equipment, supplies, and personnel to set up onsite operations for confirmatory sampling and analyses.
- .7.1.2 Demobilize. The contractor shall dismantle and pack up all equipment associated with the confirmatory sampling activities.

.7.2 Field Investigation
- .7.2.1 Conduct Geological Investigations (Soils/Sediments)
  - (1) Surface Soil Sample Collection
  - (2) Subsurface Soil Sample Collection
  - (3) Soil Boring/Permeability Sampling
  - (4) Sediments Sample Collection
  - (5) Soil Gas Survey
  - (6) Test Pit.
- .7.2.2 Conduct Air Investigations
  - (1) Sample collection
  - (2) Air Monitoring Station
- .7.2.3 Conduct Hydrogeological Investigations: Groundwater
  - (1) Well Systems Installation
    - (A) Accomplish Mobilization
    - (B) Develop Wells
    - (C) Conduct Downhole Geophysics
    - (D) Install Monitoring Wells
    - (E) Install Test Wells
    - (F) Install Gas Wells.
  - (2) Collect Samples
  - (3) Collect Samples during Drilling (e.g. Hydro Punch or equivalent)
  - (4) Conduct Tidal Influence Study
  - (5) Perform Hydraulic Tests (pump tests)
  - (6) Measure Groundwater Elevation
- .7.2.4 Conduct Hydrogeological Investigations: Surface Water

(1) Collect Samples
(2) Study Tidal Influence
(3) Measure Surface Water Elevation

.7.2.5 Conduct Waste Investigation
(1) Collect Samples (Gas, Liquid, Solid)
(2) Dispose of Derived Waste (Gas, Liquid, Solid)

.7.2.6 Conduct Geophysical Investigation
(1) Surface Geophysical Activity
(2) Magnetometer
(3) Electromagnetics
(4) Ground Penetrating Radar
(5) Seismic Refraction
(6) Resistivity
(7) Site Meteorology
(8) Cone Penetrometer Survey
(9) Remote Sensor Survey
(10) Radiological Investigation

.7.2.7 Conduct Ecological Investigation
(1) Wetland and Habitat Delineation
(2) Wildlife Observations
(3) Community Characterization
(4) Identification of Endangered Species
(5) Biota Sampling and Population Studies

.7.2.8 Collect Contaminated Building Samples.

.7.2.9 Dispose of Investigation-Derived Waste. Characterize and dispose of investigation-derived wastes in accordance with local, State, and Federal regulations as specified in the FSP and the Waste Management Plan (For more information, refer to the Fact Sheet entitled, *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS [January 1992]).

.7.3 Sample Analysis

1. Analyses of soil and sediment samples (physical properties), surface and ground water samples, waste samples, discharge samples, and air samples are the most likely types of confirmatory samples taken during RA. However, additional analyses are presented below to preserve the WBS and to provide the WAM/RPM consideration with a comprehensive listing for consideration.

2. The WAM/RPM should consider adding a subtask for onsite laboratory analysis, if required. The constructor will usually provide this service through the construction contract and there may be no reason for the contractor to provide an independent onsite laboratory.

3. For cleanup validation and to ensure that the cleanup standards have been met, CLP analyses are more likely to be performed than screening analyses. Some screening analyses in combination with CLP may be required as construction proceeds. The WAM/RPM should specify the types of sample analyses required at specific milestones during construction.

.7.3.1 Screening Type Laboratory Sample Analysis. The contractor shall arrange for and conduct the appropriate combination of screening analytical tests for any materials and/or confirmatory samples taken at the site:

(1) Analyze Air and Gas Samples
(A) Organic

(B) Inorganic
(C) Radiochemistry
(2) Analyze Ground Water Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(3) Analyze Surface Water Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(4) Analyze Soil and Sediment Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(5) Analyze Waste (Gas) Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(6) Analyze Waste (Liquid) Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(7) Analyze Waste (Solid) Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(8) Analyze Biota Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(9) Analyze Bioassay Samples
(10) Perform Bioaccumulation Studies

.7.3.2 CLP Type Laboratory Sample Analysis. The contractor shall arrange for and conduct the appropriate combination of CLP analytical tests for any materials and/or confirmatory samples taken at the site:

(1) Analyze Air and Gas Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(2) Analyze Ground Water Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(3) Analyze Surface Water Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(4) Analyze Soil and Sediment Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(5) Analyze Waste (Gas) Samples
(A) Organic

(B) Inorganic
(C) Radiochemistry
(6) Analyze Waste (Liquid) Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(7) Analyze Waste (Solid) Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(8) Analyze Biota Samples
(A) Organic
(B) Inorganic
(C) Radiochemistry
(9) Analyze Bioassay Samples
(10) Perform Bioaccumulation Studies

.7.4 Analytical Support and Data Validation

1. For RA, full data validation procedures are usually not necessary. The WAM/RPM may specify the level of data validation required.

2. The WAM/RPM should specify the format for submissions if there are Region-specific or other requirements.

.7.4.1 Prepare and Ship Environmental Samples. The contractor shall ensure the proper management of samples in the field and arrange for shipment to the designated laboratory. Accurate chain-of-custody procedures for sample tracking, protective sample packing techniques, and proper sample-preservation techniques will be used.
(1) Ground Water Samples
(2) Surface and Subsurface Soil Samples
(3) Surface Water and Sediment Samples
(4) Air Samples
(5) Biota Samples
(6) Other Types of Media Sampling and Screening
.7.4.2 Coordinate with Appropriate Sample Management Personnel
.7.4.3 Implement EPA-Approved Laboratory QA Program.
.7.4.4 Provide Sample Management (Chain of Custody, Sample Retention, and Data Storage)
.7.4.5 Perform Data Validation. The contractor shall validate appropriate data to ensure that the confirmatory data are accurate and defensible.
(1) Review Analysis Results against Validation Criteria
(2) Provide Written Documentation of Validation Efforts

.7.5 Data Evaluation

1. The WAM/RPM should specify the format for submissions if there are Region-specific or other requirements.

2. The WAM/RPM should require the contractor to prepare and submit a Technical Memorandum to the WAM/RPM summarizing the quality of data, preliminary results of evaluation, and if significant data problems are identified early in the evaluation.

.7.5.1 Data Useability Evaluation/Field QA/AC

.7.5.2 Data Reduction, Tabulation, and Evaluation. The contractor shall evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables. The contractor shall design and set up an appropriate database for pertinent information collected that will be used to validate the RA.

(1) Evaluate Geological Data (Soils and Sediments)
(2) Evaluate Air Data
(3) Evaluate Hydrogeological Data: Ground Water
(4) Evaluate Hydrogeological Data: Surface Water
(5) Evaluate Waste Data
(6) Evaluate Geophysical Data
(7) Evaluate Ecological Data

.7.5.3 Modeling. The contractor shall perform limited and focused computer modeling of data (i.e., air monitoring data) to facilitate data evaluation and interpretation.

(1) Contaminant Fate and Transport
(2) Water Quality
(3) Ground Water
(4) Air
(5) Other Modeling

.7.5.4 Develop Data Evaluation/Cleanup Status Report. Evaluate and present the sampling and analytical results in a summary report and submit to the WAM/RPM for review and approval. The report will assess the progress of the RA based on these results and identify any actions required. After the WAM/RPM's review, the contractor shall attend a meeting with EPA to discuss data evaluation results and next steps.

7.8 Remedial Action Implementation (Subpool Activities)

The purpose of this task is to provide the contractor with a structure for recording the activities performed and costs incurred by the constructor and any subcontractors during RA implementation. A funding reserve is allocated in this task to account for unforeseen site conditions and associated adjustments (i.e., change orders.

> The use of MCACES Gold for construction cost estimates and the USACE WBS will provide consistency for construction cost estimates so that costs for similar RAs can be compared.

.8.1 Remedial Action Subcontract Cost. The contractor shall monitor and track the costs associated with the constructor's implementation of the remedy.

.8.2 Remedial Action Reserve (15% of Remedial Action Subcontract). The contractor shall monitor and track the reserve in relation to any approved change orders and notify the WAM/RPM when 75% of the reserve has been expended.

7.9 Project Performance (Operation and Maintenance [O&M])

The purpose of this task is to perform the activities necessary to protect the integrity of the remedy and to evaluate system performance. This task begins during the later stages of construction with the revision of the O&M manual and ends with submittal of final technical memoranda summarizing project performance.

> The services provided here must be integrated with design document requirements. Design decisions will dictate the level of effort required of the RA contractor versus the constructor.

.9.1 Operation and Maintenance (O&M)

.9.1.1 Review O&M Manual. The contractor shall review and update the O&M Manual, as necessary, to include as-built drawings and equipment data sheets. The revised manual shall be submitted to the WAM/RPM 30 days prior to the start of operation.
(1) Describe/Analyze Potential Operating Problems
(2) Review Conformity to Applicable Performance and Operations Requirements

.9.1.2 Ensure Adequate Training for O&M Staff. The contractor shall support all necessary training of the O&M staff, including State personnel and contractors.

.9.1.3 Develop Corrective Action Plans. The contractor shall identify any potential system failures and develop corrective action plans, if necessary.

.9.1.4 Review Records/Reporting Requirements

.9.1.5 Review Laboratory Procedures

.9.1.6 Review Process Systems

.9.1.7 Review Safety and Emergency Systems. The contractor shall perform the necessary reviews of safety and emergency systems

.9.1.8 Review Warranty Information and Files

.9.2 System Performance

.9.2.1 Evaluate Equipment including operating parameters and performance. At a minimum, the performance data to be collected shall be as needed to satisfy the requirements for preparing the Cost and Performance Reports required under Section 7.9.3

.9.2.2 Performance Tests Oversight. The contractor shall oversee any performance tests conducted by the constructor and document procedures and results.

.9.2.3 Gather and Test Samples (see task 7 for details).

.9.3 Report Project Performance

.9.3.1 The contractor shall prepare a technical memorandum to summarize the system's performance and required O&M procedures. The contractor also shall prepare a Cost and Performance Report in accordance with the guidance document entitled Guide to Documenting Cost and Performance for Remediation Projects, Publication EPA-542-B-95-002, March 1995. The report shall summarize the performance data collected under section .9.2.1 as well as project costs. The Draft Technical Memoranda and Draft Cost and Performance Report shall be submitted to the WAM/RPM 30 days prior to the final inspection.

