

FINAL

URANIUM MILL TAILINGS PROJECT OFFICE

ALBUQUERQUE OPERATIONS OFFICE

U.S. DEPARTMENT OF ENERGY

ALBUQUERQUE, NEW MEXICO 87108

PROJECT MANAGEMENT PLAN

JANUARY, 1988

FINAL

**MASTER**

FOREWORD

This Project Management Plan describes the planning, systems, and organization that shall be used to manage the UMTRA Project. The plan shall be effective for the Project's duration and shall be reviewed annually and updated as significant changes in Project direction occur.

## TABLE OF CONTENTS

| <u>Section</u>  | <u>Page</u> |
|---|-------------|
| 1.0 INTRODUCTION . . . . .  | 1           |
| 1.1 Project purpose . . . . .   | 1           |
| 1.2 Project scope . . . . .   | 1           |
| 1.2.1 Management. . . . .   | 1           |
| 1.2.2 Technical . . . . .   | 3           |
| 1.2.3 Cost. . . . .   | 4           |
| 1.2.4 Schedule. . . . .   | 4           |
| 2.0 OBJECTIVES . . . . .  | 5           |
| 2.1 Project . . . . .   | 5           |
| 2.2 Management. . . . .   | 5           |
| 2.3 Technical . . . . .   | 7           |
| 2.4 Cost and Schedule . . . . .   | 7           |
| 3.0 MANAGEMENT ORGANIZATION AND RESPONSIBILITIES . . . . .                      | 9           |
| 3.1 Program responsibilities. . . . .   | 9           |
| 3.2 Federal agencies. . . . .   | 9           |
| 3.2.1 U.S. Department of Energy (DOE) . . . . .                                 | 9           |
| 3.2.2 Office of General Council (OGC) . . . . .                                 | 12          |
| 3.2.3 Assistant Secretary for Environment,<br>Safety, and Health (EH) . . . . . | 12          |
| 3.2.4 Environmental Protection Agency (EPA) . . . . .                           | 12          |
| 3.2.5 Nuclear Regulatory Commission (NRC) . . . . .                             | 13          |
| 3.2.6 Other agencies. . . . .   | 13          |
| 3.3 State/tribe . . . . .   | 14          |
| 3.4 DOE prime contractors . . . . .   | 14          |
| 3.5 Inter-organizational agreements . . . . .                                   | 15          |
| 4.0 WORK PLAN. . . . .  | 17          |
| 4.1 Introduction. . . . .   | 17          |
| 4.2 Remedial action process . . . . .   | 17          |
| 4.2.1 Preliminary planning. . . . .   | 17          |
| 4.2.2 Remedial action . . . . .   | 23          |
| 5.0 WORK BREAKDOWN STRUCTURE . . . . .  | 29          |
| 6.0 SCHEDULE . . . . .  | 31          |
| 6.1 Schedule objective. . . . .   | 31          |
| 6.2 Scheduling hierarchy. . . . .   | 31          |
| 7.0 LOGIC DIAGRAMS . . . . .  | 41          |
| 8.0 PERFORMANCE CRITERIA . . . . .  | 45          |
| 8.1 EPA standards . . . . .   | 45          |
| 8.2 Design guidance . . . . .   | 45          |
| 8.3 Additional guidelines . . . . .   | 45          |
| 9.0 COST AND MANPOWER ESTIMATES. . . . .  | 51          |
| 9.1 Costs . . . . .   | 51          |
| 9.2 Personnel . . . . .   | 51          |

## TABLE OF CONTENTS

| <u>Section</u>   | <u>Page</u> |
|--|-------------|
| 10.0 PROJECT FUNCTIONAL SUPPORT REQUIREMENTS. . . . .                              | 57          |
| 10.1 DOE decision delegations. . . . .   | 57          |
| 10.2 Institutional interfaces. . . . .   | 57          |
| 10.3 Public support. . . . .   | 58          |
| 11.0 PROJECT MANAGEMENT, MEASUREMENT, AND PLANNING<br>AND CONTROL SYSTEMS. . . . . | 63          |
| 11.1 Introduction. . . . .   | 63          |
| 11.1.1 Major subsystems. . . . .   | 63          |
| 11.1.2 System concept. . . . .   | 64          |
| 11.2 Baseline control. . . . .   | 64          |
| 11.2.1 Cost control. . . . .   | 67          |
| 11.2.2 Schedule control. . . . .   | 67          |
| 11.3 Funds control . . . . .   | 68          |
| 11.3.1 Funding process . . . . .   | 68          |
| 11.3.2 Contract funding. . . . .   | 69          |
| 12.0 INFORMATION AND REPORTING. . . . .  | 71          |
| 12.1 Objective . . . . .   | 71          |
| 12.2 Technical information program . . . . .                                       | 71          |
| 12.3 Management information program. . . . .                                       | 71          |
| 12.3.1 Project office reporting. . . . .   | 71          |
| 12.3.2 Project status review . . . . .   | 78          |
| 12.4 Information dissemination . . . . .   | 78          |
| 12.4.1 Project Document Control System (PDCS). . . . .                             | 78          |
| 12.4.2 Technical Information Center (TIC). . . . .                                 | 78          |
| 12.4.3 Remedial Action Program<br>Information Center (RAPIC). . . . .              | 81          |
| 13.0 SYSTEMS ENGINEERING. . . . .  | 83          |
| 13.1 Project process . . . . .   | 83          |
| 13.2 Project operation . . . . .   | 83          |
| 13.3 Engineering integration . . . . .   | 84          |
| 13.4 Progress reviews. . . . .   | 85          |
| 14.0 CONFIGURATION MANAGEMENT . . . . .  | 87          |
| 14.1 Project process . . . . .   | 87          |
| 14.2 Technical baselines . . . . .   | 87          |
| 14.3 Configuration control . . . . .   | 89          |
| 14.4 Configuration accounting. . . . .   | 90          |
| 15.0 CONTINGENCY. . . . .  | 91          |
| 15.1 Sensitivity analysis. . . . .   | 91          |
| 15.2 Contingency development . . . . .   | 91          |
| 15.3 Contingency application . . . . .   | 91          |
| 16.0 QUALITY ASSURANCE (QA)/Environmental, Health, and Safety (EH&S). .            | 93          |
| 16.1 Project program . . . . .   | 93          |
| 16.2 Site program. . . . .   | 93          |

TABLE OF CONTENTS

| <u>Section</u>                          | <u>Page</u> |
|---|-------------|
| 17.0 UTILITIES. . . . .                 | 97          |
| 18.0 RESPONSIBILITY MATRIX. . . . .     | 99          |
| 19.0 SUBMISSIONS AND APPROVALS. . . . . | 103         |

LIST OF FIGURES

| <u>Figure</u> |   | <u>Page</u> |
|---------------|---|-------------|
| 1.1           | UMTRA Project sites . . . . .                               | 2           |
| 3.1           | UMTRA Project participant structure . . . . .               | 10          |
| 3.2           | Project Office organization . . . . .                       | 11          |
| 4.1           | Site work plan . . . . .                                    | 22          |
| 4.2           | Typical remedial action activities . . . . .                | 24          |
| 5.1           | UMTRA Project work breakdown structure . . . . .            | 30          |
| 6.1           | UMTRA Project master schedule . . . . .                     | 32          |
| 6.2           | UMTRA sites master schedule . . . . .                       | 33          |
| 6.3           | UMTRA vicinity property schedule . . . . .                  | 34          |
| 6.4           | PSCE site summary schedule . . . . .                        | 35          |
| 6.5           | IPMS schedule . . . . .                                     | 36          |
| 6.6           | Contractor work package/planning schedule . . . . .         | 37          |
| 7.1           | Generalized site remedial action flow chart . . . . .       | 42          |
| 7.2           | Site logic diagram extract . . . . .                        | 44          |
| 9.1           | Project baseline resources plan (escalated - \$M) . . . . . | 54          |
| 9.2           | UMTRA Project staffing . . . . .                            | 55          |
| 10.1          | Public participation/information . . . . .                  | 61          |
| 11.1          | Project integration and control . . . . .                   | 65          |
| 14.1          | Project configuration management . . . . .                  | 88          |
| 16.1          | Quality assurance structure . . . . .                       | 94          |
| 16.2          | EH&S Program . . . . .                                      | 95          |

## LIST OF TABLES

| <u>Table</u>  | <u>Page</u> |
|---|-------------|
| 2.1 Key decision points . . . . .   | 6           |
| 4.1 UMTRA Project phases . . . . .  | 18          |
| 4.2 UMTRA Project work plan documentation. . . . .  | 26          |
| 6.1 UMTRA Project scheduling system. . . . .  | 39          |
| 8.1 UMTRA Project performance criteria - Other agency. . . . .                            | 46          |
| 8.2 UMTRA Project performance criteria - DOE and AL. . . . .                              | 48          |
| 8.3 UMTRA Project performance criteria - Project . . . . .                                | 49          |
| 9.1 Project total estimated cost . . . . .  | 52          |
| 9.2 Total site cost summary. . . . .  | 53          |
| 10.1 Major Project document responsibility matrix . . . . .                               | 59          |
| 10.2 Major Project activity responsibility. . . . .                                       | 60          |
| 11.1 Control baselines. . . . .   | 66          |
| 12.1 Project technical documentation. . . . .   | 72          |
| 12.2 Project management documentation . . . . .   | 73          |
| 12.3 Project Office plans and reports . . . . .   | 74          |
| 12.4 Contractor plans and reports . . . . .   | 76          |
| 12.5 Thresholds for notification on Project schedule,<br>cost, and scope changes. . . . . | 79          |
| 12.6 Project meetings . . . . .   | 80          |
| 13.1 Engineering documentation. . . . .   | 86          |
| 16.1 QA and EH&S documentation. . . . .   | 96          |
| 18.1 UMTRA Project responsibility matrix. . . . .   | 101         |

## 1.0 INTRODUCTION

### 1.1 PROJECT PURPOSE

The mission of the Uranium Mill Tailings Remedial Action (UMTRA) Project is explicitly stated and directed in the Uranium Mill Tailings Radiation Control Act of 1978, Public Law 95-604, 42 USC 7901 (hereinafter referred to as the "Act"). Title I of the Act authorizes the Department of Energy (DOE) to undertake remedial actions at 24 designated inactive uranium processing sites and associated vicinity properties (Figure 1.1) containing uranium mill tailings and other residual radioactive materials derived from the processing sites. The Act, amended in January, 1983, by Public Law 97-415, also authorizes DOE to perform remedial actions at vicinity properties in Edgemont, South Dakota. Cleanup of the Edgemont processing site is the responsibility of the Tennessee Valley Authority.

### 1.2 PROJECT SCOPE

Pursuant to the Act, the remedial actions undertaken by the Project are to be accomplished:

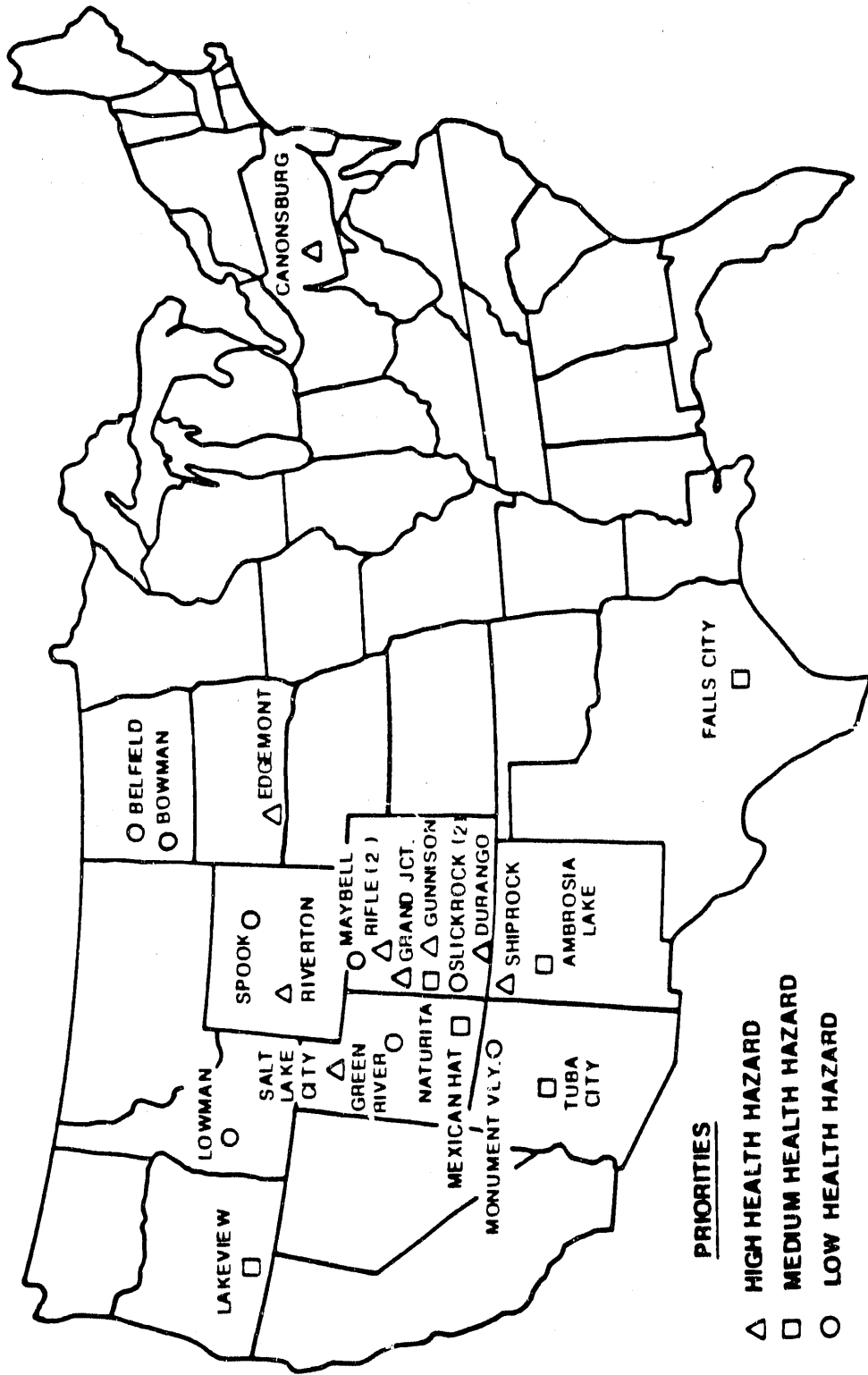
- o In cooperation with the affected states and Indian tribes.
- o With the concurrence of the Nuclear Regulatory Commission (NRC).
- o In accordance with standards promulgated by the Environmental Protection Agency (EPA) (40 Code of Federal Regulations (CFR) Part 192, effective March 7, 1983) and with applicable Federal and state laws. It is to be noted that the groundwater portion of the EPA standards was remanded by the U.S. Tenth Circuit Court of Appeals on September 3, 1985, and EPA was instructed to produce regulations with numerical standards for specific water-quality parameters. To guide groundwater evaluation and decision-making in the interim, the Project published the "DOE Plan for Water Protection Standards."

