



United States  
Environmental Protection  
Agency

Office of  
Solid Waste and  
Emergency Response

Publication 9355.0-58FS  
EPA 540/F-95/025  
PB 95-963312



# Remedial Design/Remedial Action (RD/RA) Handbook

Office of Emergency and Remedial Response  
Hazardous Site Control Division, 5203G

Quick Reference Fact Sheet  
June 1995

This fact sheet presents an overview of the Environmental Protection Agency (EPA) *Remedial Design/Remedial Action (RD/RA) Handbook*, 9355.0-04B, PB95-963307, June 1995, a manual for **Remedial Project Managers (RPMs)** that serves as a guide for all RPMs on how to manage Federal-lead, Fund-financed **Remedial Design (RD)** and **Remedial Action (RA)** projects. The handbook does not address state- and enforcement-lead RD/RA projects but contains tabbed dividers for state- and enforcement-lead guidance to be added as developed. The RPM may use the management principles and techniques outlined in the handbook to implement the selected remedy in accordance with the **Record of Decision (ROD)**. In addition to chapters on project management, project planning, remedial design, and remedial action, the handbook contains a number of appendices that will assist the RPM. Figure 1 displays the handbook's organization. This fact sheet briefly covers the same topics.

## Figure 1

*Remedial Design/Remedial Action (RD/RA) Handbook*

### Chapter

- 1 Introduction
- 2 Project Management
- 3 Project Planning
- 4 Remedial Design
- 5 Remedial Action

### Appendices

- Appendix A - Glossary
- Appendix B - Transmittal Forms
- Appendix C - Design Review Checklists
- Appendix D - Model IAGs
- Appendix E - Model SOWs
- Appendix F - RD/RA Fact Sheets  
& Other Guidance
- Appendix G - State-Lead\*
- Appendix H - Enforcement-Lead\*
- Appendix I - Operations & Maintenance\*

\*to be added as developed

ROD in a timely and cost-effective manner. As a project manager, the RPM creates, monitors, and controls the scope of work, schedule, and budget of an RD/RA project. To do so effectively, the RPM must rely on the **RD/RA Technical Review Team (TRT)** and his or her own project management skills, such as knowledge, managerial effectiveness, leadership, and technical competence. The handbook describes methods the RPM may use to conduct routine project monitoring activities. The RPM also may employ RD/RA management strategies such as **anticipatory actions**, **work-around strategies**, and **project modifications**. The RPM must consider potential RPM liability and the limits of RPM authority in the performance of his or her duties.

### PROJECT PLANNING

The RPM is responsible for the quality of the RD/RA project. The RPM that devotes substantial time and effort to the planning process will face fewer management demands as the project progresses and will be able to address them more effectively as they occur. As part of the planning process, the RPM:

- Develops the project management plan
- Assembles a Technical Review Team
- Develops a communications strategy
- Collects predesign information
- Analyzes project constraints
- Develops the RD/RA schedule and budget

### PROJECT MANAGEMENT

The RPM's ultimate responsibility during the RD/RA phase is to oversee the achievement of the goals of the

- Develops the RD/RA contracting strategy
- Involves the community
- Coordinates with the state

## Project Management Plan

The project management plan documents project management goals and operational procedures and serves as the keystone for the RD/RA project. Figure 2 lists the typical contents of a project management plan.

**Figure 2**

*Contents of a Project Management Plan*

1. Definition of project objectives
2. Organizational structure
3. Communications structure
4. Project constraints
5. RD/RA contracting strategy
6. Schedule development
7. Budget preparation
8. Superfund state contract timing
9. Property access issues
10. Community relations issues

After the creation of the project management plan, the RPM assembles a TRT. The TRT, whose members provide a broad spectrum of technical expertise to assist the RPM in reviewing crucial deliverables and other tasks, is comprised of many professionals with knowledge in the applicable fields. During project management plan development, the RPM drafts the communications strategy and collects predesign information. The RPM utilizes predesign information and considers general RD/RA project constraints to draft the RD/RA baseline project schedule and budget. General project constraints include:

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

A baseline project schedule developed by the RPM is the basis for negotiations with the EPA contractor or is used to develop agreed-upon timeframes for United States

Army Corps of Engineers (USACE)-managed projects. Then the RPM uses a detailed schedule developed by the RD or RA contractor, employing the **Gantt chart method** or the **critical path method** to monitor the RD/RA project. The RPM incorporates both RD/RA budget and schedule information into the Comprehensive Environmental Response and Liability Information System (CERCLIS). During the planning stage, the RPM also develops an RD/RA contracting strategy, which focuses on overall project scheduling, design approach, the RA procurement strategy, and RA contract types.

The RPM maximizes community relations by coordinating with the community early and often and adhering to all Superfund community relations requirements. For example, EPA is required by 40 *Code of Federal Regulations (CFR)* Section 300.435 to review and update the community relations plan that was created during the Remedial Investigation/Feasibility Study (RI/FS) stage for RD/RAs.

## State Coordination

Effective coordination with the state in Federal-lead, Fund-financed sites is essential to project success. The RPM should encourage the state to be an actively involved member of EPA's TRT. The RPM consults the **State Memorandum of Agreement (SMOA)** for general terms of EPA-state coordination on remedial projects. Regardless of whether a SMOA has been signed for a particular state, the RPM must develop the site-specific **Superfund State Contract (SSC)** for each Federal-lead, Fund-financed site before an RA can be initiated. Figure 3 highlights state responsibilities under Section 104 of CERCLA for Federal-lead, Fund-financed RD/RAs.

**Figure 3**

*State Requirements for Federal-Lead, Fund-Financed Projects under CERCLA*

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

## FEDERAL-LEAD REMEDIAL DESIGN

The RD, which addresses the technical requirements of the RA, begins with project planning and ends with the completion of a detailed set of engineering drawings and specifications.

Steps in the RD process include:

- Deciding whether to task the RD to an EPA contractor or USACE
- Developing the Statement of Work
- Oversight of design development

The RPM consults the TRT in determining whether to task the RD to an EPA contractor or to USACE. EPA contractors may be **Alternative Remedial Contracting Strategy (ARCS)** or **Response Action Contract (RAC)** contractors.

The Statement of Work (SOW) for the RD will vary depending on the contracting party. If EPA is the contracting party, the RD SOW developed by the RPM will become a legally binding component of the ARCS/RAC contract when issued as a work assignment to the designer (ARCS/RAC contractor). When developing the RD SOW for EPA contractors, the RPM should utilize the RD standard tasks listed in the handbook. The RPM also should incorporate standard design specifications by reference (developed by USACE and available from USACE's Huntsville Construction Division). Appendix E of the handbook provides a model SOW for RD.

If USACE is the contracting party, the SOW becomes part of the **Interagency Agreement (IAG)** and serves to facilitate communication between EPA and USACE regarding design requirements. In this case, the RPM prepares the **IAG SOW** with USACE assistance. Appendix D of the handbook contains model IAGs for RDs, RAs, and technical assistance.

### **Remedial Design Schedules and Independent Government Cost Estimates**

The RPM is responsible for developing a preliminary independent schedule that is a baseline for negotiating the final schedule with the contracting party. For guidance, the RPM may refer to the remedy-specific RD schedules EPA developed that are listed in the OSWER Directive 9355.0-43, titled *Guidance for Scoping the Remedial Design*. For USACE-managed RDs, USACE personnel develop the RD schedule with RPM input and cooperation.

If EPA is the contracting party, IGCE preparation is required before issuing a work assignment. Although not required to prepare an IGCE when USACE is the contracting party, the RPM should develop a rough estimate before entering RD scoping discussions with USACE. The handbook provides additional information on IGCEs for RDs.

### **Overseeing Design Development**

Once the RD effort is underway, the RPM must manage his or her design oversight activities and balance federal, state, and community relationships. This includes timely review of deliverables to prevent project schedule delay.