.9.3.2 Respond to Comments

.9.3.3 The contractor shall respond to any comments from EPA and prepare the Final Technical Memoranda and Cost and Performance Report within 10 days of receipt of comments.

7.10 Project Completion and Close Out

The purpose of the project completion and close-out activities is for the RA contractor to conduct the necessary inspections to verify completed work, make final payments, close out subcontracts, and prepare a Remedial Action Report.

1. The RPM/WAM should identify when government accepts transfer of the constructed facilities at the completion of the work assignment.

2. It is important for the WAM/RPM to consider the nature of any site improvements that will be funded with Superfund monies. Often reasonable activities that restore the physical appearance of the site and result in the long-term effectiveness of the remedy are included in the construction contract (i.e., road improvements). If not, the WAM/RPM may task the RA contractor to complete these activities.

.10.1 Demobilization

.10.1.1 Removal of Temporary facilities. The contractor shall dismantle, pack up, and move off-site any temporary facilities (i.e., trailers) or equipment used during the course of the RA.

.10.1.2 Site Restoration. At the direction of the WAM/RPM, the contractor shall conduct reasonable activities that restore the physical appearance of the site (i.e., road restoration, fence removal, limited landscaping).

.10.1.3 Termination of Engineering Support Activities.

.10.2 Pre-final/Final Activities

.10.2.1 Make pre-final/final inspection. The contractor shall conduct the prefinal inspection with the constructor and develop a punch list of deficiencies. The contractor shall prepare and submit a prefinal inspection report which includes the list of deficiencies, completion dates for outstanding items, and the date for a final inspection.

.10.2.2 Make Lockout Inspection. The contractor shall arrange for the final lockout inspection and determine if all terms of the contract have been satisfied.

.10.3 Final Payment/Punch List

.10.3.1 As-built resolution/certification

.10.3.2 Trial Period Oversight

.10.4 Remedial Action Report

.10.4.1 Prepare draft Remedial Action Report. The contractor shall prepare and submit to the WAM/RPM the Remedial Action Report, in accordance with the fact sheet entitled, *Remedial Action Report, Documentation for Operable Unit Completion*, Publication 9355.0-39FS, June 1992. The report shall summarize RA events, performance standards and construction quality control, construction activities, final inspection, certification that the remedy is operational and functional, O&M, and RA costs.

.10.4.2 Respond to Comments

.10.4.3 Prepare/Issue Final Remedial Action Report. After receipt of EPA comments, the contractor shall prepare and submit the final Remedial Action Report to the WAM/RPM.

7.11 Work Assignment Closeout

.11.1 Return Documents to Government

.11.2 Duplicate, Distribute, and Store Files

.11.3 Archive Files

.11.4 Prepare Microfiche, Microfilm, and Optical Disk

.11.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and level of effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

Attachment 1
Summary of Major Submittals for the Remedial Action at
_____ (Site)

TASK	DELIVERABLE	REF NO.	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
1.1.2	Site Trip Visit Report		3	10 days after site visit	7 days after receipt of report
1.1.4	RA Work Plan		3	30 days after initiation of work assignment (WA)	21 days after receipt of Work Plan
1.1.4	Final RA Work Plan		3	15 days after receipt of EPA comments	NA
1.2.1	Status Reports		3	Monthly and as directed by WAM/RPM	NA
2.1.2	Draft Community Relations Plan (CRP)		3	14 days after completion of community interviews	7 days after receipt of draft CRP
2.1.2	Final CRP		3	7 days after receipt of EPA comments	NA
3.1	Draft Revised Site Management Plan (SMP)		3	21 days after approval of RA Work Plan	14 days after receipt of SMP
3.1	Final Revised SMP		3	10 days after receipt of EPA comments	NA
3.1.1	Draft Revised Health and Safety Plan (HASP)		3	21 days after approval of RA Work Plan	14 days after receipt of plan
3.1.1	Final Revised HASP		3	10 days after receipt of EPA comments	NA
3.1.2	Draft Revised Sampling and Analysis Plan (SAP)		3	21 days after approval of RA Work Plan	14 days after receipt of plan
3.1.2	Final Revised SAP		3	10 days after receipt of EPA comments	NA
3.2	Draft Revised Pollution Control & Mitigation Plan		3	21 days after approval of RA Work Plan	14 days after receipt of plan

TASK	DELIVERABLE	REF NO.	NO. OF COPIES	DUE DATE (calendar days)	EPA REVIEW PERIOD
3.2	Final Revised Pollution Control & Mitigation Plan		3	10 days after receipt of EPA comments	NA
3.3	Draft Revised Construction Management Plan		3	21 days after approval of RA Work Plan	14 days after receipt of plan
3.3	Final Revised Construction Management Plan		3	10 days after receipt of EPA comments	NA
6.2.10	Draft Final Inspection Report		3	10 days after Final Inspection	NA
6.2.10	Final Inspection Report		3	7 days after receipt of EPA comments	NA
7.5.4	Draft Data Evaluation Summary Report		3	14 days after receipt of analytical results from laboratory	14 days after receipt of report
7.5.4	Final Data Evaluation Summary Report		3	7 days after receipt of EPA comments	NA
9.1.1	Draft Revised Operations and Maintenance (O&M) Manual		3	30 days before Final Inspection	21 days after receipt of report
9.3	Draft Technical Memorandum		3	10 days after completion of performance tests	21 days after receipt of memorandum
9.3	Final Technical Memorandum		3	10 days after receipt of EPA comments	NA
10.4	Draft Remedial Action Report		3	30 days after Final Inspection	21 days after receipt of report
10.4	Final Remedial Action Report		3	14 days after receipt of EPA comments	NA
11.5	Draft Closeout Report		3	30 days after final RA Report submitted	21 days after receipt of report
11.5	Final Closeout Report		3	14 days after receipt of EPA comments	NA
11.6	Final Costs		3	90 days after WA closeout	NA

Attachment 2
Work Breakdown Structure (WBS) for
Remedial Action (RA)

TASK 1 PROJECT PLANNING AND SUPPORT

1.0 Project Planning and Support
- .01 Project Planning
  - .01 Attend Scoping Meeting
  - .02 Conduct Site Visit (if necessary)
  - .03 Evaluate Existing Information (if necessary)
  - .04 Work Plan Development
    - .01 Draft Work Plan Development
      - .01 Develop Narrative
      - .02 Develop Cost Estimate
      - .03 Internal QA & Submission
    - .02 Final Work Plan Preparation
      - .01 Attend Negotiation Meeting
      - .02 Modify Draft Work Plan/Cost Estimate
      - .03 Internal QA & Submission
- .02 Project Management
  - .01 Prepare Periodic Status Reports
    - .01 Document Cost and Performance Status
    - .02 Prepare/Submit Invoices
  - .02 Meeting Participation/Routine Communications
  - .03 Maintain Cost/Schedule Control System
  - .04 Manage, Track, and Report Equipment Status
  - .05 Project Closeout
  - .06 Coordinate with Local Emergency Response Teams

TASK 2 COMMUNITY RELATIONS

2.0 Community Relations
- .01 Community Relations Plan (CRP) Development
  - .01 Conduct Community Interviews
  - .02 Prepare CRP
    - .01 Draft CRP
    - .02 Final CRP
- .02 Prepare Fact Sheets
- .03 Public Hearing, Meetings, & Availability Support
  - .01 Technical Support
  - .02 Logistical & Presentation Support
  - .03 Public Notice Support (writing, or placement of)
- .04 Maintain Information Repository/Mailing List

TASK 3 DEVELOPMENT AND UPDATE OF SITE SPECIFIC PLANS

3.0 Development and Update of Site Specific Plans
- .01 Update Site Management Plan
  - .01 Update Health & Safety Plan
  - .02 Update Sampling & Analysis Plan (Chemical Data Acquisition Plan)
    - .01 Quality Assurance Project Plan
    - .02 Field Sampling Plan
    - .03 Data Management Plan
- .02 Update Pollution Control & Mitigation Plan
  - .01 Transportation & Disposal Plan (Waste Management Plan)
- .03 Update Construction Quality Assurance Plan

TASK 4 PROCUREMENT OF SUBCONTRACT

4.0 Procurement of Subcontract
- .01 Prebid (Pre-Solicitation) Activities
  - .01 Printing & Distribution of Contract Documents
  - .02 Advertising/Soliciting of Bids
    - .01 Prebid (pre-solicitation) meetings
    - .02 Resolution of inquiries/Issuing Addenda
    - .03 On-site Visits
  - .03 Readvertise/Resolicit bids if necessary
- .02 Pre-Award Activities
  - .01 Receipt of Bids (offers)
    - .01 Determination of responsive, responsible bidders (offerors)
    - .02 Perform Reference checks
    - .03 Bid (offer) Tabulation
    - .04 Bid (offer) Analysis
  - .02 Receipt of follow-up items from lowest responsible bidder (offeror)
  - .03 Review of EEO, MBE requirements, SDB subcontracting plans
  - .04 Request for Consent from EPA
- .03 Post-Award Activities
  - .01 Attend Post Award Meetings/Preconstruction Conference
  - .02 Review permits, insurance, bonds, etc.
  - .03 Review & approve RA subcontractor schedule
  - .04 Review & approve RA subcontractor measurement and payment schedule
  - .05 Perform RA subcontractor Submittal Review - Issue Notice to Proceed (NTP)
  - .06 Review Revisions/Addendum of RA subcontractor Submittals

TASK 5 MANAGEMENT SUPPORT

5.0 Management Support
- .01 Financial Management
  - .01 Review & approve Invoices
  - .02 Review & approve Subcontract Modifications
  - .03 Maintain Tracking Systems
    - .01 Construction Codes of Accounts
    - .02 Work Breakdown Structure (WBS)
    - .03 Schedule (CPM, PERT, etc.)
- .02 Cost Monitoring
  - .01 Weekly/Monthly Tracking
  - .02 Analyze Progress Payments
  - .03 Monitor RA Subcontractor for Compliance with Davis-Bacon Act
- .03 Engineering Support
  - .01 Review Field Logs
  - .02 Periodic Attendance at Meetings
- .04 Engineering Support Option
  - .01 Review Field Change Requests
  - .02 Review VE Proposals
  - .03 Review Non-Conformance Reports
  - .04 Review Re-Design Proposals

TASK 6 DETAILED RESIDENT INSPECTION (Resident Engineer)