Before remedial actions can be initiated, the Project must complete the environmental investigations, documentation, and public review required by the National Environmental Policy Act (NEPA). In selecting remedial actions, the Act requires DOE to determine the economic feasibility of reprocessing the tailings to extract valuable minerals.

The Act also requires DOE to establish cooperative agreements with the affected states and Indian tribes to accomplish remedial actions that include a 90/10 cost sharing arrangement with the states. For sites on Indian tribal lands, 100 percent of the remedial action costs are to be borne by the Federal Government.

#### 1.2.1 Management

The UMTRA Project has been designated by the DOE as a Major System Acquisition (MSA), MSA-143, because of its importance and high dollar value. As a MSA, the Project must comply with the



**FIGURE 1.1 UMTRA PROJECT SITES**

applicable DOE directives that govern their management. The DOE's day-to-day responsibility for planning, coordinating, and conducting remedial actions at the processing sites and vicinity properties has been delegated through the Assistant Secretary for Nuclear Energy to the DOE Albuquerque Operations Office (AL) and assigned to the UMTRA Project Office (hereinafter referred to as "Project Office") via the "Project Charter (MSA-143), UMTRA-DOE/AL-400124.0167." The Project Office organization and operational concept is based on a minimally staffed office (with AL matrix support) with responsibility to make key Project decisions and to manage the contractors engaged to do the actual work. The Project Office is thus accountable to upper levels of AL and Headquarters (HQ) DOE management for the successful accomplishment of the Project.

This document describes the plan, organization, system, and methodologies used to manage the design, construction, and other activities required to clean up the designated sites and associated vicinity properties in accordance with the Act. The plan describes the objectives of the UMTRA Project, defines participants' roles and responsibilities, outlines the technical approach for accomplishing the objectives, and describes the planning and managerial controls to be used in integrating and performing the Project mission.

This plan was prepared in accordance with the guidelines established in DOE Order 4700, Project Management System. It has been developed within the context of the Project Charter and the "UMTRA Project Plan (MSA-143), UMTRA-DOE/AL-400124.0167." In turn, it is supported by other pertinent Project documents which are referred to in appropriate sections of this plan. In total, these Project plans, reviewed and revised as necessary annually, provide the basis for and assist in orderly and systematic planning. In many cases, the Project plans are further supplemented by contractor plans (e.g., Quality Assurance and Environmental, Health, and Safety).

### 1.2.2 Technical

One of DOE's first responsibilities was to designate the 24 inactive uranium processing sites at the 22 locations cited in the Act, together with any other processing sites meeting the Act's definition of processing sites. The Act also authorizes the clean-up of properties in the vicinity of the processing sites which have become contaminated with radioactive materials derived from these sites. Based on currently available data, an estimated 8155 properties show some evidence of such contamination. These properties were "designated" on February 2, 1984, in the Federal Register. Designated properties are those which have been identified by baseline surveys as being contaminated to some degree by tailings and consequently are candidates for UMTRA Project inclusion. "Included" properties are those properties, both designated and undesignated, which have been found to be contaminated with residual radioactive contamination in excess of EPA standards and eligible for cleanup. There are an estimated 4543 properties in this category.

As a result of the now completed, Project-sponsored research and technology development (R&TD) program, and other related research efforts, the technology available for remedial actions was enhanced significantly. The R&TD program conducted is described in the "Technology Development Program, UMTRA-DOE/AL-200124.0164" and an integrated summary of the results is contained in the "Technical Summary of the UMTRA Project Technology Development Program (1980-1984), UMTRA-DOE/AL-200125."

### 1.2.3 Cost

The Project total cost is currently estimated to be \$988.9 million (escalated 1987 dollars).

Section 9.0 contains additional information on the estimate. A detailed estimate will be prepared to reflect the additional costs (potentially \$500 to \$800 million in 1987 dollars) required to comply with the revised groundwater protection and restoration standards expected to be issued by the EPA in the latter part of 1988. In order not to impact the current planning, schedule, and agreements for conducting the tailings remedial action activities. This activity will be budgeted separately.

The Act does not contain funding authorization, but indicates that Project funds are to be included in annual authorization and appropriation acts. For purposes of DOE-state cost-sharing, the remedial action costs are final design and construction costs for both processing site and vicinity property remedial actions, as well as land acquisition costs.

### 1.2.4 Schedule

The Project schedule, pursuant to the provisions of the Act, is to accomplish the remedial actions within seven years from the date of promulgation of the EPA standards. EPA issued the cleanup standards effective March 7, 1983, which establishes March 7, 1990, as the date for completion of all remedial actions. However, because of schedule risks, interface complexities, and annual budget constraints, DOE submitted a legislative initiative to extend the end date to September 30, 1994. Project planning is based upon this extended schedule. The schedule extension exempts groundwater restoration activities from the revised end date.

## 2.0 OBJECTIVES

### 2.1 PROJECT

The broad programmatic performance objectives for the Project are identified in the Act and detailed in the Project Charter. Additional operational guidance is provided by NEPA. In summary, the overall objectives of the Project are:

- o To obtain the cooperation of the affected states, Indian tribes, and property owners in accomplishing the Project mission.
- o To carry out a public participation program that encourages public input into the Project decision-making process.
- o To evaluate the economic feasibility of reprocessing the tailings for the recovery of minerals prior to stabilization.
- o To develop uranium mill tailings stabilization and disposal technology for use by Project participants, and to transfer this technology to the private sector for use at active uranium processing sites.
- o To assure that environmental factors are adequately addressed in the selection and implementation of remedial actions and that provisions of the NEPA, as implemented by Council on Environmental Quality Regulations (CEQ) and DOE guidelines, are satisfied.
- o To plan, design, and perform remedial actions at the designated inactive uranium processing sites and vicinity properties in a safe and environmentally sound manner that brings these properties and the final disposal sites, if different from the processing sites, into compliance with the EPA standards and in accordance with applicable Federal and state law.
- o To obtain licenses from the NRC for long-term, post-remedial action surveillance and maintenance of the tailings disposal sites, and to conduct short-term surveillance and maintenance until such time as responsibility is turned over to the long-term custodial agency.

The following sections detail the objectives by specific categories.

### 2.2 MANAGEMENT

Per the MSA process, the Project management objectives are represented by key Project decision points. These key decision points, supplemented by selected critical Project activities, are incorporated into Project schedules and are shown in Table 2.1.

Table 2.1 Key decision points

| Decision   | Date                              | Authority   |
|--|-----------------------------------|---|
| Project  |                                   |   |
| Land Acquisition,  | Per individual site schedule      | Depending on Threshold, AL or HQ DOE/Assistant Secretary, Management and Administration |
| Public Land Withdrawal   | Per individual site schedule      | HQ DOE/Assistant Secretary, Management and Administration                               |
| Award TAC Contract   | 2nd Qtr FY 82 (Accomplished)      | AL  |
| Award RAC Contract   | 3rd Qtr FY 83 (Accomplished)      | AL  |
| State/Tribe Cooperative Agreements   | Case-by-case basis (Accomplished) | AL  |
| Major System Acquisition   |                                   |   |
| Key Decision #1 - Confirmation of the Project Mission Need and Approval of the Project Plan    | 3rd Qtr FY 83 (Accomplished)      | HQ DOE/Acquisition Executive  |
| Key Decision #2 - Approve First Remedial Action Plan (RAP), Proceed to Engineering Development | 4th Qtr FY 83 (Accomplished)      | HQ DOE/Acquisition Executive  |
| Key Decision #3 - Approve Engineering Design for First Site, Proceed to Remedial Actions       | 4th Qtr FY 83 (Accomplished)      | HQ DOE/Acquisition Executive  |
| Key Decision #4 - Terminate Project and Commence Long-Term Site Surveillance and Maintenance   | 4th Qtr FY 94                     | HQ DOE/Acquisition Executive  |

## 2.3 TECHNICAL

The objective of Project remedial actions is to stabilize and control the uranium mill tailings and other contaminated materials in compliance with the EPA standards. Section 8.0 contains a detailed discussion on the standards and their implementation.

Another technical objective is to comply with NEPA requirements which require the Project to identify environmental impacts of a proposed remedial action before any decision to begin the action is made. In particular, decision-making regarding proposed actions is subject to the CEQ regulations for implementing procedural provisions of the NEPA (40 CFR, Parts 1500 through 1508). The CEQ regulations prescribe the steps by which the goals of the NEPA are incorporated and direct the Project process.

## 2.4 COST AND SCHEDULE

As noted in Section 1.0, the Project cost objective is to accomplish the remedial actions within the current total estimated cost of \$988.9 million (escalated 1987 dollars). The Project schedule objective is to complete all activities by September 30, 1994, and the estimated costs are time-phased accordingly.

## 3.0 MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

### 3.1 PROGRAM RESPONSIBILITIES

The Act assigns responsibility for implementation of the UMTRA Program to DOE and other organizations. Figure 3.1 shows the various organizations involved and the following paragraphs address their specific Project roles.

### 3.2 FEDERAL AGENCIES

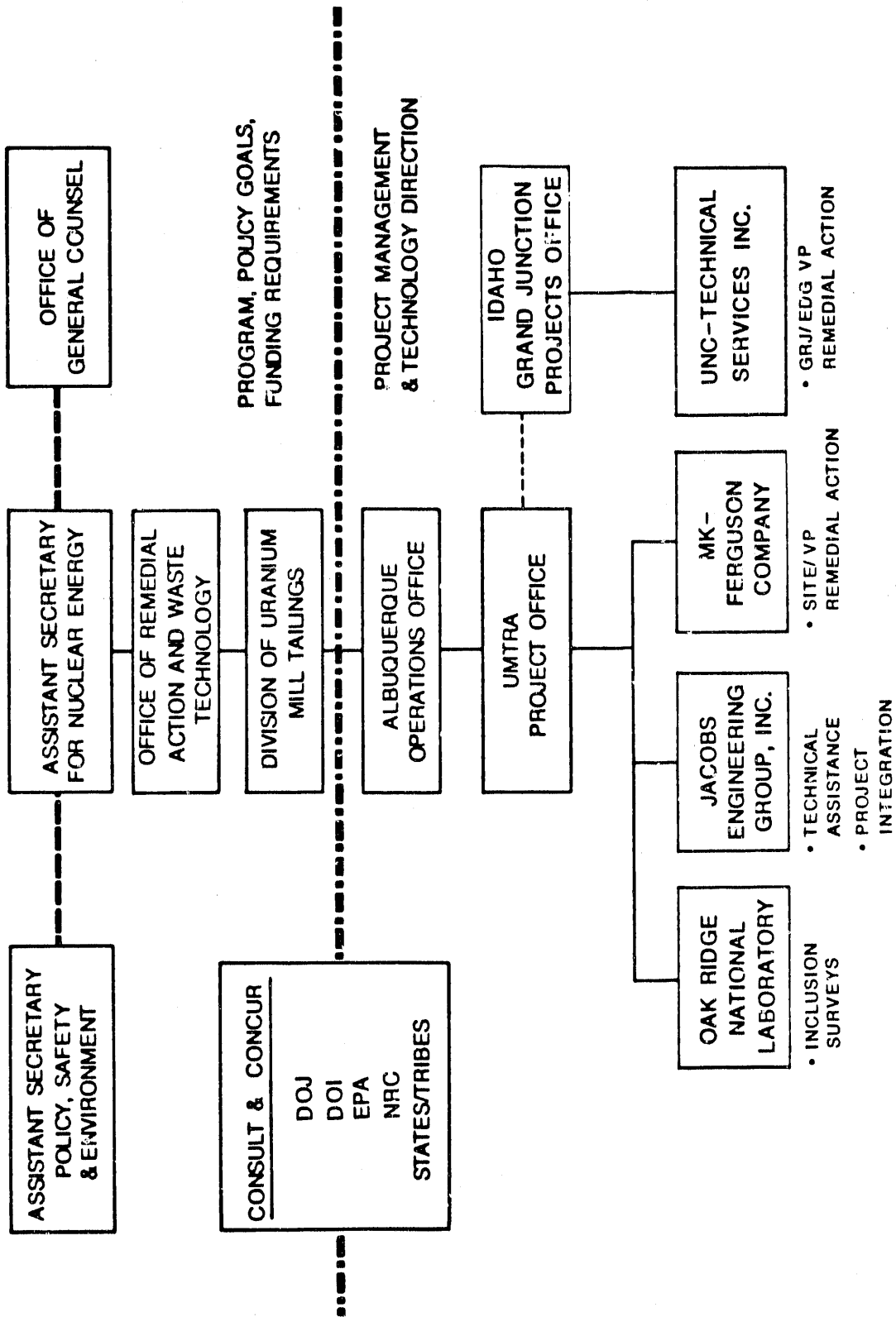
#### 3.2.1 U.S. Department of Energy (DOE)

Within Headquarters DOE, the Assistant Secretary for Nuclear Energy (NE) has been assigned primary responsibilities called forth in the Act, supported by the Office of General Counsel (OGC) and the Assistant Secretary for Environment, Safety, and Health (EH). NE's program management responsibilities have been assigned to the Office of Remedial Action and Waste Technology (NE-20) with policy direction and guidance provided to the Project Office by the Division of Uranium Mill Tailings Project (NE-22). Authority for field operations has been delegated to AL and the Project Office. The respective responsibilities of these organizations are summarized below.