Potential deliverables (or submittals) include:

- Predesign phase submittals
- Treatability screening submittals
- Preliminary design phase submittals
- Intermediate design phase submittals
- Prefinal/final design phase submittals
- Value engineering (VE) submittals

### **FEDERAL-LEAD REMEDIAL ACTION**

The RA is the process by which the remedy, as selected in the ROD, is implemented. The handbook outlines the steps involved before, during, and after the RA process. Before the RA commences, a number of RA planning activities need to occur.

The RPM revises the project management plan, assembles a TRT, finalizes the Superfund state contract, and defines state involvement during the RA. Then the RPM is responsible for developing the RA SOW, the IGCE, and the schedule. Appendix E of the handbook contains a model SOW for RA. The RPM prepares either the RA work assignment or an RA IAG. The RPM then establishes the management procedures for managing the terms of the approved RA work assignment or RA IAG. As with RDs, the procedures, which are outlined in the handbook, vary depending upon the contracting party.

### **Remedial Action Procurement**

After the preliminary RA steps have been taken, the contracting party procures the **RA contractor (constructor)**. The RPM's role in the procurement process is limited to monitoring to ensure it proceeds without delay and without contract award controversy, if possible.

### **Construction Activities**

Once the RA contract is awarded, preconstruction activities include:

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

During construction, the RPM monitors construction progress by inspection of on-site construction activities, and reviewing progress reports, progress payments, and submittals.

### Post Construction Activities

Immediately following construction of the remedy, the remedy enters the **operational and functional** period. A remedy, such as a landfill cap or soil vapor extraction, is 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 performing as designed, whichever occurs first (40 *CFR* Section 300.435).

The constructor and the contracting party perform prefinal and final inspections to determine whether the construction was completed in accordance with the RA contract. Within 60 days after the final inspection, the contracting party prepares and submits a **Remedial Action (RA) Report** to the RPM for review.

Either concurrently or in addition to the prefinal/final inspections, EPA and the state must perform a joint inspection under the *National Contingency Plan* (40 *CFR* Section 300.515[g]) to obtain agreement that the operational and functional period is ready to commence. Operations & maintenance (O&M) commences on the date of agreement that the project is operational and functional, with the exception of ground water restoration where EPA operates the system for ten years before operational and functional status is achieved.

Finally, the RPM oversees the site closeout process, which consists of **construction completion**, site completion, and site deletion activities. Construction completion signifies a major EPA accomplishment which involves the completion of physical construction and the preparation of a Close-out Report at the site. Site deletion from the National Priorities List can occur once all cleanup standards established in the ROD have been attained.

United States  
Environmental Protection  
Agency  
Washington, DC 20460  
Official Business  
Penalty for Private Use  
\$300

NTIS does not permit return of items for credit or refund. A replacement will be provided if an error is made in filling your order, if the item was received in damaged condition, or if the item is defective.

*Reproduced by NTIS  
National Technical Information Service  
U.S. Department of Commerce  
Springfield, VA 22161*

**This report was printed specifically for your order from our collection of more than 2 million technical reports.**

For economy and efficiency, NTIS does not maintain stock of its vast collection of technical reports. Rather, most documents are printed for each order. Your copy is the best possible reproduction available from our master archive. If you have any questions concerning this document or any order you placed with NTIS, please call our Customer Services Department at (703)487-4660.

Always think of NTIS when you want:

- Access to the technical, scientific, and engineering results generated by the ongoing multibillion dollar R&D program of the U.S. Government.
- R&D results from Japan, West Germany, Great Britain, and some 20 other countries, most of it reported in English.

NTIS also operates two centers that can provide you with valuable information:

- The Federal Computer Products Center - offers software and datafiles produced by Federal agencies.
- The Center for the Utilization of Federal Technology - gives you access to the best of Federal technologies and laboratory resources.

For more information about NTIS, send for our FREE *NTIS Products and Services Catalog* which describes how you can access this U.S. and foreign Government technology. Call (703)487-4650 or send this sheet to NTIS, U.S. Department of Commerce, Springfield, VA 22161. Ask for catalog, PR-827.

Name \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

*- Your Source to U.S. and Foreign Government  
Research and Technology.*