6.0 Detailed Resident Inspection
- .01 Attend Periodic Meetings
- .02 Provide Field Presence and Oversight
  - .01 Maintain Field Logs and Daily Diaries
  - .02 Interpret Subcontract Documents
  - .03 Develop Sketches Reflecting Field Conditions
  - .04 Review Submitted Construction Drawings
  - .05 Prepare Reports on Inspections
  - .06 Monitor, Update, & Report Construction Progress
  - .07 Review/Recommend Time Extensions

.08 Coordinate with Home Office/Management Support
.09 Perform Davis-Bacon Act Inspections
.10 Final Inspection
.01 Conduct Site Walkover
.02 Prepare draft Final Inspection Report
.03 Respond to Comments
.04 Prepare Final Inspection Report
.03 Provide Engineering Support to Design Team
.01 Recommend Actions on H&S Considerations
.02 Review/Recommend Action on VE Proposals
.03 Review/Recommend Design Changes
.04 Provide Support on Change Order Requests
.05 Provide Support in Claims Reduction
.06 Provide Support for Construction Schedule Changes
.04 Perform Field Testing
.05 Monitor Quality Assurance/Quality Control Procedures

TASK 7 CLEANUP VALIDATION

7.0 Cleanup Validation
.01 Mobilization/Demobilization
.01 Mobilize (acquire equipment/supplies/personnel)
.02 Demobilize
.02 Field Investigation
.01 Conduct Geological Investigations (Soils/Sediments)
.01 Surface Soil Sample Collection
.02 Subsurface Soil Sample Collection
.03 Soil Boring/Permeability Sampling
.04 Sediments Sample Collection
.05 Soil Gas Survey
.06 Test Pit
.02 Conduct Air Investigations
.01 Sample Collections
.02 Air Monitoring Station
.03 Conduct Hydrogeological Investigations - Groundwater
.01 Well Systems Installation
.01 Accomplish Mobilization
.02 Perform Well Development
.03 Conduct Downhole Geophysics
.04 Install Monitoring Wells
.05 Install Test Wells
.06 Install Gas Wells
.02 Sample Collection
.03 Hydro Punch
.04 Tidal Influence Study
.05 Hydraulic Tests (Pump Tests)
.06 Groundwater Elevation Measurement
.04 Conduct Hydrogeological Investigations—Surface Water
.01 Sample Collection
.02 Tidal Influence Study
.03 Surface Water Elevation Measurement
.05 Conduct Waste Investigation
.01 Sample Collection (Gas, Liquid, Solid)
.02 Derived Waste Disposal (Gas, Liquid, Solid)
.06 Conduct Geophysical Investigation
.01 Surface Geophysical Activity
.02 Magnetometer
.03 Electromagnetics
.04 Ground Penetrating Radar
.05 Seismic Refraction

.06 Resistivity
.07 Site Meteorology
.08 Cone Penetrometer Survey
.09 Remote Sensor Survey
.10 Radiological Investigation

.07 Conduct Ecological Investigation
.01 Wetland and Habitat Delineation
.02 Wildlife Observations
.03 Community Characterization
.04 Identification of Endangered Species
.05 Biota Sampling/Population Studies

.08 Collect Contaminated Building Samples

.09 Dispose of Investigation Derived Waste

.03 Sample Analysis

.01 Screening Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Groundwater Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies

.02 CLP-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Groundwater Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic

.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies

.04 Analytical Support and Data Validation
.01 Prepare and Ship Environmental Samples
.01 Groundwater Samples
.02 Surface and Subsurface Soil Samples
.03 Surface Water & Sediment Samples
.04 Air Samples
.05 Biota Samples
.06 Other Types of Media Sampling and Screening
.02 Coordinate with Appropriate Sample Management Personnel
.03 Implement EPA-Approved Laboratory QA Program
.04 Provide Sample Management (Chain of Custody, Sample Retention, & Data Storage)
.05 Perform Data Validation
.01 Review Analysis Results Against Validation Criteria
.02 Provide Written Documentation of Validation Efforts

.06 Data Evaluation
.01 Data Useability Evaluation/Field QA/QC
.02 Data Reduction, Tabulation and Evaluation
.01 Evaluate Geological Data (Soils/Sediments)
.02 Evaluate Air Data
.03 Evaluate Hydrogeological Data—Groundwater
.04 Evaluate Hydrogeological Data—Surface Water
.05 Evaluate Waste Data
.06 Evaluate Geophysical Data
.07 Evaluate Ecological Data
.03 Modeling
.01 Contaminant Fate and Transport
.02 Water Quality
.03 Groundwater
.04 Air
.05 Other Modeling
.04 Document Data Evaluation Efforts

TASK 8 REMEDIAL ACTION IMPLEMENTATION (SUBPOOL ACTIVITIES)

8.0 Remedial Action Implementation
.01 Remedial Action Subcontract Cost

.02 Remedial Action Reserve (15% of Remedial Action Subcontract)

TASK 9 PROJECT PERFORMANCE

9.0 Project Performance (O&M)
- .01 Operation & Maintenance (O&M)
  - .01 Review O&M Manual
    - .01 Describe/Analyze Potential Operating Problems
    - .02 Review Conformity to Applicable Performance & Operations Performance
  - .02 Ensure Adequate Training for O&M Staff
  - .03 Develop Corrective Action Plans (if necessary)
  - .04 Review Records/Reporting Requirements
  - .05 Review Laboratory Procedures
  - .06 Review Process Systems
  - .07 Review Safety and Emergency Systems
  - .08 Review Warranty Information and Files
- .02 System Performance
  - .01 Evaluate Equipment
  - .02 Site Restoration
  - .03 Gather and Test Samples (see Task 7 for details)
- .03 Report Project Performance
  - .01 Develop Draft Technical Memoranda and Cost and Performance Report
  - .02 Respond to Comments
  - .03 Prepare Final Technical Memoranda and Cost and Performance Report

TASK 10 PROJECT COMPLETION AND CLOSE OUT

10.0 Project Completion and Close Out
- .01 Demobilization
  - .01 Removal of Temporary Facilities
  - .02 Site Restoration
  - .03 Termination of Engineering Support Activities
- .02 Pre-Final/Final Activities
  - .01 Make Pre-Final/Final Inspection
  - .02 Make Lockout Inspection
- .03 Final Payment/Punch List
  - .01 As-built Resolution/Certification
  - .02 Trial Period Oversight
- .04 Remedial Action Report
  - .01 Prepare Draft Remedial Action Report
  - .02 Respond to Comments
  - .03 Prepare/Issue Final Remedial Action Report

TASK 11 WORK ASSIGNMENT CLOSE OUT

11.0 Work Assignment Close Out
- .01 Return Documents to Government
- .02 File Duplication/Distribution/Storage
- .03 File Archiving
- .04 Microfiche/Microfilm/Optical Disk
- .05 Prepare Closeout Report

Attachment 3
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.

28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. *Remedial Design/Remedial Action (RD/RA) Handbook*, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.

Attachment 4

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE:	TRANSMITTAL NO.
TO:	FROM:		☐ New Transmittal ☐ Resubmittal of Transmittal No. _____

SUBTASK NO.	DELIVERABLE	NO. OF COPIES	REMARKS

ACCEPTANCE ACTION	
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)	NAME/TITLE/SIGNATURE OF REVIEWER DATE

Attachment 5

TRANSMITTAL REGISTER								
PROJECT TITLE AND LOCATION				CONTRACT NO.			WORK ASSIGNMENT NO.	
Subtask No.	DELIVERABLE	No. of Copies	Due Date	Transmittal No.	Date Received	Date Comments Sent to Contractor	EPA Acceptance Date	REMARKS

_____
(Date)

MODEL STATEMENT OF WORK FOR REMEDIAL ACTION OVERSIGHT

_____ SITE, _____ COUNTY, _____ STATE

ATTACHMENTS

Attachment 1. Summary of Major Submittals for the Remedial Action Oversight at ___ (Site) 21
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Attachment 5. Transmittal Register 31

Purpose of RA Oversight Model SOW

1. **To tell the contractor what EPA wants done.** This model SOW is for contractors to provide oversight of RAs being conducted by Potentially Responsible Parties (PRPs). Be as specific as possible in describing what the RA oversight contractor is required to do. In that way, the contractor will understand the requirements, will write a RA Oversight Work Plan and associated budget to meet those requirements, and will be ultimately responsible for satisfying those requirements. Whenever there is an absolute requirement (e.g., that the contractor prepare the Quality Assurance Project Plan (QAPP) in accordance with QAMS-005/80, December 29, 1980), state that requirement.

2. **To give the contractor a structure for recording costs.** A structured cost schedule will simplify cost comparisons of specific tasks being performed at similar RA oversight projects.

Use of Work Breakdown Structure (WBS)

1. A WBS was developed for this model SOW for the WAM/RPM to track the initial and final costs of each element and to share these data with other Federal agencies. The WBS is, essentially, the outline for this model SOW and is included as Attachment 2 to this document.

2. If an element is not to be used, **do not** change the numbering system, instead, insert "Not used" for that element number after deleting the text for that element.

3. For elements in the SOW for a given project, additional descriptions (e.g., type of samples and estimated number) should be added to the SOW for the contractor and WAM/RPM to develop estimated costs on a common basis.

8.0 Introduction

.0.1 Site Description

Provide a brief site description that contains information relative to RA oversight planning and implementation such as location, operational history, remedial response history, waste types, quantities, and milestones specified in the Record of Decision (ROD) and Remedial Design (RD) documents.

.0.2 Purpose

The purpose of this SOW is to provide the framework and requirements for the contractor to provide oversight of the construction and implementation of the RA, including system start-up and diagnostic testing, operation and maintenance, and performance monitoring, at _____ (site). Actual construction and implementation of the RA shall be performed by the PRP's constructor. The ROD issued on _____ (date) describes the RA selected for this site, and the RD documents provide the construction and implementation detail required to achieve the selected RA. The goal is to complete the RA by _____. The estimated completion date for this work assignment is _____.

Many contractors, subcontractors, and other participating team members will be involved in the completion of the RA. The WAM/RPM may consider identifying and defining each team member to avoid potential confusion. Upfront definitions will ensure that the names and titles of team members are used consistently throughout the completion of the RA, and that the roles and responsibilities of each team member are clear in the SOWs, project plans, and other critical project and contract documents.