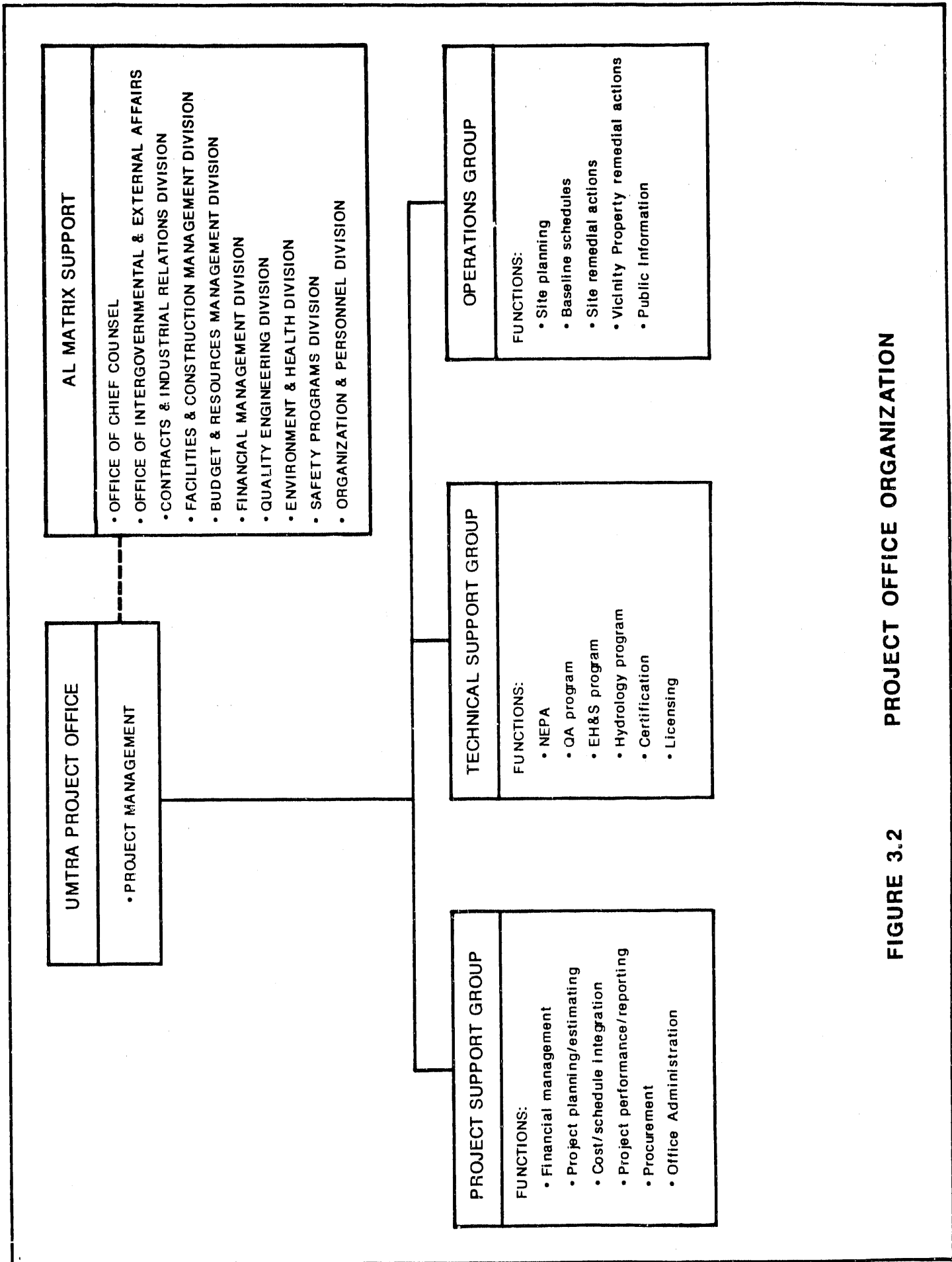
NE and AL. The majority of UMTRA Program functions at HQ DOE are NE's responsibility. Management of the UMTRA Project is assigned by NE to AL in the Project Charter. AL has been delegated day-to-day authority to manage and execute Project functions within established procurement, real estate, and other operational approved thresholds.

Responsibility for AL management of the Project is assigned to the UMTRA Project Manager, who is supported by Project Office and AL staff and selected contractors. Management of the Project is conducted in accordance with overall program policy and guidance provided by HQ DOE. The Project Office organization is depicted in Figure 3.2. Specifically, the Project Office is responsible for:

- o Coordinating Project activities with the tribes, states, local governments, property owners, and the public.
- o Negotiating, executing, and administering cooperative agreements with the affected states and tribes.
- o Developing technology for disposal and stabilization of mill tailings and transferring this technology to the private sector.
- o Investigating the feasibility of reprocessing the tailings.



**FIGURE 3.1 UMTRA PROJECT PARTICIPANT STRUCTURE**



**FIGURE 3.2 PROJECT OFFICE ORGANIZATION**

- o Controlling and integrating the technical, cost, and schedule activities of the Project.
- o Preparing and defending annual budget requests.
- o Procuring and managing Project participants.
- o Managing the NEPA process and preparation of associated documents.
- o Managing the selection and implementation of site remedial action activities.
- o Accomplishing the remedial actions at the sites and vicinity properties.
- o Certifying remedial actions at the sites and vicinity properties.
- o Acquiring necessary licenses and permits.
- o Conducting the site's surveillance and maintenance program.

### 3.2.2 Office of General Council (OGC)

The OGC is responsible for providing program legal assistance relative to implementation of the Act, for providing legal advice and counsel on legally applicable or relevant and appropriate environmental standards, for preparing model cooperative agreements, for reviewing NEPA documents, and for the drafting of any memoranda of understanding between DOE and other Federal agencies (see Section 3.5).

### 3.2.3 Assistant Secretary for Environment, Safety, and Health (EH)

This office is responsible for site NEPA document determinations and environmental document review and approval, for providing guidance on implementation of applicable or relevant and appropriate environmental standards, and for providing occupational safety and environmental overview for the Project. EH originally designated the processing sites and assigned a priority for remedial action based on potential health hazard.

### 3.2.4 Environmental Protection Agency (EPA)

The EPA, in accordance with the provisions of the Act, promulgated standards for remedial actions at UMTRA Project sites. The standards were published January 5, 1983, and became effective March 7, 1983.

Additionally, the Agency is involved in encouraging public participation and in general overview of Project activities such as review of NEPA documents and consultation on the standards.

### 3.2.5 Nuclear Regulatory Commission (NRC)

The NRC, per the Act, is involved in the following areas:

- o Consultation in designation of processing sites and potential vicinity properties and determination of site boundaries.
- o Consultation in preparation of the Annual Report to Congress.
- o Concurrence in cooperative agreements executed with the states and tribes.
- o Concurrence in designation of DOE-controlled or DOI-administered lands as disposal sites.
- o Concurrence in acquisition/disposal of processing sites.
- o Concurrence in allowing mineral recovery from residual radioactive materials.
- o Concurrence in selection and performance of remedial action at processing, disposal, and vicinity property sites.
- o Concurrence in determination that radioactive materials should be removed from processing sites.
- o Concurrence in determination that remedial actions are complete.
- o Concurrence in sale or lease of subsurface mineral rights at licensed disposal sites.
- o Issuance of NRC license for long-term site surveillance and maintenance.
- o Encouragement of public participation.

In order to provide an orderly process for executing their respective statutory responsibilities under the Act, DOE and the NRC entered into a "Memorandum of Understanding" in July, 1985.

### 3.2.6 Other Agencies

Other Federal agencies with responsibilities for carrying out provisions of the Act include:

- o Consultation by the Department of Interior (DOI) concerning sites on Indian lands and the possible use of public lands for disposal sites.

- o Review of NEPA documents by the DOI where Indian lands are involved or Bureau of Land Management land withdrawal occurs.
- o Determination by the Department of Justice (DOJ) regarding liability of owners and operators of the designated sites for remedial action costs.

### 3.3 STATE/TRIBE

The affected state or tribe, through cooperative agreements with DOE, has the following responsibilities:

- o Recommendations for alternative disposal sites.
- o Acquisition of processing and disposal sites where deemed appropriate.
- o Consultation on NEPA documentation.
- o Concurrence on site RAPs.
- o Encouragement of public participation.
- o State cost sharing to the extent of ten percent of costs (no cost sharing is required per DOE/Tribal cooperative agreement).

### 3.4 DOE PRIME CONTRACTORS

The Project Office is supported by an integrated team of contractors as follows:

Technical Assistance Contractor (TAC). The TAC develops and implements site characterization; conducts off-site radon monitoring; monitors technology development; prepares NEPA documentation; develops site remedial action concepts; prepares site RAPs, conceptual designs, and design criteria; reviews site final designs; recommends certification of remedial action; coordinates site licensing; and conducts interim surveillance and maintenance activities at disposal sites. The TAC is responsible for development, implementation, and operation of Project-level programs for health and safety, quality assurance, public participation, document control, and cost and schedule control and integration. Jacobs Engineering Group Inc. with the support of its major subcontractors (Roy F. Weston, Inc. and Sergent, Hauskins, and Beckwith) serves as the TAC.

Remedial Action Contractor (RAC). The RAC performs detailed engineering for the processing sites, and construction and inspection necessary for the conduct of remedial action work. The RAC is also responsible for on-site health and safety, site radiation, and environmental monitoring efforts. With the exception of Salt Lake City, MK-Ferguson Company with the support of its major subcontractors (MK-Engineering and Chem Nuclear Systems Inc.) serves as the RAC for the Project sites. The State

of Utah, per cooperative agreement, serves as the RAC for the Salt Lake City processing site and the Clive disposal site.

Vicinity Property Contractors. Initial vicinity property remedial actions at Canonsburg and Salt Lake City were performed by National Lead of Ohio and Ford, Bacon, and Davis respectively. When MK-Ferguson Company joined the Project as the RAC, it assumed responsibility for vicinity property remedial action work at the sites with the exception of Grand Junction and Edgemont. On-site management of the remedial actions for the vicinity properties at these sites is now performed by UNC Technical Services Inc. (formerly by Bendix Field Engineering Company) under the direction of the DOE Idaho Operations Grand Junction Projects Office (ID-GJPO). An UMTRA Programmatic Agreement between AL and ID, discussed in the next section, establishes the management relationship between the two offices regarding the two sites' vicinity properties.

Inclusion Survey Contractor (ISC). The ISC, Oak Ridge National Laboratory, evaluates each designated vicinity property to determine its eligibility for inclusion in the UMTRA Project. The inclusion evaluation consists of either on-site radiological surveys or mobile radiation surveys, complemented with detailed evaluations of the baseline radiological information. This results in an inclusion or exclusion recommendation for each designated vicinity property.

### 3.5 INTER-ORGANIZATIONAL AGREEMENTS

In addition to the cooperative agreements with the affected states and tribes, the DOE has entered into Project-related agreements with various organizations. The purpose of the agreements is to define in detail the respective responsibilities of the parties, thereby eliminating unnecessary duplication of effort and facilitating Project operation. The agreements in effect include the following:

- o Memorandum of Understanding Between the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission. The memorandum delineates the concurrence procedures and areas of cooperation between the DOE and NRC in the implementation of Title I of the Act.
- o UMTRA Project Programmatic Agreement Between Albuquerque and Idaho Operations Offices. This agreement establishes the management relationship between AL and ID regarding Project direction, budget and finance, and meetings and reports on those Project elements (e.g. Grand Junction and Edgemont vicinity property remedial action and related activities, processing site radiological characterization, Technical Measurement Center operation, and the like) for which ID has been assigned the planning, implementing, and managing authority.

The Quality Assurance and Environmental, Health, and Safety programs conducted by ID are more fully described in a Project Office memorandum titled, "Quality Assurance and Health and Safety Interface between DOE Idaho Operations Office and Albuquerque Operations Office for Bendix Activities Performed in Support of Uranium Mill Tailings Remedial Action Project."

- o Statement of Principles and Directives for the Implementation of the Uranium Mill Tailings Remedial Action (UMTRA) Project in the State of Colorado. This statement, consistent with the Act and the DOE-Colorado cooperative agreement, outlines the principles and directives agreed to by the Governor of Colorado and the AL Manager that will serve as the basis for the cooperative and expeditious implementation of the UMTRA Project in Colorado.
  
- o Memorandums of Understanding Between the Bureau of Land Management Responsible District Offices and Department of Energy/ Albuquerque Operations Office. These memoranda provide for the conduct by DOE, and its authorized contractors and subcontractors, of baseline environmental investigations on certain Federal lands located in Colorado, which are administered by the Bureau of Land Management. The baseline environmental investigations are in connection with Project preparation of environmental documents, in accordance with NEPA, for proposed remedial action alternatives under consideration by DOE for the Maybell, Naturita, Slick Rock, and Gunnison sites.

## 4.0 WORK PLAN

### 4.1 INTRODUCTION

The Project work plan is consistent with the MSA major phases - Technology Development, Advanced Development, Engineering Development, and Operations. However, because of the sites involved, the phases overlap as each site progresses on its individual work plan. Project activities, products, and decisions are depicted by phase in Table 4.1.

The Project is currently transitioning from Advanced Development to the Operational phase by site. The Project Mission need was confirmed and the Project Plan approved (Key Decision #1) on August 2, 1983. The approval of the first Remedial Action Plan for Canonsburg, the lead UMTRA Project site, provided the basis (Key Decision #2) to proceed with Engineering Development for the remaining sites. The approval of the engineering design for Canonsburg (Key Decision #3) moved the Project into the Operational phase. This phase includes a site's remedial action, certification, licensing, and surveillance and maintenance. Approval of the completed remedial action at the last site determines Project termination and start of the long-term sites' surveillance and maintenance program (Key Decision #4).

After promulgation of the EPA standards, the generic processing site and vicinity property work plans shown in Figure 4.1 were adopted and budgets and schedules developed for performing the work. The Project planning is based on the Project Work Breakdown Structure (PWBS) which is discussed in Section 5.0.

The UMTRA Project research and technology development program was initiated in FY 1980, pursuant to the Act, to characterize the environmental problems associated with the processing sites and to develop cost-effective alternatives for their mitigation. The program conducted resulted in a significantly improved understanding of tailings and their impact on the environment. It concluded successfully in FY 1984. Technology transfer is continuing throughout the Project's duration.

Detail on the program is contained in the "Technology Development Program, UMTRA-DOE/AL-200124.0164" and "Technical Summary of the UMTRA Project Technology Development Program (1980-1984), UMTRA-DOE/AL-350124.0000."

### 4.2 REMEDIAL ACTION PROCESS

#### 4.2.1 Preliminary planning

DOE first scoped the Project by designating the inactive uranium processing sites at the 22 locations cited in the Act, together with any other processing sites meeting the Act's definition of processing sites. Data collected by preliminary radiological and engineering assessments were used by the Office of Environment, Safety and Health (EH) to designate 25 sites in November, 1979. Following site designation and in conjunction with the

Table 4.1 UMTRA Project phases

| Project phase                 | Activity  | Description   | Product   | Decision   |
|-------------------------------|---|---|---|--|
| <u>Technology Development</u> | Provide support to design development.                      | Develop cost-effective technological alternatives for mitigating environmental problems associated with disposal sites.   | Technology improvements for stabilizing tailings.                                       | Is the proper technology being developed? transferred?                                       |
| <u>Advanced Development</u>   |   |   |   |  |
| <u>Planning</u>               | Scope Project.<br><br>Establish Project management concept. | Identify sites.<br><br>Prepare Project Plan, and implement compliance with DOE MSA requirements.                          | Project workload.<br><br>Project Plan and other Project-level management documentation. | Is the Project properly scoped?<br><br>Should the Project proceed as planned?                |
| <u>Site Characterization</u>  | Update preliminary Engineering Assessments.                 | Review available data and perform limited measurements to estimate the extent of contamination and environmental hazards. | Processing/Disposal site descriptions.  | Are available site data sufficient to choose and justify proposing a remedial action option? |

0 MSA Key  
Decision # 1  
 Should the Project Mission  
 Need be confirmed and the Project Plan approved?

Table 4.1 UMTRA Project phases (Continued)

| Project phase | Activity                                      | Description  | Product   | Decision  |
|---------------|---|--|---|---|
|               | Select preferred alternative.                 | Conduct the early site appraisal and alternate site selection process, identify the additional site characterization needs and the technical approach for remedial action (draft CADSAR), and agree with NRC and affected state or tribe on preferred remedial action option (final CADSAR). | Draft/Final Comparative Analysis of Disposal Site Alternatives Report (CADSAR). | Do the Project participants agree on the technical approach?  |
|               | Evaluate reprocessing.                        | Determine the technical feasibility and economic viability of reprocessing the mill tailings.  | Expressions of interest from commercial reprocessors.                           | Is reprocessing economically and technically viable?  |
| NEPA Process  | Develop remedial action and disposal options. | Develop options for remedial action including preliminary schedules, costs, risk and benefit assessment. Evaluate principal options of stabilization in place or off-site disposal.  | Draft Environmental Assessment (EA)/Environmental Impact Statement (EIS).       | What are environmental impacts of remedial action options?  |
|               | Conduct environmental assessment.             | Perform required data collection and analyse to obtain environmental data and characterize the impacts of remedial operations.   | Final EA/Finding of No Significant Impact.                                      | Are there any significant impacts?<br><br>Should the preferred option be implemented or is an EIS required? |

Table 4.1 UMTRA Project phases (Continued)

| Project phase            | Activity  | Description  | Product  | Decision  |
|--------------------------|---|--|--|---|
|                          | Analyze in detail the environmental impact.                 | Prepare an EIS and make available for public, State/Tribe, and NRC review.   | Final EIS/ROD.   | Should the preferred option be implemented?   |
| Remedial Action Planning | Perform remedial action planning and design development.    | Prepare a detailed site plan that includes problem description and remedial measures, environmental, health and safety requirements, responsibilities of Project participants, schedule, cost estimate, conceptual design (draft RAP). | Draft Remedial Action Plan (RAP).  | Does the RAP meet the EPA standards?<br><input type="checkbox"/> MSA Key Decision # 2<br>Should the Project proceed into engineering development?   |
| Engineering Development  |   |  |  |   |
| Site Acquisition         | Acquire processing site or disposal site where appropriate. | Purchase fee simple title (including mineral rights and surface mineral value) or withdraw land from public domain (except Indian lands).  | Remedial Action Agreement, real estate purchase agreement, or land withdrawal application. | Will the land be acquired in time to support the remedial action schedule?  |
| Remedial Action Design   | Perform detailed engineering.                               | Prepare the final drawings, specifications, cost estimate, and schedule; finalize the RAP for the remedial action and tailings disposal; and assure that the final design meets EPA standards.   | Final RAP/final design.  | Is the design consistent with design criterion? Does design meet the remedial action schedule?<br><input type="checkbox"/> MSA Key Decision # 3<br>Should the Project proceed into remedial operations? |

Table 4.1 UMTRA Project phases (Concluded)

| Project phase  | Activity                              | Description   | Product  | Decision  |
|--|---------------------------------------|---|--|---|
| <u>Operations</u>  |                                       |   |  |   |
| Site Remedial Action   | Conduct remedial operations.          | Implement the remedial action as outlined in the technical specifications, plans, procedures, and drawings. | Stabilized site and Site Completion Report.                    | Does the remedial action comply with the EPA standards?               |
| Certification  | Verify EPA standards have been met.   | Certify, with NRC concurrence, that the provisions of the final design have been satisfied.                 | Certification Report.  | Has the final disposal site been constructed per the final design?    |
| Licensing  | Obtain NRC license for disposal site. | Prepare and submit to NRC the Site Surveillance and Maintenance Plan.                                       | General license for post-remedial maintenance.                 | Will the disposal site integrity be maintained after remedial action? |
| Surveillance & Maintenance   | Implement monitoring.                 | Conduct site inspections to ensure the site remains environmentally sound.                                  | Site inspection and annual Surveillance & Maintenance Reports. | Does the disposal site continue to function as designed?              |
| <p>0 MSA Key<br/> Decision # 4<br/> Should the Project be terminated and long-term surveillance and maintenance begin?</p> |                                       |   |  |   |

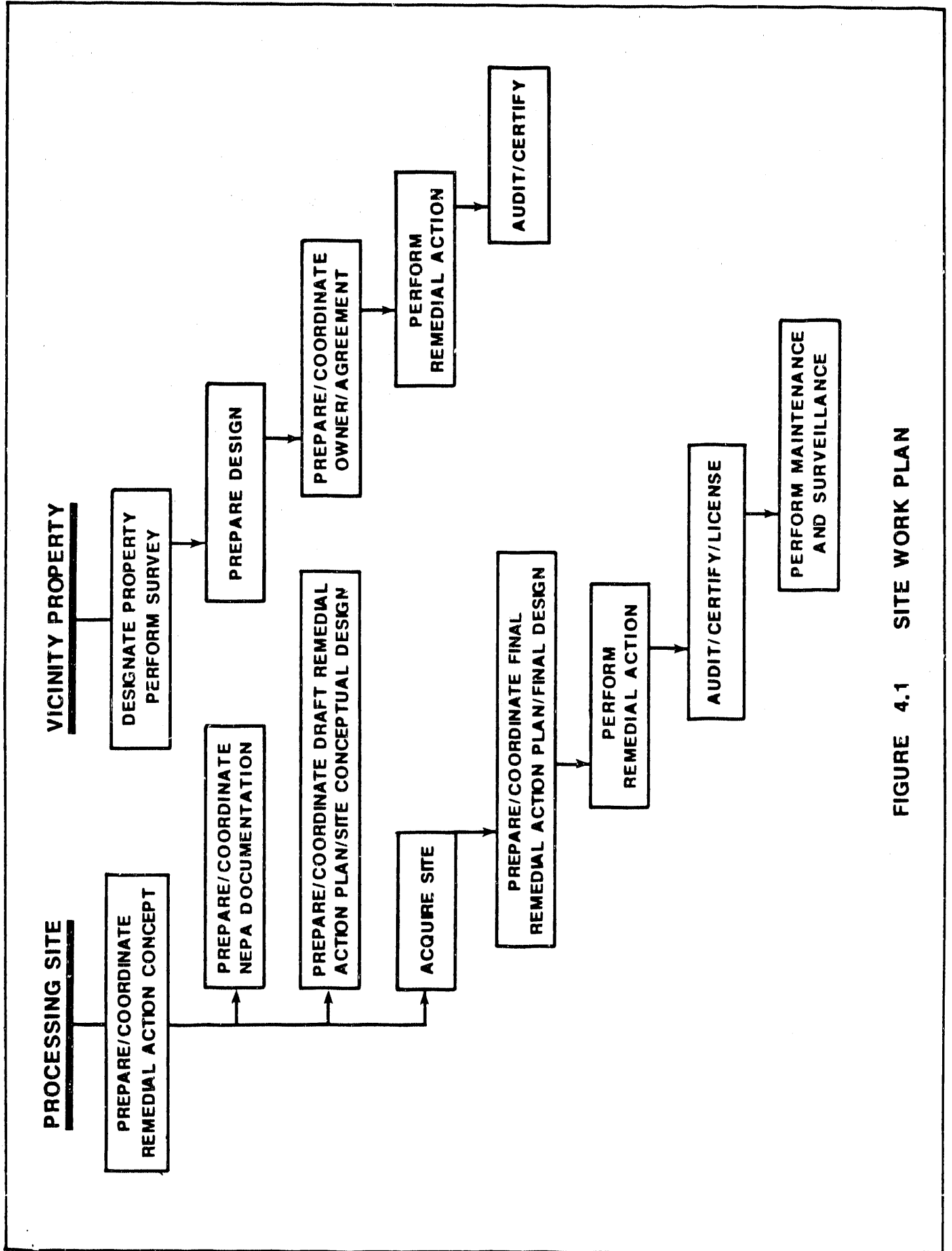


FIGURE 4.1 SITE WORK PLAN

EPA, EH ordered the sites designated for remedial action on the basis of the assessed potential health effects. One site, Baggs, Wyoming, included in the original designation, was subsequently determined to be ineligible for remedial action under the Act and was deleted from the Project scope.

To establish the number of vicinity properties to be cleaned up, detailed on-site radiological surveys are conducted to determine whether the level of contamination at a property exceeds that permitted by the EPA standards, making the property eligible for inclusion for remedial action.

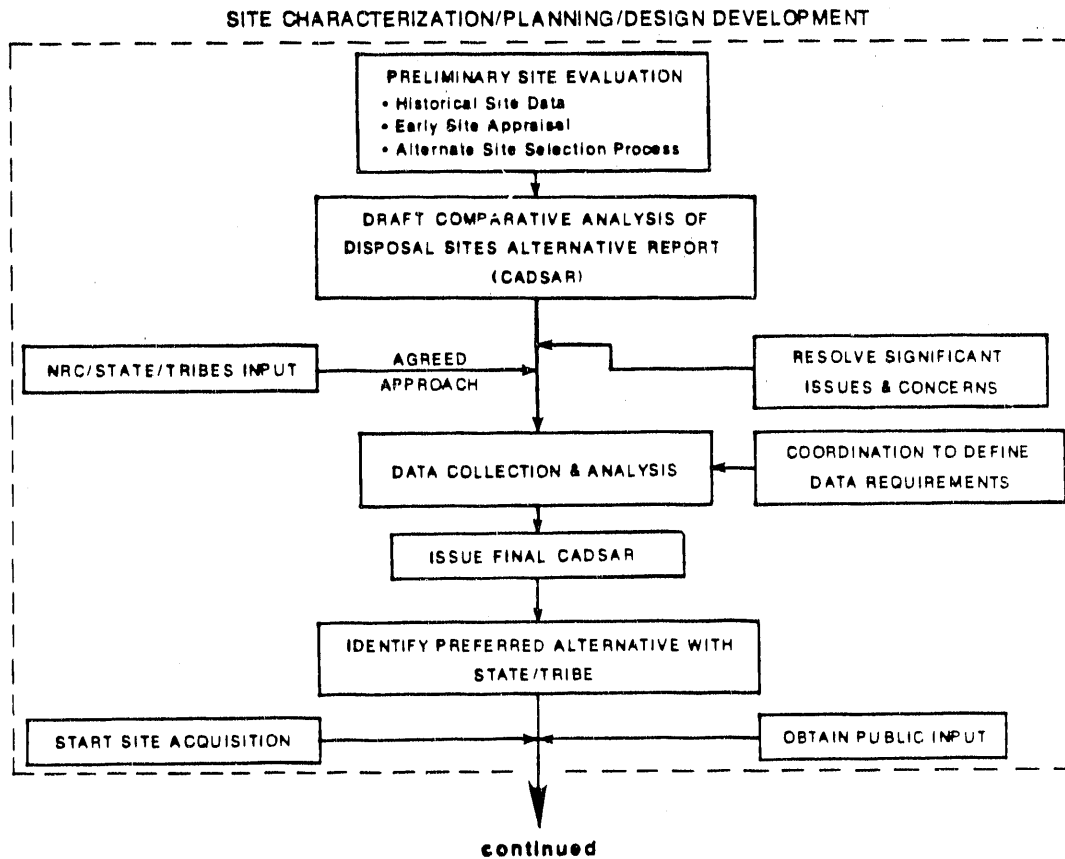
By enactment of Public Law 97-415 (January 4, 1983), the Project scope was extended to include performance of remedial actions at vicinity properties in Edgemont, South Dakota. In January, 1983, NE assumed responsibility from EH for conducting radiological assessment studies of vicinity properties, and for inclusion of eligible vicinity properties near the designated processing sites.