For the purposes of this model SOW, the "**contractor**" is defined as the firm responsible for performing the SOW. The **contractor** is under contract with EPA to provide oversight of the "RA constructor," who is under contract with the PRPs. The **contractor** may be contracted through the Alternate Remedial Contracting Strategy (ARCS) or Remedial Action Contractor (RAC) contracting vehicles, but will not be performing RA construction or implementation tasks.

For a PRP-lead remediation project, it is likely that RD and RA would be performed by PRP constructors and contractors, with oversight provided by EPA contractors. This model SOW is written with the assumption that the **contractor** (providing RA oversight) is not the same as the contractor that provided RD oversight. If the same contractor is used, some of the tasks described in this model SOW could be modified or "Not used."

.0.2.1 Description of the RA

A brief description should include a summary of the general response objectives for the subject site, the selected RA described in the ROD to achieve those objectives, and a description of subsequent RD documents required for construction and implementation of the RA.

.0.2.2 Objectives of Oversight. The primary objective of PRP oversight is to ensure that the RA, as specified in the ROD and the RD documents, is accurately interpreted and adhered to during construction and implementation. The RA must protect public health and the environment during the life of the project and must comply with the terms of the Settlement Agreement or Consent Decree (CD). Successful RA oversight is accomplished by observing and documenting that the PRP has complied with all applicable laws, regulations, and requirements, and has met all performance standards specified in the CD.

.0.3 General Requirements

.0.3.1 The contractor shall perform RA oversight in accordance with this SOW and shall ensure consistency with the ROD, RD documents produced for the site, the CD, the *Remedial Design and Remedial Action Handbook* (U.S. EPA Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995) and other relevant guidance used by EPA in conducting RAs. The primary contact for this work assignment is _____, Tel. (___)_____; the secondary contact is _____, Tel. (___)_____.

.0.3.2 A summary of the major deliverables and the schedule for submittal is attached. See Attachment 1.

.0.3.3 Specifically, the RA involves the construction and implementation of _____ (briefly describe the major components of the RA).

.0.3.4 The contractor shall furnish all necessary and appropriate personnel, materials, and services needed, or incidental to, performing and completing the RA oversight.

.0.3.5 A list of primary guidance and reference material is listed in Attachment 2. In all cases, the contractor shall use the most recently issued guidance.

.0.3.6 The contractor shall maintain RA oversight files as specified in the contract and by the WAM/RPM.

.0.3.7 The contractor shall communicate at least weekly with the WAM/RPM, either in person or through conference calls, to report on RA oversight progress.

.0.3.8 The contractor shall notify the WAM/RPM when 75 percent and when 95 percent of the approved work assignment budget has been expended.

.0.3.9 The contractor shall document all decisions that are made in meetings and conversations with EPA or the PRP. The contractor shall forward this documentation to the WAM/RPM within 2 working days of the meeting or conversation.

Although the contractor is being tasked to document decisions made in meetings and conversations with EPA or the PRP, the WAM/RPM is ultimately responsible for documenting the decisions and should not solely rely on the contractor to do this.

.0.3.10 EPA will provide oversight of contractor activities throughout the RA oversight efforts. EPA review and approval of the contractor's deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment during the contractor's oversight of the PRP's remedial activities. EPA will review the deliverables prepared during the oversight to assess the likelihood that the RA will achieve its remediation goals and that all performance requirements applicable to the RA have been correctly identified and implemented. However, acceptance of deliverables by EPA does not relieve the contractor of responsibility for the adequacy of the deliverable.

.0.4 Oversight Official

The contractor shall designate an Oversight Official (i.e., the contractor's site manager responsible for the work assignment) to report directly to the WAM/RPM during RA oversight. The Oversight Official is the point-of-contact (POC) from the contractor, who acts as a liaison between the WAM/RPM, the PRP, the PRP's RA constructor, and the PRP's Independent QA Team. The Oversight Official is responsible for providing technical support in monitoring PRP compliance with the CD. Specific responsibilities of the Oversight Official include ensuring that the PRP is working with an Independent QA Team, assisting in the review of professional qualifications, reviewing RA submittals, and providing summary and activity reports to the WAM/RPM.

.0.5 Equipment Transfer

At the completion of the RA, or when government property is no longer required at the site, the contractor shall arrange for the proper disposition of government-furnished or contract-acquired property (purchased with contract funds) in accordance with the contract requirements. The disposition (transfer, sale, or abandonment) of government personal property and the tracking of such equipment shall be coordinated with the Contract Property Administrator. For additional information, refer to *Contractor's Guide for Control of Government Property*, Office of Administration and Resources Management, December 1988.

.0.6 Project Closeout

At the completion of the RA, the contractor shall perform all necessary project closeout activities as specified in the contract. These activities may include closing out any subcontracts, indexing and consolidating project records and files, and providing a technical and financial closeout report to EPA. Final costs shall be reported to EPA electronically, categorized by each cost element in the WBS.

8.1 Project Planning and Support

The purpose of this task is to plan for the execution and overall management of this SOW. Technical and management activities required to oversee the PRP's implementation of the RA, along with associated costs, are developed during the planning phase and are detailed in the contractor's RA Oversight Work Plan. Activities required for general work assignment management, including preparation of monthly progress report and invoices, that will occur throughout the duration of the project are included in this task. This task may begin before or after approval of the final RD and will continue through the RA oversight work assignment closeout.

.1.1 Project Planning

.1.1.1 Attend Scoping Meeting. The contractor shall attend a scoping meeting to be held at the EPA Regional Office before or concurrent with developing the contractor's RA Oversight Work Plan.

Location of meetings and the WAM/RPM's expectations for the number of contractor personnel to attend should be specified for cost estimation purposes. Consider having the RD oversight contractor, if different than the RA oversight contractor, attend initial meetings and site visits to present any special considerations and to facilitate the transfer of site and design information prior to the development of the RA Oversight Work Plan.

.1.1.2 Conduct Site Visit. The contractor shall conduct a one-day site visit with the WAM/RPM during the project planning phase to develop a conceptual understanding of the site and the RA scope and requirements. A Health and Safety Plan (HASP) is required for the site visit. The contractor shall prepare a letter report that documents all EPA, RA constructor, RA oversight contractor, and site personnel present at the visit, all decisions made during the visit, any action items assigned, including person responsible and due date, any unusual occurrences during the visit, and any portions of the site that were not accessible to the contractor and the impact of this on oversight of the RA. This report shall be submitted to the WAM/RPM within 10 calendar days of the site visit.

.1.1.3 Evaluate Existing Information. The contractor shall obtain, copy (if necessary), and review available information pertaining to the site from EPA. The contractor shall evaluate the existing data and documents, including the ROD, the CD, and the PRP's RA Work Plan, if available. The specific reference documents to be reviewed are listed in Attachment 3.

The WAM/RPM may want to specify that the contractor focus on the review of RD documents submitted by the PRP's RD contractor. The contractor should perform a relatively thorough review of final design documents to gain an understanding of the RA to be constructed and implemented at the subject site. A detailed review of earlier stages of design (i.e., review of preliminary and intermediate design documents, described under Task 6.7.1 in the WBS) would not likely be required of the RA oversight contractor.

In addition to providing the contractor with final design documents, the WAM/RPM may want to compile summaries contained in project reports to describe the nature and extent of contamination, cleanup goals and objectives, the selected RA, and critical aspects of the ongoing community relations program. The WAM/RPM could also provide reference documents for the selected RA, such as technology summaries and fact sheets.

.1.1.4 Develop Technical Project Goals and Objectives. The contractor shall prepare data needs and data quality objectives (DQOs) for analytical sampling to be performed during oversight. The goals and objectives should be used to define the analytical methods and protocols, decontamination procedures, and EPA reporting levels (e.g., I, II, III, IV) required to match those used by the PRP's RA constructor.

(1) Not used - Develop Conceptual Site Model

(2) Identify Preliminary Project Requirements
- (a) Data Needs and Data Quality Objectives
- (b) Not used - RA Objectives and Potential Alternatives
- (c) Not used - Possible Treatability Studies
- (d) Not used - ARARs and/or Standards
- (e) Not used - NEPA Requirements
- (f) Not used - Other Regulatory Requirements/Restrictions

The WAM/RPM should require the contractor to identify DQOs for the collection of samples during RA oversight. Other requirements and standards that may be applicable to the contractor's SOW should also be identified.

.1.1.5 Develop RA Oversight Work Plan

(1) Develop Draft RA Oversight Work Plan. The contractor shall prepare and submit a Draft RA Oversight Work Plan within 45 calendar days after initiation of the work assignment. The contractor shall use information from the EPA-approved PRP's RA Work Plan, if available, appropriate guidance, and direction provided by the WAM/RPM as the basis for preparing the RA Oversight Work Plan. RA oversight work must be coordinated and properly sequenced with EPA and PRP RA activities. Submit the original to the Contracting Officer, one copy to the Project Officer, and one copy to the WAM/RPM.

1. The WAM/RPM should verify the work plan submittal timeframe with the PO.

2. Additional copies of the work plan can be submitted to the WAM/RPM if specified, for distribution to other technical staff.

(a) Develop Narrative. The RA Oversight Work Plan shall include a comprehensive description of project tasks, the procedures to accomplish them, quality assurance/quality control (QA/QC) systems and project-specific QA/QC

procedures to be followed, project documentation, and project schedule. Specifically, the RA Oversight Work Plan shall include the following:

- Identification of RA project elements and the associated oversight tasks including review of PRP planning, construction, and implementation documentation. This task will result in a detailed breakdown of subtasks within the WBS tasks.
- The contractor's technical approach to each task to be performed, including a detailed description of each task, the assumptions used, the information needed for each task, any information to be produced during and at the conclusion of each task, and a description of the work products that will be submitted to EPA. Information shall be presented in a sequence consistent with the work breakdown structure format defined in the standard WBS.
- A schedule with specific dates for completion of each required activity and submission of each deliverable required by this SOW. This schedule shall also include information regarding timing, initiation, and completion of all critical path milestones for each activity and deliverable and the expected review time for EPA.
- A project communications and management plan and contractor reporting requirements, such as meetings and presentations to EPA at the conclusion of major phases of the project.

(b) Develop Cost Estimate. The contractor's estimated cost to complete the work shall be broken into Level of Effort (by P-level) and cost for each element of the Work Breakdown Structure (Attachment 2) and submitted to EPA on disk.