Concurrent with this initial planning, the Project management concept (including acquisition strategy) was formulated and the original Project Charter (initially titled Project Management Agreement) was signed. After the Project was designated an MSA, Project planning and management was and is guided by the pertinent DOE and AL Orders governing a MSA. The Project Mission Need was confirmed and the initial Project Plan prepared and approved. The Project Plan is revised periodically to reflect current Project direction.

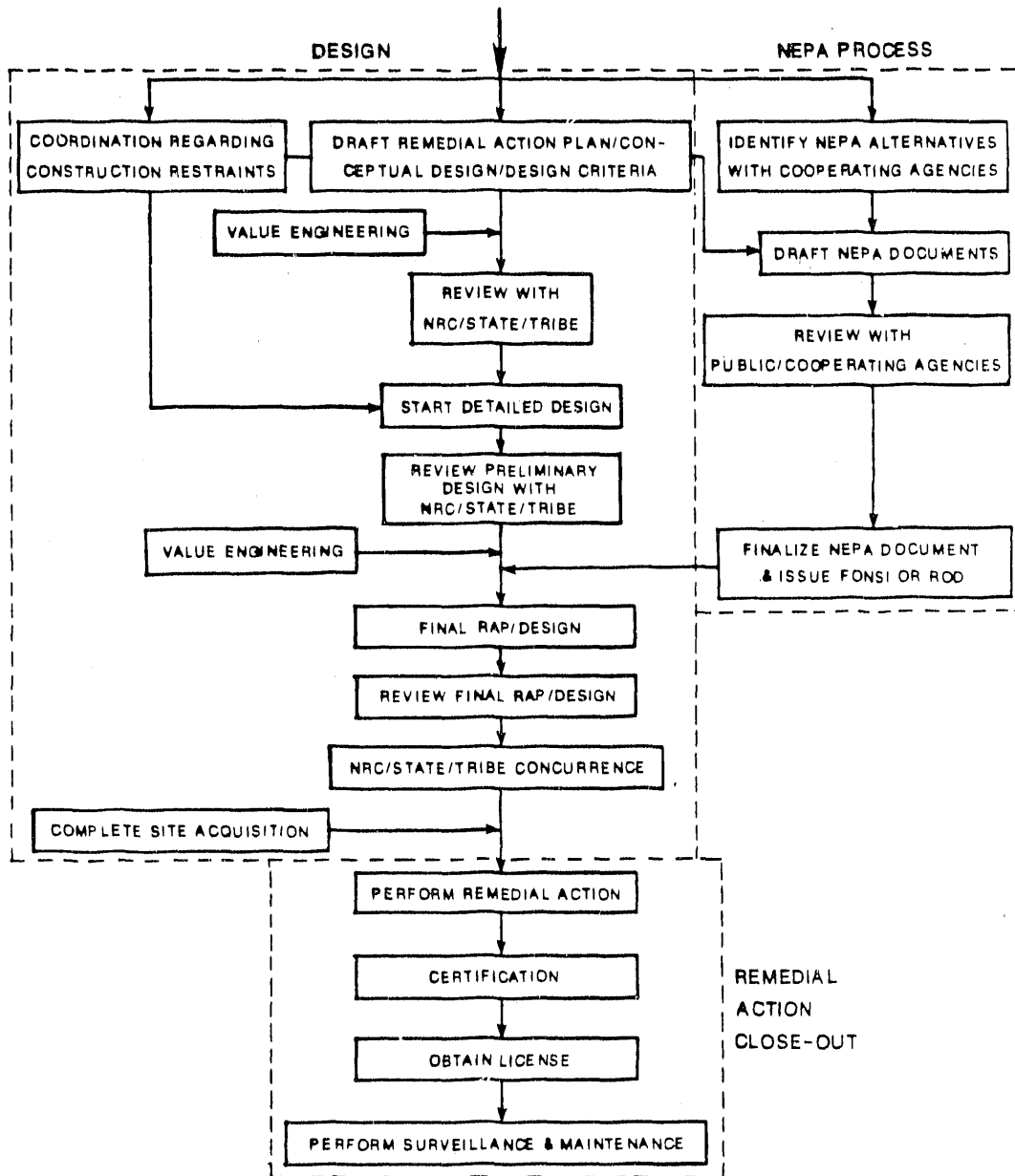
#### 4.2.2 Remedial action

Evaluation of the existing conditions at each site is undertaken to identify the viable remedial action options and to select a preferred alternative. Engineering Assessments prepared between 1978 and 1982 represented the initial effort to characterize the sites and identify remedial action options. These initial assessments, performed for all the processing sites, are used as source material for initial site characterization and analysis activities.

The identification of a site's preferred alternative for remedial action then progresses through a series of planning, design, and remedial action activities that culminate in a site's surveillance and maintenance. Each site design is subjected to a formal value engineering (VE) analysis at the completion of the draft RAP or the 60-percent design point as determined by the Project Office. The objective of the Project's VE effort is to achieve a site's completed remedial action at the lowest cost that will satisfactorily and reliably meet the EPA standards. The Project Office, TAC, RAC, NRC, affected state or tribe, site task force, and public are involved in these activities to a varying degree. Figure 4.2 depicts the overall process and Table 4.2 lists the documentation that describes the various activities involved in accomplishing the UMTRA Project workplan.



**FIGURE 4.2 TYPICAL REMEDIAL ACTION ACTIVITIES**



**FIGURE 4.2 (Cont.) TYPICAL REMEDIAL ACTION ACTIVITIES**

Table 4.2 UMTRA Project work plan documentation

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General Guidance Documentation

- o "Site Management Manual," UMTRA-DOE/AL-40005.0000. Documents the organizational and technical approach used to manage the activities required to stabilize and control the Project sites.
- o "Key Programmatic Steps and Activities for Implementing the Uranium Mill Tailings Remedial Action Program," UMTRA-DOE/AL-400129.0000. Presents the basic procedures and key programmatic steps established to carry out a site's remedial action.
- o "Plan for Implementing EPA Standards for UMTRA Sites," UMTRA-DOE/AL-400724.0163. Presents the Project procedures and testing and evaluation criteria that shall be followed in planning for the implementation of the EPA standards.
- o "Technical Approach Document," UMTRA-DOE/AL-050425.0000. Describes the general technical approaches and design criteria to be used in preparing site RAPs and site designs.
- o "Design Criteria for Stabilization of Inactive Uranium Mill Tailings Sites," UMTRA-DOE/AL-050424.0049. Provides criteria for the RAC in preparing site designs.
- o "DOE Plan for Water Protection Standards." Defines and describes the DOE's implementation of water protection standards for the UMTRA Project.
- o "Outdoor Radon Monitoring Plan for the UMTRA Project Sites," UMTRA-DOE/AL-150225.0000. Describes the monitoring schedules and methods used to measure ambient radon concentrations around UMTRA Project sites.
- o "Alternate Site Selection Process for UMTRA Project Sites," UMTRA-DOE/AL-200129.0007. Describes the procedures to be used by the Project Office in conjunction with the NRC and affected state or tribe to select and to agree mutually on alternate sites for off-site disposal.
- o "Certification Plan for the UMTRA Project Processing Sites," UMTRA-DOE/AL-400728.000. Establishes the Project policy and procedures for site certification.
- o "Project Licensing Plan," UMTRA-DOE/AL-350124. Establishes the Project site licensing concept and describes the functions of participatory agencies.
- o "Guidance for UMTRA Project Surveillance and Maintenance," UMTRA-DOE/AL-350124.0000. Establishes the Project procedures to be used to perform long-term surveillance and maintenance of disposal sites after completion of remedial action.
- o "Vicinity Properties Management and Implementation Manual," UMTRA-DOE/AL-050601. Describes the Project policies and procedures for remedial actions on vicinity properties.

Table 4.2 UMTRA Project work plan documentation (concluded)

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General Guidance Documentation (continued)

- o "UMTRA Project Quality Assurance Plan," UMTRA-DOE/AL-400324.0185. Establishes the guidelines for Project participants' QA programs.
- o "UMTRA Project Environmental, Health, and Safety Plan," UMTRA-DOE/AL-150224.006. Identifies the basic Federal health and safety standards and special DOE requirements applicable to the Project environmental, health, and safety program.
- o "Special Studies." Present the findings, conclusions, and recommendations on selected topics identified by the UMTRA Project Manager to assist in performance of site planning and remedial actions.

Site-Specific Planning Documentation

- o "Comparative Analysis of Disposal Site Alternatives Report." Provides the basis for agreement with the affected state or tribe on a preferred alternative for a site's remedial action and with the Nuclear Regulatory Commission that the preferred alternative will meet the EPA standards.
  - o Site NEPA Documentation. Includes "Environmental Assessments" or "Environmental Impact Statements," "Findings of No Significant Impact" or "Records of Decision," and other documentation (e.g., floodplain assessment) required to comply with NEPA requirements for a site. The preparation of this documentation is guided by: (1) "Contents of Environmental Assessments Prepared for the UMTRA Project," UMTRA-DOE/AL-150126.0010; (2) "Contents of Environmental Impact Statements Prepared for the UMTRA Project," UMTRA-DOE/AL-150125.0006; and (3) "Procedures for Preparation, Printing, and Distribution of UMTRA Project National Environmental Policy Act Documents," UMTRA-DOE/AL-150127.0000.
  - o "Remedial Action Plan." Identifies the series of site activities and the design required to affect the long-term stabilization and control of the residual radioactive materials for a site.
  - o "Site Surveillance and Maintenance Plan." Describes the surveillance and maintenance requirements for the disposal site after remedial actions have been completed and provides the basis for obtaining the site license.
  - o "Economic Evaluation of Inactive Uranium Mill Tailings." A series of studies conducted to determine the economic viability of reprocessing the tailings for recoverable uranium, vanadium, and molybdenum. The studies were conducted at Salt Lake City, Shiprock, Gunnison, Grand Junction, Old and New Rifle, Maybell, Riverton, Spook, Ambrosia Lake, Mexican Hat, Tuba City, and Durango.
-

The Project is also required by the Act to consider the potential for reprocessing of the uranium tailings. Recovery of the residual minerals is permitted as long as it is consistent with the site's remedial action. Additionally, reprocessing has to be as cost effective as any other option in order to be considered as an alternative remedial action. Based on economic evaluation studies conducted by the Project Office it was determined that tailings reprocessing was not economical. As a result, it is no longer considered a viable remedial action option for the Project, unless market conditions change.

## 5.0 WORK BREAKDOWN STRUCTURE

The UMTRA PWBS, shown in Figure 5.1, is organized into work elements which promote completion of the Project work plan in a uniform and integrated manner. Level 1 and 2 elements correspond with the DOE B&R code, thereby promoting traceability. Level 3 elements define the tasks which make up the Level 2 elements and which are assigned to Project participants. Those Level 3 elements which are site-related are further extended one level and are the key PWBS elements for Project planning and control. Level 4 elements are the designated Project sites for which Level 3 tasks are to be accomplished.

The key prime contracting services performed and formerly performed by UMTRA Project Contractors at Level 2 are described in the PSCE Report. Work on PWBS Element 20, Technology Development, is complete.

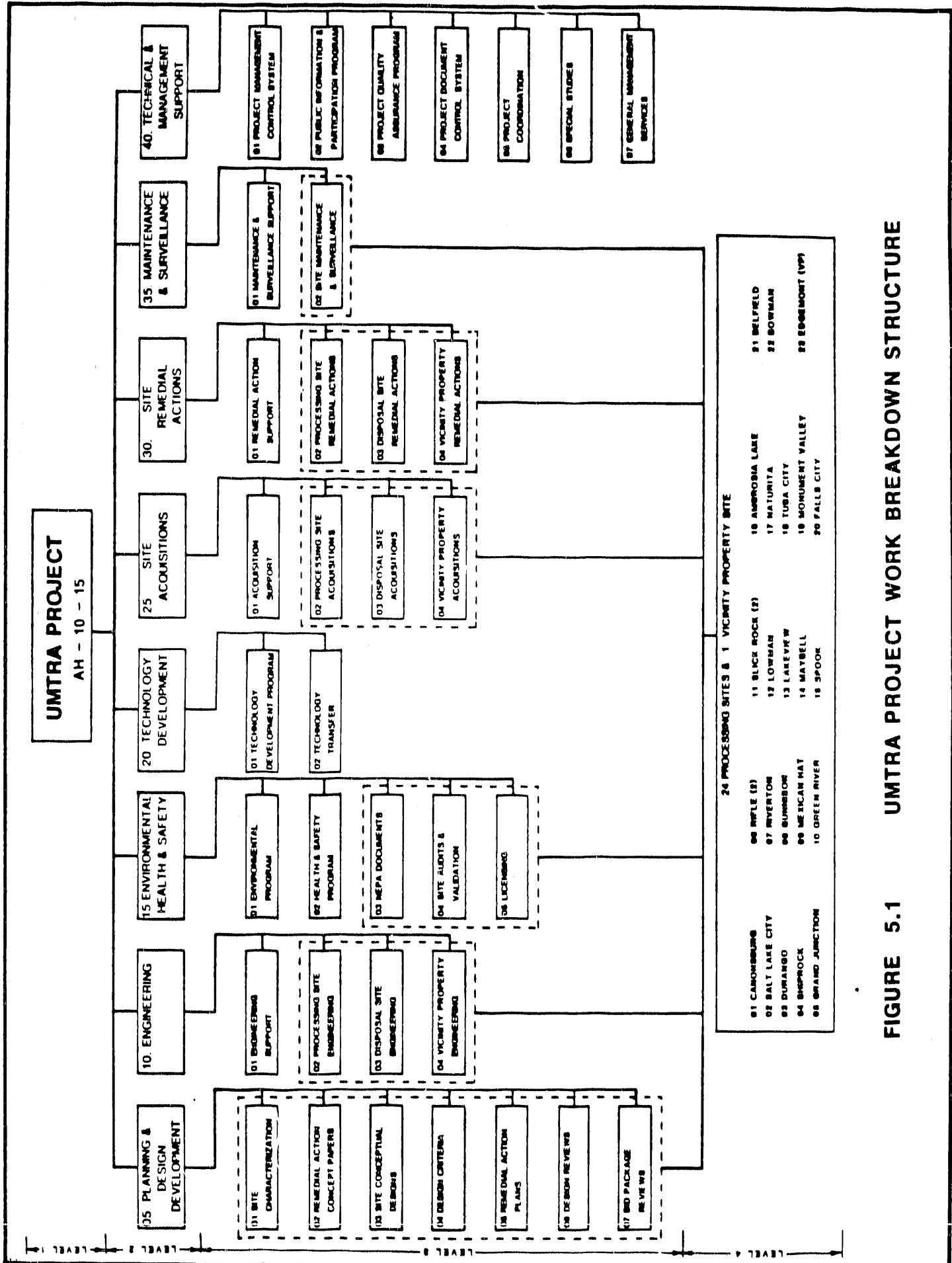


FIGURE 5.1 UMTRA PROJECT WORK BREAKDOWN STRUCTURE

## 6.0 SCHEDULE

### 6.1 SCHEDULE OBJECTIVE

To meet the key schedule decision points discussed in Section 1.2.1, the Project scheduling system is operated as part of the integrated Project Management Control System (see Section 11.0). This scheduling system contains the key Project activities, work plan elements, decision points, and milestones required to accomplish the work by September, 1993. The integrated scheduling system assures that all Project work is planned and scheduled to meet critical need dates, to consider interfaces by and among Project participants, and to provide visibility of work in progress and the information necessary to make timely management decisions on future courses of action.

### 6.2 SCHEDULING HIERARCHY

The Project scheduling system hierarchy contains successively more detail from the UMTRA Project Master Schedule down through to the lower level contractor schedules. The schedule hierarchy is as follows (examples of the schedules are depicted in the figures indicated):

- o UMTRA Project Master Schedule (Figure 6.1).
- o UMTRA Sites Master Schedule (Figure 6.2) and UMTRA Vicinity Property Schedule (Figure 6.3).
- o PSCE Site Summary Schedule (Figure 6.4).
- o IPMS Schedule (Figure 6.5).
- o Contractor Work Package/Planning Schedule (Figure 6.6).

The upper three levels of schedules appear in the PSCE Report in bar chart format with each lower level expanding the scheduled detail. They are updated annually during the report's revision to incorporate the approved fiscal year budget appropriation. Additionally, the level 2 and 3 schedules are maintained and updated separately from the report as noted below.

The UMTRA Project Master Schedule (Figure 6.1) presents summary coverage of the critical activities at PWBS Level 2 that lead to successful Project completion. The UMTRA Master Site and Vicinity Property Schedules (Figures 6.2 and 6.3) expand the UMTRA Project Master Schedule by site and provide a summary of individual site activities. These schedules serve as the fiscal year (FY) site schedule baseline. They are revised based on the FY appropriation and to incorporate Change Control Board actions (see Section 11.2) that are approved by the Project Manager during the FY. The PSCE Site Summary Schedule (Figure 6.4) is composed primarily of critical PWBS Level 2 and 3 elements that support the Master Site/Vicinity Property site schedules. They are maintained in two versions, represented by different bars, on the same schedule (Figure 6.4). One bar represents the FY baseline schedule for the site from the Master Site/Vicinity Property Sche-

PROJECT MASTER SCHEDULE FROM IPMS DATABASE

FY '87 BUDGET SUBMITTAL BASELINE

(NOTE: BEL - BEL/BOW)

RUN DATE: 06FEB87  
 DATA DATE: 01OCT86  
 NETWORK START: 1JAN79  
 FORECAST END: 30SEP89  
 REQUIRED END: 30SEP89

\*\*\* PROCESSING SITE \*\*\*

SITE CHARACTERIZATION

DESIGN DEVELOPMENT (ICD/RAP)

NEPA DOCUMENTS

ENGINEERING

SITE ACQUISITION

REMEDIAL ACTION

CERTIFICATION

\*\*\* VICINITY PROPERTIES \*\*\*

INCLUSIONS

ENGINEERING

REMEDIAL ACTION

CERTIFICATION

Approved: *[Signature]*  
 Date: 2-6-87

| Activity                     | Start     | End       | Resources | Notes |
|------------------------------|-----------|-----------|-----------|-------|
| PROCESSING SITE              | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| SITE CHARACTERIZATION        | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| DESIGN DEVELOPMENT (ICD/RAP) | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| NEPA DOCUMENTS               | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| ENGINEERING                  | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| SITE ACQUISITION             | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| REMEDIAL ACTION              | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| CERTIFICATION                | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| VICINITY PROPERTIES          | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| INCLUSIONS                   | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| ENGINEERING                  | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| REMEDIAL ACTION              | 01 JAN 79 | 30 SEP 89 | ...       | ...   |
| CERTIFICATION                | 01 JAN 79 | 30 SEP 89 | ...       | ...   |

FIGURE 6.1 UMTA PROJECT MASTER SCHEDULE

# UMTRA SITES MASTER SCHEDULE

| PROCESSING SITES    | FY 1983 |    | FY 1984 |    | FY 1985 |    | FY 1986 |    | FY 1987 |    | FY 1988 |    | FY 1989 |    | FY 1990 |    | FY 1991 |    | FY 1992 |    | FY 1993 |    |    |    |    |    |    |    |
|---------------------|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----|----|----|----|----|----|
|                     | 10      | 20 | 30      | 40 | 10      | 20 | 30      | 40 | 10      | 20 | 30      | 40 | 10      | 20 | 30      | 40 | 10      | 20 | 30      | 40 | 10      | 20 | 30 | 40 | 10 | 20 | 30 | 40 |
| CANONSBURG          |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| SALT LAKE CITY      |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| SHIPROCK            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| DURANGO             |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| GUNNISON            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| GRAND JUNCTION • PS |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| GRAND JUNCTION • VP |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| RIFLE - 2           |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| RIVERTON            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| TUBA CITY           |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| MEXICAN HAT         |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| LAKEVIEW            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| AMBROSIA LAKE       |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| NATURITA            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| FALLS CITY          |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| GREEN RIVER         |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| SLICK ROCK - 2      |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| BELFIELD            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| BOWMAN              |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| MAYBELL             |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| LOWMAN              |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| SPOOK               |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |
| MONUMENT VALLEY     |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |    |    |    |    |    |    |

 PLANNING & DESIGN, NEPA  
 REMEDIAL ACTION  
 ENGINEERING  
 (VP WORK INCLUDED IN PROCESSING SITES EXCEPT FOR GRAND JUNCTION)

AS OF 6/87 (FY 89 BUDGET/ \$116M)  
 APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

**FIGURE 6.2**





| SITE/GEN ACT | BOOK | ACTIVITY IDENTIFIER                | ACTIVITY DESCRIPTION | FORECAST START | FORECAST COMPLETION | TARGET COMPLETION | FORECAST VARIANCE | STATUS            |
|--------------|------|------------------------------------|----------------------|----------------|---------------------|-------------------|-------------------|-------------------|
| 0501-15-020  | SPK  | DEVELOP & ISSUE DRAFT CADSAR       |                      | 14 JUL 86      | 5 SEP 86            | 5 SEP 86          | 0                 | FORECAST-ON-SCHED |
| 0501-15-021  | SPK  | NRC REVIEW DRAFT CADSAR            |                      | 05 SEP 86      | 30 OCT 86           | 30 OCT 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-022  | SPK  | STATE REVIEW DRAFT CADSAR          |                      | 05 SEP 86      | 30 OCT 86           | 30 OCT 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-045  | SPK  | GEO DRILL SOU/AWARD                |                      | 31 JAN 86 A    | 17 OCT 86           | 17 OCT 86         | 0                 | STARTED-ON-SCHED  |
| 0501-15-051  | SPK  | GEO DRILL FIELD WORK               |                      | 20 OCT 86      | 20 NOV 86           | 20 NOV 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-061  | SPK  | GEO DRILL DATA ANAL/REPT           |                      | 10 DEC 86      | 12 DEC 86           | 12 DEC 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-075  | SPK  | HYD DRILL SOU/AWARD                |                      | 20 DEC 85 A    | 17 OCT 86           | 24 OCT 86         | 5                 | STARTED-AHEAD     |
| 0501-15-081  | SPK  | HYD DRILL FIELD WORK               |                      | 20 OCT 86      | 14 NOV 86           | 20 NOV 86         | 10                | FORECAST-AHEAD    |
| 0501-15-091  | SPK  | HYD DRILL DATA ANAL/REPT           |                      | 17 NOV 86      | 6 FEB 87            | 6 FEB 87          | 0                 | FORECAST-ON-SCHED |
| 0501-15-095  | SPK  | PIT EXCAV SOU/AWARD                |                      | 15 JAN 86 A    | 13 OCT 86           | 30 OCT 86         | -6                | STARTED-BEHIND    |
| 0501-15-111  | SPK  | PIT EXCAV FIELD WORK               |                      | 20 OCT 86      | 14 NOV 86           | 14 NOV 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-121  | SPK  | PIT EXCAV DATA ANAL/REPT           |                      | 17 NOV 86      | 20 NOV 86           | 20 NOV 86         | 0                 | FORECAST-ON-SCHED |
| 0501-15-131  | SPK  | ROGER'S REPORT                     |                      | 17 NOV 86      | 2 JAN 87            | 16 JAN 87         | 10                | FORECAST-AHEAD    |
| 0501-15-171  | SPK  | DEV FINAL CADSAR                   |                      | 12 JAN 87      | 3 APR 87            | 3 APR 87          | 0                 | FORECAST-ON-SCHED |
| 0501-15-181  | SPK  | PUB MTG/COMMENT/ISSUE FINAL CADSAR |                      | 6 APR 87       | 22 MAY 87           | 22 MAY 87         | 0                 | FORECAST-ON-SCHED |
| 0501-15-200  | SPK  | RADON MONITORING                   |                      | 30 MAR 87      | 31 MAR 87           | 31 MAR 87         | 0                 | FORECAST-ON-SCHED |
| 0501-15-300  | SPK  | INCLUSIONS                         |                      | 1 MAY 86       | 20 MAY 87           | 20 MAY 87         | 0                 | FORECAST-ON-SCHED |
| 0505-15-001  | SPK  | DEVELOP SCD/RAP                    |                      | 1 JUN 87       | 21 AUG 87           | 21 AUG 87         | 0                 | FORECAST-ON-SCHED |
| 0505-15-011  | SPK  | ISSUE DRAFT SCD/RAP                |                      | 24 AUG 87      | 25 SEP 87           | 25 SEP 87         | 0                 | FORECAST-ON-SCHED |
| 0505-15-021  | SPK  | NRC REVIEW DRAFT SCD/RAP & COMMENT |                      | 20 SEP 87      | 13 NOV 87           | 13 NOV 87         | 0                 | FORECAST-ON-SCHED |
| 0505-15-022  | SPK  | STATE REV DRAFT SCD/RAP & COMMENT  |                      | 20 SEP 87      | 13 NOV 87           | 13 NOV 87         | 0                 | FORECAST-ON-SCHED |
| 0505-15-031  | SPK  | DRAFT RAP REVIEW MEETING           |                      | 16 NOV 87      | 27 NOV 87           | 27 NOV 87         | 0                 | FORECAST-ON-SCHED |