(c) Perform Internal QA and Submit Draft RA Oversight Work Plan

(2) Prepare Final RA Oversight Work Plan. The contractor shall prepare a Final RA Oversight Work Plan 15 days after receipt of EPA comments on the draft. This final version shall incorporate comments on the draft version as directed by the WAM/RPM.

(a) Attend Negotiation Meeting. The contractor shall attend a Work Plan negotiation meeting at the EPA Regional Office. EPA and the contractor will refine the SOW requirements and funding issues related to the RA Oversight Work Plan.

(b) Modify Draft RA Oversight Work Plan and Cost Estimate.

(c) Perform Internal QA and Submit Final RA Oversight Work Plan.

.1.1.6 Review PRP Plans. The contractor shall review upfront plans prepared by the PRP's RA constructor. These plans should constitute a complete set of construction-related work plans and project plans, based on generic guide specifications for construction.

> The review of PRP plans under this task includes those plans which can be prepared prior to the preparation of detailed construction plans. The review of detailed construction plans is described in Task 6.7, "Review of PRP Documents." Generic guide specifications for construction may be used by the PRP's RA constructor to prepare these upfront PRP plans. The RA oversight contractor should recognize the preliminary level of detail that can be expected during their review of upfront plans.

(1) Review PRP Site Management Plan

(a) Review PRP Pollution Control & Mitigation Plan

(b) Review PRP Transportation and Disposal (of site-derived wastes) Plan

(2) Review PRP Health and Safety Plan

(3) Review PRP Sampling and Analysis Plan

(a) Review PRP Quality Assurance Project Plan

(b) Review PRP Field Sampling Plan

(c) Review PRP Data Management Plan

(4) Review Other PRP Plan(s)

.1.2 Preparation of Site-Specific Plans

The site-specific plans to be prepared by the contractor may consist of revisions or modifications to existing plans. If the RA oversight contractor was also the RD oversight contractor, this task should be abbreviated to reflect only revisions to existing plans. Similarly, if a new RA oversight contractor is being used, previous site plans can be provided by the WAM/RPM as examples to streamline this task.

.1.2.1 Not used

.1.2.2 Develop Health and Safety Plan (HASP) that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with 29 CFR 1910.120. Whenever possible, use the HASP developed for the RI/FS and/or RD oversight work assignments in preparing the HASP for RA oversight. Provisions in the RA constructor's HASP may also be incorporated into the contractor's HASP.

1. The HASP may not constitute an Emergency Response Plan. Site conditions may warrant the preparation of a separate Emergency Response Plan.

2. EPA does not approve the contractor's HASP, but reviews it to ensure that it is complete and adequately protective.

.1.2.3 Develop Sampling and Analysis Plan (SAP) or Chemical Data Acquisition Plan to reflect the specific objectives of data acquisition to be conducted during RA construction oversight. The SAP will outline the data collection and QA/QC requirements of sampling and analysis to be conducted by the contractor. The SAP may be composed of the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) under separate covers, or it may be a single document, containing the essential elements of both the FSP and QAPP. The contractor shall use the SAPs prepared for the RI/FS and/or RD oversight portions of the project, whenever possible.

The Sampling and Analysis Plan (SAP) may not be required for certain RA oversight WAs. If required, the SAP can be prepared by updating the SAP prepared for the RD. The contractor may collect split (or duplicate) samples for laboratory analysis as samples are collected by the PRP's RA constructor. These split samples are collected under Task 6.5 to assess the quality of analytical results provided by the PRP. For a direct comparison, samples should be analyzed using the same analytical methods and EPA reporting levels as those used by the PRP's RA constructor.

(1) Develop Quality Assurance Project Plan in accordance with QAMS-005/80 (December 29, 1980). The QAPP shall describe the project objectives and QA/QC protocols to be used in achieving the desired DQOs. The DQOs shall, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for RA objectives identified in the National Contingency Plan (NCP). The selected analytical methods and reporting levels shall parallel those being used by the PRP's RA constructor.

(2) Develop Field Sampling Plan to define the oversight sampling and information-collection methods that shall be used for the project. It shall include sampling objectives, sample locations and frequency, sampling equipment and procedures, sample handling and analysis, and description of which samples are to be analyzed through the Contract Laboratory Program (CLP), which through other sources, and

the justification for those decisions. The FSP shall be written so that a field sampling team unfamiliar with the site would be able to gather the samples and field information required. The FSP developed for the RI/FS or RD oversight should be used whenever possible in preparing the FSP for the RA oversight activities.

(3) Develop Data Management Plan to address requirements for project management systems including tracking, storing, and retrieving data. The plan shall also identify software to be used, minimum data requirements, data format, and backup data management. The plan shall address both data management and document control for all RA oversight activities.

1.2.4 Other Plan(s)

.1.3 Project Management

1. The WAM/RPM should specify the format for submissions; e.g., Monthly Progress Reports, if there are Region-specific requirements or if you have specific requirements.
2. During construction, there may be especially active periods and the WAM/RPM should specify additional communication requirements or status reports from the contractor. Also, the WAM/RPM should arrange for personal visits to the site during these times.

.1.3.1 Prepare Periodic Status Reports. The contractor shall prepare Monthly Progress Reports.

(1) Document Cost and Performance Status. The contractor shall document the technical progress and status of each task in the WBS for the reporting period in accordance with contract requirements. The contractor shall report costs and level of effort (by P-level) for the reporting period as well as cumulative amounts expended to date.

(2) Prepare and Submit Invoices. Monthly invoices will be prepared and submitted in accordance with the level of detail as specified in the contract.

.1.3.2 Meeting Participation and Routine Communications. The contractor shall attend project meetings, provide documentation of meeting results, and shall contact the WAM/RPM by telephone on a weekly basis to report project status. The contractor shall notify the WAM/RPM immediately if inconsistencies with the design or non-compliance with the CD or applicable or relevant and appropriate requirements (ARARs) are apparent. The contractor shall describe the problem and provide recommended solutions in a technical memorandum to the WAM/RPM.

.1.3.3 Not Used - Maintain Cost/Schedule Control System.

.1.3.4 Not used - Perform Value Engineering

.1.3.5 Not used - Perform Engineering Network Analysis

.1.3.6 Not used - Manage, Track, and Report Equipment Status.

.1.3.7 Work Assignment Closeout. The contractor shall perform the necessary activities to closeout the work assignment in accordance with contract requirements.

.1.4 Subcontract Procurement and Support Activities

Other than a CLP laboratory, it is unlikely that the contractor will require subcontractors for RA oversight activities. A special laboratory may be desired in addition to a CLP laboratory to perform geotechnical testing or biologic parameter testing for certain sites. Using non-CLP laboratories should be considered on a case-by-case basis.

.1.4.1 Identify and Procure Subcontractors. The contractor shall identify, solicit, and award any subcontracts that are required to complete the RA oversight activities.

(1) Not used - Drilling Subcontractor
(2) Not used - Surveying Subcontractor
(3) Not used - Geophysical Subcontractor
(4) Not used - Site Preparation Subcontractor
(5) Analytical Services Subcontractor(s)
(6) Not used - Waste Disposal Subcontractor
(7) Not used - Treatability Subcontractor(s)
(8) Other(s)

.1.4.2 Develop Subcontractor QA/QC Program. The contractor shall review, approve, and monitor the subcontractor's QA/QC program and conduct audits, as required.

.1.4.3 Perform Subcontract Management. The contractor shall perform the necessary management and oversight of any subcontractor(s) needed for RA oversight. The contractor shall institute procedures, monitor progress, and maintain systems and records to ensure that the work proceeds according to contract requirements. The contractor shall review and approve subcontractors' invoices and issue any necessary contract modifications.

8.2 Community Relations

The contractor shall provide community relations support to EPA throughout the RA. The contractor shall provide community relations support in accordance with *Community Relations in Superfund: A Handbook*, June 1988. This task begins with the approval of the contractor's RA Oversight Work Plan and continues throughout the duration of the work assignment.

1. Generally, EPA retains responsibility for community relations during a PRP-lead RA. The CD may specify the level of PRP participation in these activities and the WAM/RPM should define the role of the contractor and the level of interaction with the PRP.

2. A variety of possible community relations activities may be appropriate during the RA, based on the characteristics and specific circumstances at your site. Refer to the *Community Relations in Superfund: A Handbook, Chapters 6 and 7 and Appendix A*, for suggested community relations activities during RA activities.

3. With implementation of the remedy, site activity increases and so does the likelihood of community concerns and questions. In addition to the community relations activities listed below in the WBS, the WAM/RPM may consider the following activities to communicate progress during construction: arranging site tours and workshops, establishing observation decks, and videotaping cleanup activities. These activities may be covered under Task 6.2.3.1, "Technical Support," or added to the WBS as a separate item and numbered accordingly (i.e., 6.2.3.5). The WAM/RPM should plan for and develop a proactive and effective program with the assistance of the Regional Community Relations Specialist.

4. The WAM/RPM should review the current community relations plan, if one exists, and direct the contractor to update the existing CRP to address activities and concerns specific to the RA.

5. The WAM/RPM should specify the format for Community Relations submissions (e.g., fact sheets, news releases) if there are EPA Region-specific or other requirements.

.2.1 Develop Community Relations Plan

.2.1.1 Conduct Community Interviews. The contractor shall assist the WAM/RPM in conducting community interviews to identify community concerns associated with the RA. The contractor shall assist the WAM/RPM in identifying key community members, establishing an interview schedule, conducting interviews, and summarizing the results.

.2.1.2 Update the CRP. The contractor shall update the existing CRP to address community relations requirements and community concerns during the RA.

(1) Draft CRP. The contractor shall update the CRP and submit a draft version within 14 days after completion of the community interviews.

(2) Final CRP. Within 7 days of receipt of EPA comments, the contractor shall submit a final CRP.

.2.2 Prepare Fact Sheets

The contractor shall assist the WAM/RPM in preparing a fact sheet that informs the public about activities related to the final design, the schedule for the RA, activities to be expected during construction, measures to be taken to protect the community, provisions for responding to emergency releases and spills, and any potential inconveniences such as excess traffic and noise that may affect the community during the RA.

1. This subtask may have been completed during the RD. In that case, the WAM/RPM may task the contractor to revise the fact sheet before construction begins with the current schedule, expected conditions, and relevant points of contact.

2. Depending on the complexity of the RA, the WAM/RPM should consider communicating construction progress by sending out regular fact sheets. Specify to the contractor the anticipated number of fact sheets, topics, and number of copies required.

.2.3 Public Meetings and Availability Support

The number and locations of anticipated public meetings should be identified in the SOW for cost estimation purposes. Similarly, the WAM/RPM should specify the number of contractor personnel expected to be in attendance at the public meetings.

.2.3.1 Technical Support. The contractor shall assist the WAM/RPM in providing technical support for community meetings that may be held during the RA. This support may include preparing technical input to news releases, briefing materials, arranging other community relations vehicles (i.e., site tours), and helping the WAM/RPM to coordinate with local agencies.

.2.3.2 Logistical and Presentation Support. The contractor shall assist the WAM/RPM in preparing technical briefing materials and in arranging for the logistical details for the meetings.

.2.3.3 Public Notice Support. The contractor shall assist the WAM/RPM in drafting public notices, announcing the public meetings, and placing the notice in a local paper of general circulation.

.2.4 Maintain Information Repository and Mailing Lists

The contractor shall assist the WAM/RPM in developing or revising site mailing lists and maintaining a repository of information on activities related to RA, as described in Appendix A.8, page A-19, of *Community Relations in Superfund: A Handbook*, June 1988.

8.3 Data Acquisition Oversight

This task involves oversight of the PRP's collection of samples during the RA. The review of the PRP's project plans required for this sampling effort is performed under Task 6.1.1.6. This task begins with EPA's approval of the PRP's SAP, FSP, and QAPP prior to the PRP's mobilization, and ends with the PRP's demobilization at the completion of the RA.

Mobilization and demobilization oversight includes ensuring that the PRP's RA constructor and their subcontractors efficiently perform start-up and closeout field activities per the overall schedule in the CD. The RA oversight contractor should monitor site preparation and the construction of utilities and temporary facilities, and ensure that an appropriate work sequence is followed while minimizing site disturbances. A logical sequence for major mobilization and demobilization activities to be conducted by the RA constructor may be as follows:

Mobilization
- stage and organize equipment and materials onsite
- prepare exclusion zone, decontamination area, and waste storage/staging area
- construct utilities and temporary facilities

Daily Demobilization
- consolidate and store debris and excess materials
- decontaminate personnel and equipment
- maintain secure waste storage/staging area

Final Demobilization
- dismantle utilities and temporary facilities that are no longer required
- ensure site has minimum disturbances (i.e., remove trash, debris, excess materials)
- properly label waste stored/staged onsite, and ensure that provisions are in-place for its removal

.3.1 Mobilization and Demobilization Oversight

.3.1.1 Identify Field Support Equipment/Supplies/Facilities. The contractor may require a field trailer and related utilities if it is infeasible to share the RA constructor's trailer. Other support equipment, supplies, or facilities required for performing oversight activities should be identified in this task.

.3.1.2 Mobilization Oversight. Mobilization activities to be conducted by the PRP's constructor include preparing an exclusion zone, staging and organizing onsite equipment, and constructing utilities and temporary facilities.

(1) Not used - Site Preparation
(2) Installation of Utilities
  (a) Install Electric Distribution
  (b) Install Telephone/Communication System
  (c) Install Water/Sewer/Gas Distribution
  (d) Install Fuel Line Distribution
(3) Construction of Temporary Facilities
  (a) Construct Decontamination Facilities
  (b) Construct Sample or Derived Waste Storage Facility
  (c) Construct Field Offices
  (d) Construct Mobile Laboratory
  (e) Construct Other Temporary Facilities

.3.1.3 Demobilization Oversight. Demobilization activities to be conducted by the PRP's constructor include consolidating and storing materials, decontaminating personnel and equipment, and maintaining a secure waste storage/staging area.

(1) Removal of Temporary Facilities
(2) Site Restoration

.3.2 Perform Field Investigation Oversight. Field activities that require oversight include site reconnaissance, data acquisition of air, groundwater, surface water, and other environmental media

samples, as well as the characterization, management and disposal of investigation-derived wastes (IDW). The contractor shall ensure the proper collection and management of samples acquired by the PRP, including accurate chain-of-custody (COC) procedures for sample tracking, protective sample-packing techniques, and proper sample-preservation techniques. Ensure that the PRP characterizes and disposes of investigation-derived wastes in accordance with local, State and Federal regulations as specified in the FSP (see the Fact Sheet *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS, January 1992).

The WAM/RPM should specify the expected written and/or photographic documentation to be recorded in the field. The WAM/RPM also should specify the type of field activity reports expected by the WAM/RPM, the frequency, and the required distribution (WAM/RPM, State representative, etc.).

.3.2.1 Perform Site Reconnaissance Oversight
- (1) Ecological Resources Reconnaissance
- (2) Well Inventory
- (3) Residential Well Sampling
- (4) Land Survey
- (5) Topographic Mapping
- (6) Field Screening

.3.2.2 Perform Geological Investigations Oversight - Soils and Sediments

.3.2.3 Perform Air Investigations Oversight

.3.2.4 Perform Hydrogeological Investigations Oversight - Groundwater
- (1) Well Systems Installation
- (2) CLP Sample Collection
- (3) Screening Sample Collection. A screening sampling event can consist of temporary sampling points to estimate the approximate distribution and range of contaminant concentrations. CLP sampling can then be performed after the screening event to confirm specific concentrations. Screening techniques include temporary piezometers, well points, and direct push technology (DPT) sampling techniques such as piezocones, resistivity cones, groundwater samplers, and soil gas samplers.
- (4) Tidal Influence Study
- (5) Hydraulic Tests (Pump Tests)
- (6) Groundwater Elevation Measurement

.3.2.5 Perform Hydrogeological Investigations Oversight - Surface Water

.3.2.6 Perform Waste Investigation Oversight

.3.2.7 Perform Geophysical Investigation Oversight

.3.2.8 Perform Ecological Investigation Oversight

.3.2.9 Perform Contaminated Building Samples Oversight

.3.2.10 Perform Disposal of Investigation-Derived Wastes Oversight

.3.2.11 Prepare Data Acquisition Oversight Reports

8.4 Analysis of Split Samples

.4.1 Perform Screening-type Laboratory Sample Analysis

The contractor shall request appropriate analytical services to match those being used by the PRP's RA constructor. Using the same level of analysis will provide the data required to perform an accurate quality comparison. The contractor should reference the procedures outlined in the *User's Guide to the Contract Laboratory Program*, EPA, December 1986. Frequently, the PRP's RA constructor will use EPA Level II analytical reporting using non-CLP methods for this task; the RA oversight contractor should use the same level of analysis.

.4.1.1 Analyze Air and Gas Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.2 Analyze Groundwater Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.3 Analyze Surface water Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.4 Analyze Soil and Sediment Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.5 Analyze Waste (Gas) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.6 Analyze Waste (Liquid) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.7 Analyze Waste (Solid) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.8 Analyze Biota Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.1.9 Analyze Bioassay Samples

.4.1.10 Perform Bioaccumulation Studies

.4.2 Perform CLP-type Laboratory Sample Analysis

The contractor shall request appropriate analytical services to match those being used by the PRP's RA constructor. Using the same level of analysis will provide the data required to perform an accurate quality comparison. The contractor should reference the procedures outlined in the *User's Guide to the Contract Laboratory Program*, EPA, December 1986. Typically, the PRP's RA constructor will be using EPA Level IV analytical reporting using CLP methods for this task; the RA oversight contractor should use the same level of analysis.

.4.2.1 Analyze Air/Gas Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.2 Analyze Groundwater Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.3 Analyze Surface water Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.4 Analyze Soil and Sediment Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.5 Analyze Waste (Gas) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.6 Analyze Waste (Liquid) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.7 Analyze Waste (Solid) Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.8 Analyze Biota Samples
- (1) Organic
- (2) Inorganic
- (3) Radiochemistry

.4.2.9 Analyze Bioassay Samples

.4.2.10 Perform Bioaccumulation Studies

8.5 Analytical Support and Data Validation of Split Samples

The contractor shall collect split (or duplicate) samples of samples collected by the PRP's RA constructor, and shall arrange for the analysis and validation of those samples. The contractor's split samples are to be compared to samples collected by the PRP's RA constructor to assess the validity of the RA constructor's sampling program. The sample collection, analysis, and validation task begins with reserving sample slots in the CLP, and ends with the contractor's data validation letter report.

1. Sample collection procedures, analytical methods, and EPA reporting levels for the contractor's split samples should be consistent with the procedures, methods, and levels being used by the PRP's RA constructor.

2. For RA oversight purposes, full data validation procedures are usually not necessary. The WAM/RPM may want to specify the level of data validation required.

3. The WAM/RPM should specify the format for submissions if there are Region-specific or other requirements.

.5.1 Prepare and Ship Environmental Samples. The contractor shall properly collect and manage split samples in the field, and arrange for appropriate shipment to the designated laboratory. The contractor shall follow the procedures specified in the contractor's SAP, FSP, QAPP, and HASP for proper sample preservation and protective sample packing, and then ship via an overnight carrier to the designated laboratory.

.5.1.1 Groundwater Samples
.5.1.2 Surface and Subsurface Soil Samples
.5.1.3 Surface water and Sediment Samples
.5.1.4 Air Samples
.5.1.5 Biota Samples
.5.1.6 Other Types of Media Samples

.5.2 Coordinate With Appropriate Sample Management Personnel. The contractor shall arrange shipment and delivery schedules with the appropriate sample management personnel and provide any clarification on the data collection procedures that may be required.

.5.3 Implement EPA-Approved Laboratory QA Program. The contractor shall ensure the QA/QC protocols, as specified in the QAPP, are followed.

.5.4 Provide Sample Management (COC, sample retention, and data storage). The contractor shall follow accurate COC procedures for sample tracking.

.5.5 Perform Data Validation. The contractor shall perform appropriate data validation to ensure that the data are accurate and defensible. The contractor shall review the appropriate laboratory data packages according to the protocols specified in the contractor's RA Oversight Work Plan and complete the necessary summary tables, validation worksheets, and DQO summary forms. The contractor shall prepare and submit a data validation letter report within 21 calendar days of receipt of the analytical results.