FIGURE 6.5 IPMS SCHEDULE

| SITE/GEN ACT  |   | SPOOK     |         |           |             |              |            |             |             |                     |                     |
|---------------|---|-----------|---------|-----------|-------------|--------------|------------|-------------|-------------|---------------------|---------------------|
| ACTIVITY CODE | ACTIVITY DESCRIPTION                          | EST. DUR. | P. DUR. | REM. DUR. | EARLY START | EARLY FINISH | LATE START | LATE FINISH | TOTAL FLOAT | IMPOSED DATES (1ST) | IMPOSED DATES (2ND) |
| 0505-15-875   | SPK RAP DOE-INHOUSE FINAL REV & CONCURRENCE   | 35        |         |           | 16SEP86     | 03NOV86      | 16SEP86    | 03NOV86     | 0           |                     |                     |
| 0505-15-900   | SPK RAP PUBLISH                               | 30        |         |           | 04NOV86     | 15DEC86      | 04NOV86    | 15DEC86     | 0           | CL                  | 0                   |
| 1000-15-001   | SPK PK DESIGN                                 | 197       |         |           | 01OCT87     | 01JUL88      | 01OCT87    | 01JUL88     | 0           | SE 01OCT87          |                     |
| 1503-15-135   | SPK PSCR SUB-CONT & REPORTING (ARCH,BIO,HIST) | 60        |         |           | 31OCT86     | 22JAN87      | 05DEC86    | 26FEB87     | 25          |                     |                     |
| 1503-15-200   | SPK NEPA PREP FACT SHEET                      | 35        |         |           | 28APR87     | 15JUN87      | 28APR87    | 15JUN87     | 0           |                     |                     |
| 1503-15-245   | SPK NEPA DRAFT RPT. ASSMTS (ARCH,BIO,HIST)    | 20        |         |           | 23JAN87     | 19FEB87      | 12MAY87    | 08JUN87     | 77          |                     |                     |
| 1503-15-250   | SPK NEPA EDIT-WORD PROC (ARCH,BIO,HIST)       | 15        |         |           | 23JAN87     | 12FEB87      | 19MAY87    | 08JUN87     | 82          |                     |                     |
| 1503-15-255   | SPK NEPA DOE REV DRAFT ASSMTS (ARCH,BIO,HIST) | 5         |         |           | 20FEB87     | 26FEB87      | 09JUN87    | 15JUN87     | 77          |                     |                     |
| 1503-15-280   | SPK NEPA DEV AIR NOISE IMPACTS                | 20        |         |           | 30JUN87     | 27JUL87      | 14JUL87    | 10AUG87     | 10          |                     |                     |
| 1503-15-285   | SPK NEPA DEV EXIST' ENV. RC                   | 15        |         |           | 23JAN87     | 12FEB87      | 30JUN87    | 20JUL87     | 112         |                     |                     |
| 1503-15-290   | SPK NEPA DEV EA APPND B DES-CALCS             | 15        |         |           | 30JUN87     | 20JUL87      | 30JUN87    | 20JUL87     | 0           |                     |                     |
| 1503-15-295   | SPK NEPA DEV EA SURFACE H2O IMPACTS           | 15        |         |           | 30JUN87     | 20JUL87      | 30JUN87    | 20JUL87     | 0           |                     |                     |
| 1503-15-800   | SPK NEPA DEV DEA & PREP REV                   | 60        |         |           | 09JUN87     | 31AUG87      | 09JUN87    | 31AUG87     | 0           |                     |                     |
| 1503-15-811   | SPK NEPA DEA TAC REV & REL.                   | 27        |         |           | 01SEP87     | 28SEP87      | 01SEP87    | 28SEP87     | 0           |                     |                     |
| 1503-15-813   | SPK NEPA DEA EDITING -EDIT-UP                 | 10        |         |           | 21JUL87     | 03AUG87      | 18AUG87    | 31AUG87     | 20          |                     |                     |
| 1503-15-815   | SPK NEPA PE/OGC AND AGENCY REVIEW EA          | 35        |         |           | 29SEP87     | 16NOV87      | 29SEP87    | 16NOV87     | 0           |                     |                     |
| 1503-15-820   | SPK NEPA DEA INCORP COMMTS                    | 10        |         |           | 17NOV87     | 30NOV87      | 17NOV87    | 30NOV87     | 0           |                     |                     |
| 1503-15-821   | SPK NEPA PRINT EA                             | 12        |         |           | 01DEC87     | 16DEC87      | 01DEC87    | 16DEC87     | 0           |                     |                     |
| 1503-15-822   | SPK NEPA PE/OGC APPROVAL OF EA                | 30        |         |           | 17DEC87     | 27JAN88      | 17DEC87    | 27JAN88     | 0           |                     |                     |
| 1503-15-824   | SPK NEPA INCORP. COMMENTS AND PUBLIS- EA      | 34        |         |           | 28JAN86     | 15MAR86      | 28JAN86    | 15MAR86     | 0           |                     |                     |
| 1503-15-901   | SPK NEPA PUBLIC COMMENT (EA)                  | 25        |         |           | 16MAR88     | 19APR88      | 16MAR88    | 19APR88     | 0           |                     |                     |
| 1503-15-904   | SPK NEPA PREP FONS                            | 18        |         |           | 20APR88     | 13MAY88      | 20APR88    | 13MAY88     | 0           | CL                  | 0                   |
| 1505-15-113   | SPK PSCR ACCESS PERMIT/LAND USE AGREEMENTS    | 40        |         |           | 22AUG86     | 16OCT86      | 12SEP86    | 04NOV86     | 15          |                     |                     |
| 1505-15-400   | SPK SLA ISSUE DRAFT                           | 40        |         |           | 03AUG87     | 25SEP87      | 18AUG87    | 12OCT87     | 11          | SE 03AUG87          |                     |
| 1505-15-450   | SPK SLA ISSUE FINAL                           | 40        |         |           | 01JUN86     | 26JUL86      | 22JUL86    | 15SEP86     | 37          | SE 01JUN86          |                     |

FIGURE 6.6 CONTRACTOR WORK PACKAGE/PLANNING SCHEDULE

dules and the other bar represents the working schedule, which is the current approved Project Office plan for the site. As noted above, the baseline schedule is revised per FY appropriation and Change Control Board action; whereas, the working schedule is updated monthly and reflects the contractor's latest forecast start and completion dates approved by the Project Office. The forecast completion date from the working schedule is compared to the target completion date for the same activity from the baseline schedule, thereby measuring progress against plan on a monthly basis.

Schedule variance analysis is conducted by the contractors to explain any slippage greater than 30 days between the baseline and working schedules. The reasons for the potential or actual delay are analyzed and recommended corrective actions identified.

The IPMS Schedule (Figure 6.5) status is reviewed monthly, prior to updating, at a meeting attended by the Project Office, TAC, and RAC staff responsible for site-specific activities/schedules. The status of the key activities is addressed and the scheduling changes fully coordinated. Based on the results, the schedule is updated and produced in a tabular bar chart format with a one-year window (i.e., one month of history and 11 months of look-ahead). The tabular schedule is transmitted to the various Project participants (NRC, states, tribes, HQ DOE, EPA, and DOI) to support their respective agency planning for reviewing Project documents. A copy of the IPMS (65 Point) Schedule in bar chart format is also included in the Site Progress Report.

The contractor Work Package/Planning Schedules (Figure 6.6) are updated monthly by each contractor and are used to support the IPMS (65 Point) Schedule updating process. Schedule variance analysis is conducted per thresholds established with each contractor and the results reported in the contractor's monthly Status Report. Table 6.1 summarizes the preceding discussion.

Table 6.1 UMTRA Project scheduling system

| Schedule Level | Title/format  | Schedule level supported | Purpose   | Input                        | Approved by                 | Updated                                   |
|----------------|---|--------------------------|---|------------------------------|-----------------------------|---|
| 1              | UMTRA Project Master Schedule/ Bar Chart                                    | --                       | Depicts critical PMS level 2 elements   | HO DOE/Project Office        | Project Office              | Annually                                  |
| 2              | UMTRA Site Master Schedule and UMTRA Vicinity Property Schedule/ Bar Charts | Schedule Level 1         | Establish Project Baseline  | Project Office/ Participants | Project Office              | As required*                              |
| 3              | PSCE Site Summary Schedules/ Bar Chart                                      | Schedule Levels 1-2      | Expands Project Baseline by Site, establishes Site Working Schedule               | Project Office/ Contractors  | Project Office/ Contractors | As required                               |
| 4              | IPMS (65 point) Schedule/Bar Chart and Tabular Format                       | Schedule Levels 1-3      | Details Site Baseline and Working Schedules                                       | Project Office/ Contractors  | Project Office/ Contractors | Baseline: As required<br>Working: Monthly |
| 5              | Contractor Work Package/Planning Package Schedules/ Tabular Format          | Schedule Levels 1-4      | Further details the contractor portion of the Site Baseline and Working Schedules | Contractors                  | Project Office/ Contractors | Baseline: As required<br>Working: Monthly |

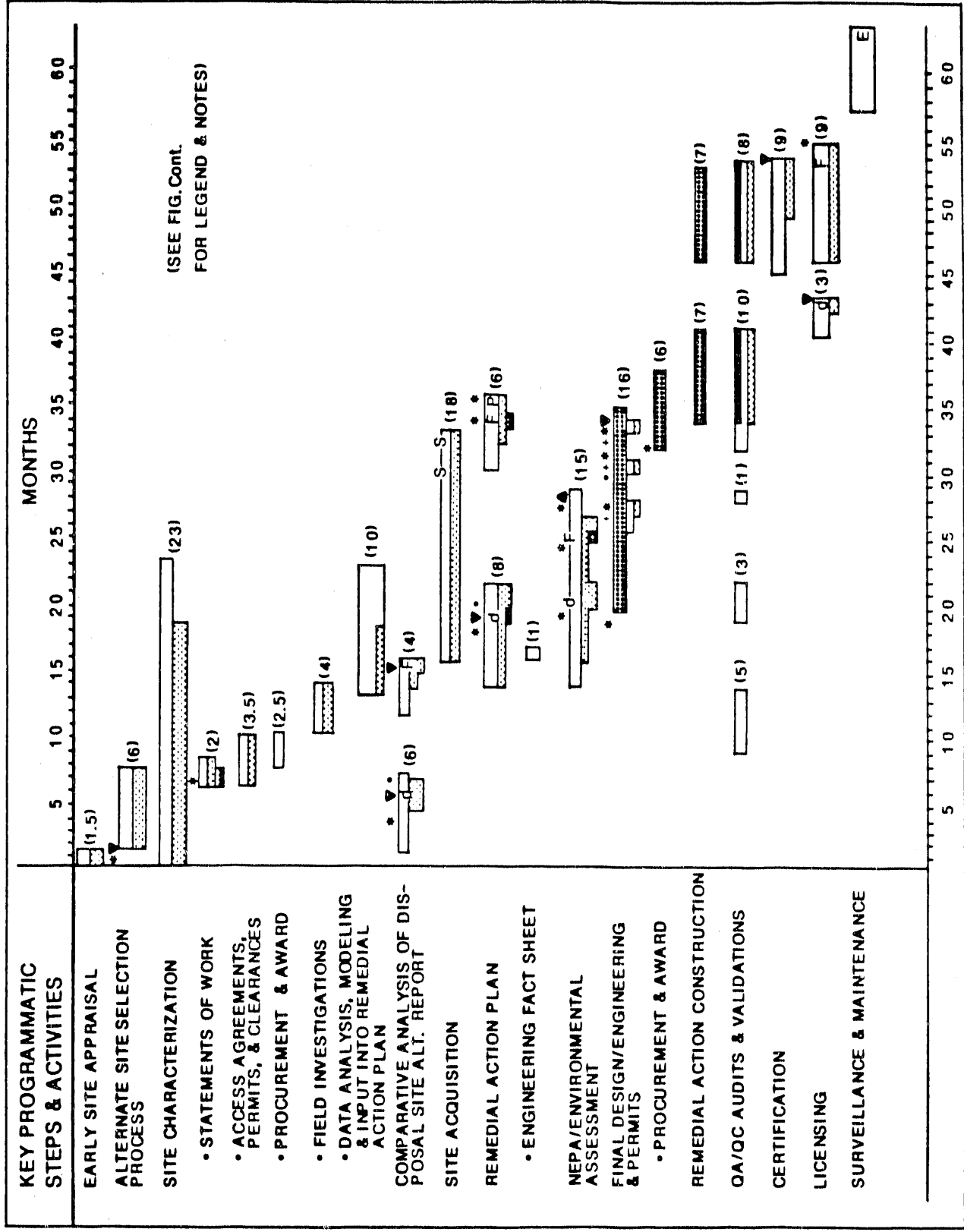
\* As required = The Project Baseline Schedule, and in turn all Site Baseline Schedules are revised based upon approved Change Control Board activities during a fiscal year and annually per the fiscal year appropriations.

## 7.0 LOGIC DIAGRAMS

The flow of typical remedial action activities is shown in Figure 7.1. This logic is further detailed in the integrated Project scheduling system (Section 6.0) which provides a comprehensive time and resource scheduling system based on the critical path method.






Logic diagrams are available for each site's remedial action including identification of the critical path. Figure 7.2 is an extract from a site logic diagram based on the IPMS (65 point) schedule. An extract is used for illustration purposes because of the length of the diagram.

Other logic diagrams are plotted as required, e.g., the Project budgeting process.



**FIGURE 7.1 GENERALIZED SITE REMEDIAL ACTION FLOW CHART**

**LEGEND:**

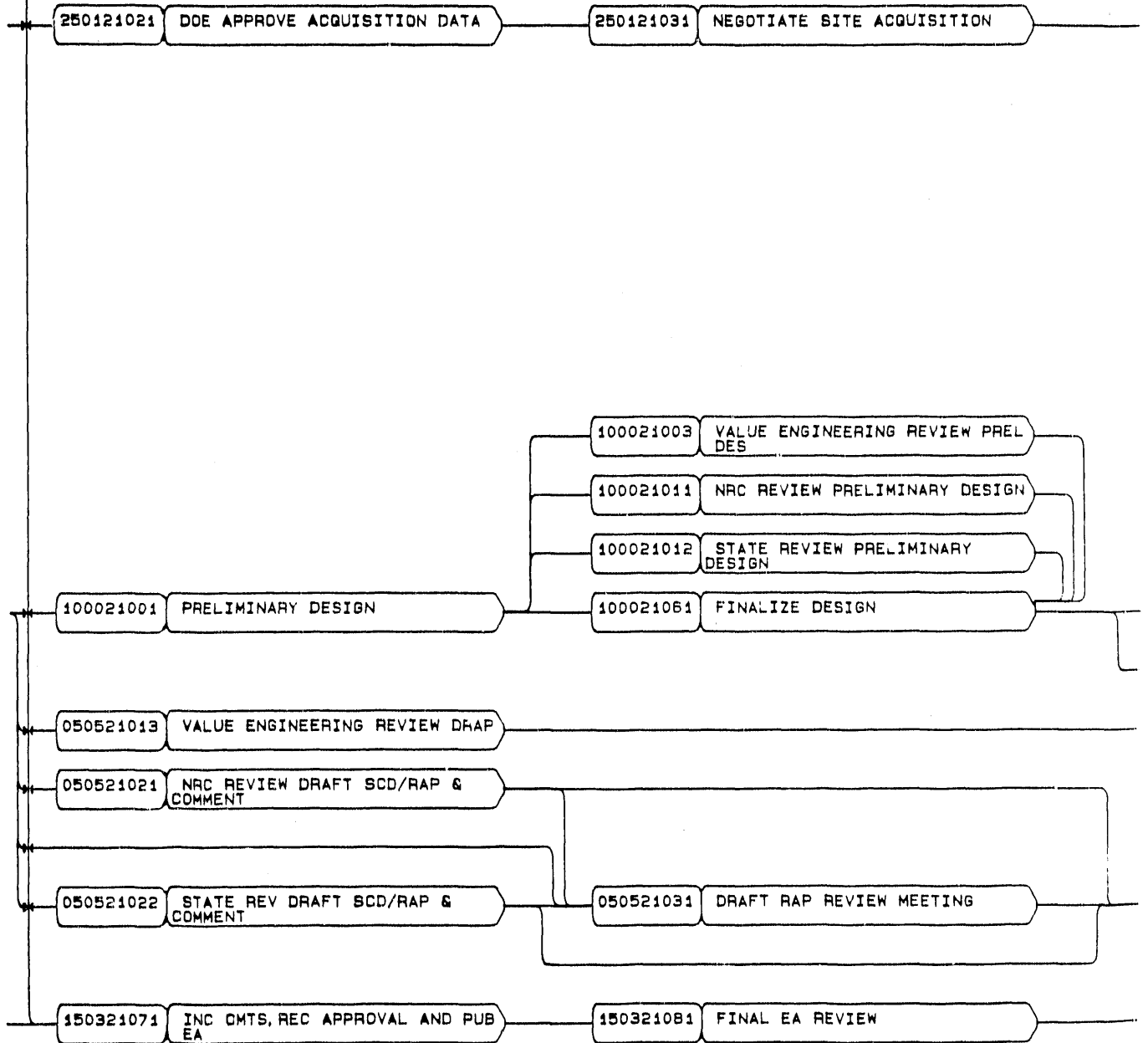
|   |  |      |  |
|---|--|------|--|
|  | COOPERATING AGENCY PARTICIPATION/STATE/TRIBE/NRC | D    | FINDING OF NO SIGNIFICANT IMPACT                     |
|  | DOE/TECHNICAL ASSISTANCE CONTRACTOR              | E    | END OF PROJECT                                       |
|  | DOE/REMEDIAL ACTION CONTRACTOR                   | P    | PUBLISH  |
|  | DOE (UMTRA PROJECT OFFICE) DECISION POINT        | S    | STATE ACQUISITION                                    |
| *   | DOE (UMTRA PROJECT OFFICE) APPROVAL              | B    | ACQUISITION OF BLM LAND                              |
|  | HO DOE DECISION POINT                            | (XX) | AVERAGE DURATION OF ACTIVITY (MONTHS)                |
| d   | DRAFT  | •    | VALUE ENGINEERING                                    |
| F   | FINAL  | +    | DESIGN REVIEW (FINAL DESIGN AT 30/60/90% COMPLETION) |