.5.5.1 Review Analysis Results Against Validation Criteria
.5.5.2 Provide Written Documentation of Validation Efforts

8.6 Data Evaluation of Split Samples

This task involves comparison of the PRP's data that is collected during the RA with data resulting from the analysis of split samples collected by the contractor during RA oversight. Data evaluation begins with the receipt of analytical data from the data acquisition task and ends with the submittal of a Data Evaluation Summary Report. Specifically, the contractor shall compare, evaluate, interpret, and tabulate data in an appropriate presentation format for final data tables.

1. The WAM/RPM should specify the format for submissions if there are Region-specific or other requirements.

2. The WAM/RPM should specify that the contractor prepare and submit a Technical Memorandum to the WAM/RPM if new analytical data needs or significant data problems are identified during the evaluation.

.6.1 Data Useability Evaluation and Field QA/QC. The contractor shall review the data collected and the QA/QC protocols to evaluate if the data are appropriate for the intended use.

.6.2 Data Reduction, Tabulation, and Evaluation. The contractor shall evaluate, interpret, and tabulate data in an appropriate presentation format for analysis. The contractor shall design and set up an appropriate database for pertinent information collected that will be used to validate the RA. Data management should be performed according to the contractor's Data Management Plan.

.6.2.1 Evaluate Geological Data - Soils and Sediments
.6.2.2 Evaluate Air Data
.6.2.3 Evaluate Hydrogeological Data - Groundwater
.6.2.4 Evaluate Hydrogeological Data - Surface Water
.6.2.5 Evaluate Waste Data
.6.2.6 Evaluate Geophysical Data
.6.2.7 Evaluate Ecological Data

.6.3 Modeling. The contractor shall perform limited and focused computer modeling of data (e.g., air monitoring data) to facilitate data evaluation and interpretation.

.6.3.1 Contaminant Fate and Transport
.6.3.2 Water Quality
.6.3.3 Groundwater
.6.3.4 Air
.6.3.5 Other Modeling

.6.4 Develop Data Evaluation Report. The contractor shall evaluate and present results in a Data Evaluation Summary Report to submit to the WAM/RPM for review and approval. The report will include a comparison between the contractor's split sample data and the PRP's data, will provide an assessment of this comparison, and will identify any actions required. After the WAM/RPM's review, attend a meeting with EPA to discuss data evaluation results and next steps.

8.7 Review of PRP Documents

Task 6.1.1.6 in the WBS is "Review of PRP Plans," which is intended to include the review of upfront, generic project plans, such as the SAP, FSP, QAPP, and HASP. This task (Task 6.7) is intended to include the review of updates, amendments, or modifications to the upfront plans, as well as the review of detailed construction plans, specifications, and related submittals.

This task involves work efforts to review detailed construction plans and related documents prepared by the PRP's RA constructor. In addition to the review of project plans (e.g., SAP, FSP, QAPP, HASP) under Task 6.1.1.6, the RA oversight contractor shall perform reviews as directed by the WAM/RPM. The following factors are to be considered during the review of PRP submittals:

- Technical requirements of the ROD, Unilateral Administrative Order (UAO), Administrative Order of Consent (AOC), CD, and compliance with ARARs
- Standard professional engineering practices
- Applicable statutes, EPA policies, directives and regulations
- Spot checking design calculations to assess accuracy and quality of design activities
- Examination of planning and construction schedules for meeting project completion goals

The contractor shall review the planning, construction, and implementation documentation as directed by the WAM/RPM to ensure professional quality, technical accuracy, and compliance with the ROD and CD, CERCLA guidance, and ARARs. Specific documents to be reviewed include the PRP's RA Work Plan, Construction QAPP (CQAP), cut sheets, material lists, equipment lists and specifications, operation and maintenance plans, and updates or modifications to the upfront project plans (e.g., SAP, FSP, QAPP, HASP).

.7.1 Not used - Review of PRP Remedial Design Documents

Task 6.7.1 in the WBS is "Review PRP Remedial Design Documents." Because RD documents should be provided to the contractor to review under Task 6.1.1.3, this task is not likely to be required.

.7.2 Review of PRP Remedial Action Documents. The contractor's review of PRP documents should be focused on the technical and engineering aspects of the detailed construction-related submittals. Letter reports shall be submitted upon the completion of each review by the contractor within 21 calendar days of the start of the review, identifying specific issues and suggested revision or other action.

.7.2.1 Site Management for Construction
.7.2.2 PRP's Remedial Action Work Plan
.7.2.3 O&M Manual
.7.2.4 Remedial Action Report
.7.2.5 As-build Drawings
.7.2.6 Construction QAPP
.7.2.7 Construction QA Reports

8.8 Remedial Action Oversight

This task is intended to include general field oversight of the PRP's RA constructor during construction and implementation of the RA. This task is separate from other field tasks to be performed under the SOW (e.g., mobilization/demobilization oversight and data collection oversight). Field observations, recordings, photographs, and other compliance-related oversight activities are to be performed under this task.

This task includes work efforts to provide technical field oversight of PRP RA activities to ensure that construction and implementation is performed in accordance with RD plans, specifications, and the CD. Oversight activities include observing and recording compliance with specific aspects of project plans and design documents, photographing major field activities, maintaining a daily field notebook, and providing reports to the WAM/RPM. The contractor's Oversight Official should coordinate with the PRP's Independent QA Team and communicate and report to the WAM/RPM according to an agreed-upon schedule.

.8.1 On-site Oversight of Construction

The WAM/RPM must define the appropriate level of oversight needed. For example, will oversight be continuous over a long period or are short visits appropriate, will overnight stays be required, and is one person adequate to oversee the whole RA?

.8.2 Periodic RA Oversight Reports

The appropriate frequency and level of detail must be specified (i.e., whether the reports are to be weekly or periodic, whether the content is to be short and informal or very detailed).

.8.3 Participation in Remedial Action Meetings

.8.3.1 EPA Regional Office Meeting
.8.3.2 On-site Meetings

8.9 Technical Meeting Support

This task includes work efforts related to attendance at and documentation of meetings with EPA, PRPs, PRP constructors and contractors, and state and local regulatory agencies. The contractor shall attend meetings and provide documentation of meeting results. Within 7 days after a meeting, the contractor will submit to the WAM/RPM a written report summarizing the meeting results. Meetings may be scheduled to coincide with the following specific milestones during the RA:

- Review of PRP RA Work Plan
- PRP preconstruction conference
- Technical progress meetings between the PRP constructor and the Independent QA Team
- Kick-off, progress, and completion of any confirmatory (split) sampling
- Prefinal/final inspections

8.10 Work Assignment Closeout

.10.1 Return Documents to Government

.10.2 Duplicate, Distribute, and Store Files

.10.3 Archive Files

.10.4 Prepare Microfiche, Microfilm, and/or Optical Disk

.10.5 Prepare Closeout Report. The contractor shall include a breakdown on disk of final costs and Level of Effort (by P-level) in the same detail and format as the Work Breakdown Structure (Attachment 2).

ATTACHMENT 1
SUMMARY OF MAJOR DELIVERABLES FOR THE REMEDIAL ACTION OVERSIGHT AT _____(SITE)

TASK	DELIVERABLE	REF NO.	NO. OF COPIES	DUE DATE (Calendar Days)	EPA REVIEW PERIOD
1.1.2	Site Visit Letter Report		3	10 days after site visit	7 days after receipt of report
1.1.5	Draft RA Oversight Work Plan		3	45 days after initiation of work assignment (WA)	30 days after receipt of work plan
1.1.5	Final RA Oversight Work Plan		3	15 days after receipt of EPA comments	NA
1.1.6	Draft Technical Memoranda Summarizing Review of Upfront PRP Plans		3	30 days after initiation of WA	14 days after receipt of memoranda
1.1.6	Final Technical Memoranda Summarizing Review of Upfront PRP Plans		3	10 days after receipt of EPA comments	NA
1.2.2	Draft Health and Safety Plan (HASP)		3	21 days after approval of RA Work Plan	14 days after receipt of plan
1.2.2	Final HASP		3	10 days after receipt of EPA comments	NA
1.2.3	Draft Sampling and Analysis Plan (SAP)		3	21 days after approval of RA Work Plan	14 days after receipt of plan
1.2.3	Final SAP		3	10 days after receipt of EPA comments	NA
1.3.1	Status Reports		3	Monthly and as directed by WAM	NA
1.3.2	Technical Memoranda Summarizing Meeting Results, Project Status, and Non-Compliance Issues		3	As required	NA
2.1.2	Draft Community Relations Plan (CRP)		3	14 days after completion of community interviews	7 days after receipt of draft CRP
2.1.2	Final CRP		3	7 days after receipt of EPA comments	NA

5.5	Data Validation Letter Report		3	21 days after receipt of analytical results from laboratory	NA
6.4	Draft Data Evaluation Summary Report		3	45 days after receipt of analytical results from laboratory	14 days after receipt of report
6.4	Final Data Evaluation Summary Report		3	7 days after receipt of EPA comments	NA
7.2	Draft Letter Report Summarizing Review of PRP RA Documents		3	21 days after receipt of PRP document from EPA	14 days after receipt of letter report
7.2	Final Letter Report Summarizing Review of PRP RA Documents		3	10 days after receipt of EPA comments	NA
8.2	Draft RA Oversight Reports		3	As required	As required
8.2	Final RA Oversight Reports		3	7 days after receipt of EPA comments	NA
9.0	Draft Technical Memoranda Summarizing Meeting Results		3	7 days after attendance at meeting(s)	10 days after receipt of memoranda
9.0	Final Technical Memoranda Summarizing Meeting Results		3	7 days after receipt of EPA comments	NA

Attachment 2
Work Breakdown Structure (WBS) for
Remedial Action Oversight

8.0 Remedial Action Oversight

.01 Project Planning and Support

.01 Project Planning
- .01 Attend Scoping Meeting
- .02 Conduct Site Visit
- .03 Evaluate Existing Information
- .04 Develop Technical Project Goals & Objectives
  - .01 Not Used - Develop Conceptual Site Model
  - .02 Preliminary ID of Project Requirements
    - .01 Data Needs & DQOs
    - .02 Not Used - RA Objectives & Potential Alternatives
- .05 Work Plan Development
  - .01 Draft Work Plan Development
    - .01 Develop Narrative
    - .02 Develop Cost Estimate
    - .03 Internal QA & Submission
  - .02 Final Work Plan Preparation
    - .01 Attend Negotiation Meeting
    - .02 Modify Draft Work Plan/Cost Estimate
    - .03 Internal QA & Submission
- .06 Review of PRP Plans
  - .01 Review PRP Site Management Plan
    - .01 Review PRP Pollution Control and Mitigation Plan
    - .02 Review PRP Transportation and Disposal Plan
  - .02 Review PRP Health and Safety Plan
  - .03 Review PRP Sampling & Analysis Plan
    - .01 Review PRP Quality Assurance Project Plan
    - .02 Review PRP Field Sampling Plan
    - .03 Review PRP Data Management Plan
  - .04 Other PRP Plan(s)

.02 Preparation of Site Specific Plans
- .01 Not used
- .02 Develop Health & Safety Plan
- .03 Sampling & Analysis Plan (Chemical Data Acquisition Plan)
  - .01 Quality Assurance Project Plan
  - .02 Field Sampling Plan
  - .03 Data Management Plan
- .04 Other Plan(s)

.03 Project Management
- .01 Prepare Periodic Status Reports
  - .01 Document Cost and Performance Status
  - .02 Prepare/Submit Invoices
- .02 Meeting Participation/Routine Communications
- .03 Not Used - Maintain Cost/Schedule Control System
- .04 Not Used - Perform Value Engineering
- .05 Not Used - Perform Engineering Network Analysis
- .06 Not Used - Manage, Track, and Report Equipment Status
- .07 Work Assignment Closeout

.04 Subcontract Procurement/Support Activities
- .01 ID and Procurement of Subcontractors

.01 Not Used - Drilling Subcontractor
.02 Not Used - Surveying Subcontractor
.03 Not Used - Geophysical Subcontractor
.04 Not Used - Site Preparation Subcontractor
.05 Analytical Services Subcontractor(s)
.06 Not Used - Waste Disposal Subcontractor
.07 Not Used - Treatability Subcontractor(s)
.08 Other(s)
.02 Contractor QA/QC Program
.03 Perform Subcontract Management

.02 Community Relations

.01 Community Relations Plan (CRP) Development
.01 Conduct Community Interviews
.02 Update CRP
.01 Draft CRP
.02 Final CRP
.02 Prepare Fact Sheets
.03 Public Hearing, Meetings, & Availability Support
.01 Technical Support
.02 Logistical & Presentation Support
.03 Public Notice Support (writing, or placement of)
.04 Maintain Information Repository/Mailing List

.03 Data Acquisition Oversight

.01 Mobilization/Demobilization Oversight
.01 ID Field Support Equipment/Supplies/Facilities
.02 Mobilization
.01 Not Used - Site Preparation
.02 Installation of Utilities
.01 Install Electrical Distribution
.02 Install Telephone/Communication System(s)
.03 Install Water/Sewer/Gas Distribution
.04 Install Fuel Line Distribution
.03 Construction of Temporary Facilities
.01 Construct Decontamination Facilities
.02 Construct Sample/Derived Waste Storage Facility
.03 Construct Field Offices
.04 Construct Mobile Laboratory
.05 Construct Other Temporary Facilities
.03 Demobilization Oversight
.01 Removal of Temporary Facilities
.02 Site Restoration

.02 Field Investigation Oversight
.01 Site Reconnaissance Oversight
.01 Ecological Resources Reconnaissance
.02 Well Inventory
.03 Residential Well Sampling
.04 Land Survey
.05 Topographic Mapping
.06 Field Screening
.02 Geological Investigations (Soils/Sediments) Oversight
.03 Air Investigations Oversight
.04 Hydrogeological Investigations Oversight - Groundwater
.01 Well Systems Installation
.02 CLP Sample Collection
.03 Screening Sample Collection

.04 Tidal Influence Study
.05 Hydraulic Tests (Pump Tests)
.06 Groundwater Elevation Measurement
.05 Hydrogeological Investigations Oversight — Surface Water
.06 Waste Investigation Oversight
.07 Geophysical Investigation Oversight
.08 Ecological Investigation Oversight
.09 Contaminated Building Samples Oversight
.10 Disposal of Investigation-Derived Waste Oversight
.11 Prepare Data Acquisition Oversight Reports

.04 Sample Analysis of Splits

.01 Screening Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Groundwater Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies
.02 CLP-Type Laboratory Sample Analysis
.01 Analyze Air/Gas Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.02 Analyze Groundwater Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.03 Analyze Surface Water Samples
.01 Organic
.02 Inorganic

.03 Radiochemistry
.04 Analyze Soil/Sediment Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.05 Analyze Waste (Gas) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.06 Analyze Waste (Liquid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.07 Analyze Waste (Solid) Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.08 Analyze Biota Samples
.01 Organic
.02 Inorganic
.03 Radiochemistry
.09 Analyze Bioassay Samples
.10 Perform Bioaccumulation Studies

.05 Analytical Support and Data Validation of Split Samples
.01 Prepare and Ship Environmental Samples
.01 Groundwater Samples
.02 Surface and Subsurface Soil Samples
.03 Surface Water & Sediment Samples
.04 Air Samples
.05 Biota Samples
.06 Other types of media sampling and screening
.02 Coordinate with appropriate Sample Management personnel
.03 Implement EPA-approved Laboratory QA program
.04 Provide Sample Management (Chain of Custody, sample retention, & data storage)
.05 Perform Data Validation
.01 Review analysis results against validation criteria
.02 Provide written documentation of validation efforts

.06 Data Evaluation of Split Samples
.01 Data Useability Evaluation/Field QA/QC
.02 Data Reduction, Tabulation and Evaluation
.01 Evaluate Geological Data (Soils/Sediments)
.02 Evaluate Air Data
.03 Evaluate Hydrogeological Data—Groundwater
.04 Evaluate Hydrogeological Data—Surface Water
.05 Evaluate Waste Data
.06 Evaluate Geophysical Data
.07 Evaluate Ecological Data
.03 Modeling
.01 Contaminant Fate and Transport
.02 Water Quality
.03 Groundwater
.04 Air
.05 Other Modeling
.04 Develop Data Evaluation Report

.07 Review of PRP Documents

.01 Not Used - Review PRP Remedial Design Documents

.01 Not Used - Review Preliminary Design
.02 Not Used - Review Intermediate Design
.03 Not Used - Review Pre-Final/Final Design

.02 Review PRP Remedial Action Documents

.01 Site Management Plan for Construction
.02 Remedial Action Work Plan
.03 O&M Manual
.04 Remedial Action Report
.05 As Built Drawings
.06 Construction QAPP
.07 Construction QA Reports

.08 Remedial Action Oversight

.01 On-Site Oversight of Construction
.02 Periodic RA Oversight Reports
.03 Participation in Remedial Action Meetings
.01 Region Office Meetings
.02 On-Site Meetings

.09 Technical Meeting Support

.10 Work Assignment Close Out

.01 Return Documents to Government
.02 File Duplication/Distribution/Storage
.03 File Archiving
.04 Microfiche/Microfilm/Optical Disk
.05 Prepare Closeout Report

Attachment 3
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RD process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.
4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.

26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.
29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. *Remedial Design/Remedial Action (RD/RA) Handbook*, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.

Attachment 4

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE:	TRANSMITTAL NO.
TO:	FROM:		☐ New Transmittal ☐ Resubmittal of Transmittal No. _____

SUBTASK NO.	DELIVERABLE	NO. OF COPIES	REMARKS

ACCEPTANCE ACTION

DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)	NAME/TITLE/SIGNATURE OF REVIEWER DATE

Attachment 5

TRANSMITTAL REGISTER								
PROJECT TITLE AND LOCATION				CONTRACT NO.			WORK ASSIGNMENT NO.	
Subtask No.	DELIVERABLE	No. of Copies	Due Date	Transmittal No.	Date Received	Date Comments Sent to Contractor	EPA Acceptance Date	REMARKS

Appendix F

*RD/RA Fact Sheets and Other Guidance

*Fact sheets to be added by the RPM for reference.

Suggested RD/RA Fact Sheets

- "ARCS Construction Contract Modification Procedures"
  OSWER Directive 9355.5-01/FS (September 1989)
- "Emergency Responder Agreements for Fund-Lead RAs"
  OSWER Directive 9285.6-08/FS (March 1994)
- "EPA Oversight of Remedial Designs and Remedial Actions Performed by PRPs"
  OSWER Directive 9355.5-01/FS (April 1990)
- "EPA/USACE Payment Process: Direct Cite/Revised Reimbursement Methods"
  OSWER Directive 9355.5-14/FS (May 1990)
- "Expediting Remedial Construction"
  OSWER Directive 9355.5-02/FS (October 1989)
- "Guide to Addressing Pre-ROD and Post-ROD Changes"
  OSWER Directive 9355.3-02/FS (April 1991)
- "Guide to Discharging CERCLA Aqueous Wastes to Publicly Owned Treatment Works (POTWs)"
  OSWER Directive 9330.2-13/FS (March 1991)
- "Guide to Management of Investigation-Derived Wastes"
  OSWER Directive 9345.3-02/FS (May 1991)
- "Health and Safety Roles and Responsibilities at Remedial Sites"
  OSWER Directive 9285.1-02/FS (July 1991)
- "Notification of Out-of-State Shipment of Superfund Site Wastes"
  OSWER Directive 9330.2-07/FS (May 1991)
- "Overview of Off-Site Rule for OSCs and RPMs"
  OSWER Directive 9834.11/FS (September 1993)
- "Procedure for Use of USACE Preplaced Contracts to Expedite Superfund Cleanup Tasks"
  OSWER Directive 9355.5-05/FS (April 1994)
- "Public Awareness Signs at Superfund Sites"
  OSWER Directive 9375.5-10/FS (October 1990)
- "Real Estate Acquisition Procedures for USACE Projects"
  OSWER Directive 9355.5-01/FS (February 1990)
- "Remedial Action Report"
  OSWER Directive 9355.0-39/FS (June 1992)
- "Scoping the Remedial Design"
  OSWER Directive 9355.5-21/FS (March 1995)
- "Value Engineering"
  OSWER Directive 9355.5-03/FS (May 1990)

Appendix G

*State-Lead

*Materials to be added by the RPM as developed.

Appendix H

*Enforcement-Lead

*Materials to be added by the RPM as developed.

Appendix I

*Operations and Maintenance

*Materials to be added by the RPM as developed.