**NOTES:**

1. Funding problems, unforeseen geologic and climatic conditions and public interest may significantly affect this schedule.
2. Chart is based on the preparation of an Environmental Assessment. Environmental Impact Statement preparation will add six (6) months to the process and delay subsequent steps by that amount.
3. Remedial Action construction will generally require two (2) full construction seasons. Larger sites may require additional time.
4. Bar thickness denotes relative degree of involvement in that step or activity.
5. The steps, activities and time required are based on current statutes, regulations, cooperative agreements, policy and practice.
6. Draft Remedial Action Plan (RAP) Includes Site Conceptual Design (SCD). In the Final RAP, the SCD is replaced by the Final Design.

**FIGURE 7.1 (Cont.) GENERALIZED SITE REMEDIAL ACTION FLOW CHART**

# IPMS BELFIELD



**FIGURE 7.2**

**SITE LOGIC DIAGRAM EXTRACT**

## 8.0 PERFORMANCE CRITERIA

### 8.1 EPA STANDARDS

The EPA standards are the primary performance criteria governing the Project remedial actions. The "Plan for Implementing EPA Standards for UMTRA Sites, UMTRA-DOE/AL-400724.0163" presents and standardizes the Project approach used to comply with the EPA standards. The plan's application requires extensive consultation with the affected state or tribe and the NRC concerning relevant Federal, state, or tribal policies, standards, and regulations. Throughout this process, the Project Office encourages state and tribal participation to ensure that compliance with the EPA standards is achieved. As noted previously, the EPA standards for groundwater are to be re-issued.

Supplemental standards to the EPA standards may be applied as a form of remedial action, particularly in the case of vicinity properties. The application of supplemental standards is permitted by 40 CFR Part 192.22. Their use is further detailed in the Vicinity Properties Management and Implementation Manual.

### 8.2 DESIGN GUIDANCE

The Project's "Technical Approach Document (TAD), UMTRA-DOE/AL-050425.0000" provides criteria for a systematic approach to addressing design features for a site. Additionally, the Project's "Design Criteria for Stabilization of Uranium Mill Tailings Sites, UMTRA-DOE/AL-050424.0049" provides guidelines for preparing the final design. The guidance is consistent with state-of-the-art engineering practices, the EPA standards, and the NRC's "Standard Review Plan for Remedial Action Plans." The design guidance is used in conjunction with the site RAP to provide information on the constraints, procedures, codes, and standards to be used during the design and performance of a site's remedial action.

### 8.3 ADDITIONAL GUIDELINES

The EPA standards and design guidance discussed above are supplemented by numerous other performance guidelines for accomplishing Project work. These are identified in Tables 8.1 through 8.3 as to origin (i.e., Other Agency, DOE and AL, and Project).

Table 8.1 UMTRA Project performance criteria - Other agency

| Planning and Design Development                  | Engineering                              | Environmental Health and Safety   | Technology Development                           |
|--|--|---|--|
| 0 EPA Standards                                  | 0 EPA Standards                          | 0 EPA Standards   | 0 Federal Acquisition Regulations/DOE Supplement |
| 0 Resource Conservation Recovery Act             | 0 Supplemental Standards (40 CFR 192.22) | 0 NEPA (40 CFR, Parts 1500-1508)  |  |
| 0 Federal Acquisition Regulations/DOE Supplement | 0 Resource Conservation Recovery Act     | 0 OSHA (29 CFR 1926-1910)   |  |
| 0 Cooperative Agreements                         | 0 Cooperative Agreements                 | 0 Recording & reporting occupational injuries and illnesses (29 CFR 1940)       |  |
| 0 NRC Standard Review Plan for RAPs.             |  | 0 Hazardous materials regulations "packaging & Transportation" (49 CFR 100-177) |  |
| 0 State water quality standards                  |  | 0 Floodplain/wetlands assessment (10 CFR 1022)                                  |  |
|  |  | 0 Endangered Species Act  |  |
|  |  | 0 Cultural Resources Preservation (36 CFR 800)                                  |  |
|  |  | 0 State and local permits/approvals   |  |
|  |  | 0 NRC Licensing Plan for Uranium Mill Tailings Remedial Action Sites            |  |

Table 8.1 UMTRA Project performance criteria - Other agency (concluded)

| Site Acquisition                                  | Site Remedial Actions                             | Maintenance and Surveillance                      | Technical Management Support  |
|---|---|---|---|
| 0 Federal Acquisition Regulations/DOE Supplements | 0 Federal Acquisition Regulations/DOE Supplements | 0 Federal Acquisition Regulations/DOE Supplements | 0 Federal Acquisition Regulations/DOE Supplements   |
| 0 Cooperative Agreements                          | 0 Cooperative Agreements                          |   | 0 Quality Assurance criteria for nuclear power plants and fuel re-processing plants (10 CFR 50, Appendix B) |
| 0 Public Law 95-91                                |   |   |   |
| 0 Public Law 95-604                               |   |   | 0 Quality Assurance program requirements for nuclear power plants (ANSI/ASME NQA-i)                         |
| 0 Land withdrawals (43 CFR 2310)                  |   |   |   |

Table 8.2 IMTRA Project performance criteria - DOE and AL

| Environmental Health and Safety  | Environmental Health and Safety  | Site Acquisition                     | Technical Management Support   | Technical Management Support  |
|--|--|--------------------------------------|--|---|
| 0 5000.3, Unusual Occurrence Reporting System.   | 0 5484.1, Environmental Protection, Safety and Health Protection Information Reporting Requirements. | 0 4300.1B, Real Property Management. | 0 1324.2, Records Disposition.   | 0 2250.1, Cost and Schedule for Contract Performance Measurement.         |
| 0 5440.1C, Implementation of the National Environmental Policy Act.  | 0 Environmental Compliance Guide DOE/EV-0132.  |                                      | 0 1324.3, Files Management   | 0 5100.3, Field Budget Process.   |
| 0 5480.3 Safety requirements for packaging and transportation of hazardous material, hazardous substances, and hazardous wastes. |  |                                      | 0 1324.4, Micrographics management.  | 0 5100.4, Internal Review Budget Process.                                 |
| 0 5480.4 Environmental Protection, Safety and Health Protection Standards.   |  |                                      | 0 1332.1A, Uniform Reporting System.   | 0 5100.5, Office of Management and Budget-Budget Process.                 |
| 0 5481.1A, Environmental Protection, Safety and Health Protection Program for DOE Operations.                                    |  |                                      | 0 1360.1, Acquisition and Management of Automatic Data Processing Equipment and Resources. | 0 5100.6, Congressional Budget Review.                                    |
| 0 5482.1A, Environmental, Safety and Health Appraisal Program.   |  |                                      | 0 1360.5, Management of Microcomputers and Word Processors.                                | 0 5500.1, Vital Records Protection Program.                               |
| 0 5483.1A, Occupational Safety and Health Program for Government-Owned Contractor-Operated Facilities.                           |  |                                      | 0 1700.1, Freedom of Information Program.  | 0 5500.4 Public Affairs Policy and Planning Requirements for Emergencies. |
|  |  |                                      | 0 2100.1A, Glossary of Financial Terms.  | 0 5700.2C, Cost Estimating, Analysts, and Standardization.                |
|  |  |                                      | 0 2100.7, Accounting for Funds Recovered from Obligations Incurred in Prior Fiscal Years.  | 0 5700.4A (draft 4700), Project Management System.                        |
|  |  |                                      | 0 2100.10, Reimbursable (Funds-In) Policy and Procedures.                                  | 0 5700.6A Quality Assurance.  |



## 9.0 COST AND MANPOWER ESTIMATES

### 9.1 COSTS

The Project total cost is estimated to be \$988.9 million in escalated FY 1987 dollars. This estimate is time-phased over the Project duration. It is subject to change as the planned funding profile or the schedule is impacted. A detailed time-phased cost estimate will be prepared for implementation of the groundwater protection and restoration standards after EPA promulgation of the standards.

Table 9.1 presents the Project total cost estimate in FY 1987 and escalated dollars by summary PWBS level for the duration of the Project. Table 9.2 presents the cost of the individual sites in escalated dollars. Figure 9.1 shows the Project Baseline Resources Plan, including the Federal and state shares, associated with the UMTRA Project Master Schedule.

Details on the Project's total estimated cost and its development are contained in the PSCE Report. This report supports the cost baseline presented in the Project Plan and is updated annually.

### 9.2 PERSONNEL

Project Office staffing is phased to correspond to the scheduled accomplishment of the Project Mission. As the work load phases toward completion in FY 1994, the staffing requirement will drop accordingly. Figure 9.2, UMTRA Project Staffing, presents the total planned Project staffing for the duration of the Project in full time equivalents, pending any impacts of the EPA groundwater standards.

Table 9.1 Project total estimated cost

(1987 - \$000)

|                      | FY '79-80 | FY '81   | FY '82   | FY '83   | FY '84   | FY '85   | FY '86   | FY '87    | FY '88    | FY '89    | FY '90    | FY '91    | FY '92   | FY '93  | Total     |
|----------------------|-----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|----------|---------|-----------|
| Planning & Des Dev   | 2685.00   | 786.00   | 766.00   | 4201.00  | 4542.00  | 14826.00 | 15871.00 | 9507.00   | 6127.31   | 2487.92   | 710.30    | 538.35    | 543.56   | 40.56   | 64032.00  |
| Engineering          |           |          |          |          |          |          |          |           |           |           |           |           |          |         |           |
| Processing Site      | 0.00      | 0.00     | 0.00     | 737.00   | 1560.00  | 2862.00  | 3046.00  | 5720.00   | 5134.54   | 2050.92   | 536.60    | 583.94    | 844.23   | 643.00  | 23718.23  |
| Vicinity Properties  | 208.00    | 1665.00  | 681.00   | 1347.00  | 3375.00  | 6033.00  | 6501.00  | 9960.00   | 9575.56   | 8647.43   | 6284.20   | 2227.28   | 1187.72  | 120.00  | 57812.19  |
| Env Health & Safety  | 2309.00   | 1104.00  | 4815.00  | 3476.00  | 1301.00  | 2385.00  | 1399.00  | 1294.00   | 950.28    | 432.64    | 418.33    | 574.28    | 211.25   | 46.22   | 20716.00  |
| Technology Develop   | 4045.00   | 4820.00  | 2904.00  | 1264.00  | 0.00     | 0.00     | 0.00     | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00     | 0.00    | 13033.00  |
| Site Acquisition     | 0.00      | 0.00     | 688.00   | 1059.00  | 2227.00  | 78.30    | 547.00   | 4497.00   | 321.07    | 1988.93   | 390.00    | 0.00      | 0.00     | 0.00    | 11796.00  |
| Remedial Actions     |           |          |          |          |          |          |          |           |           |           |           |           |          |         |           |
| Processing Site      | 0.00      | 0.00     | 0.00     | 750.00   | 3705.00  | 22931.00 | 42801.00 | 42929.00  | 49704.26  | 52584.02  | 55943.32  | 69709.16  | 52685.77 | 0.00    | 393742.53 |
| Vicinity Properties  | 0.00      | 1051.00  | 976.00   | 2843.00  | 3902.00  | 7928.00  | 18441.00 | 30494.00  | 30494.00  | 29648.00  | 25020.58  | 10289.42  | 1679.00  | 0.00    | 162766.00 |
| Maint & Surveillance | 0.00      | 0.00     | 0.00     | 0.00     | 0.00     | 12.00    | 31.00    | 232.00    | 0.00      | 276.00    | 442.00    | 623.00    | 995.00   | 940.00  | 4060.00   |
| Tech & Mgmt Support  | 2308.00   | 2328.00  | 7551.00  | 5994.00  | 8540.40  | 7384.00  | 8666.50  | 19882.30  | 1734.38   | 17139.96  | 19571.47  | 18121.48  | 18832.46 | 5207.75 | 158668.80 |
| Totals               | 11555.00  | 11754.00 | 18381.00 | 21671.00 | 29152.40 | 64439.00 | 97303.50 | 124915.30 | 120157.50 | 115255.82 | 109316.80 | 102666.91 | 76978.99 | 6997.53 | 910544.75 |

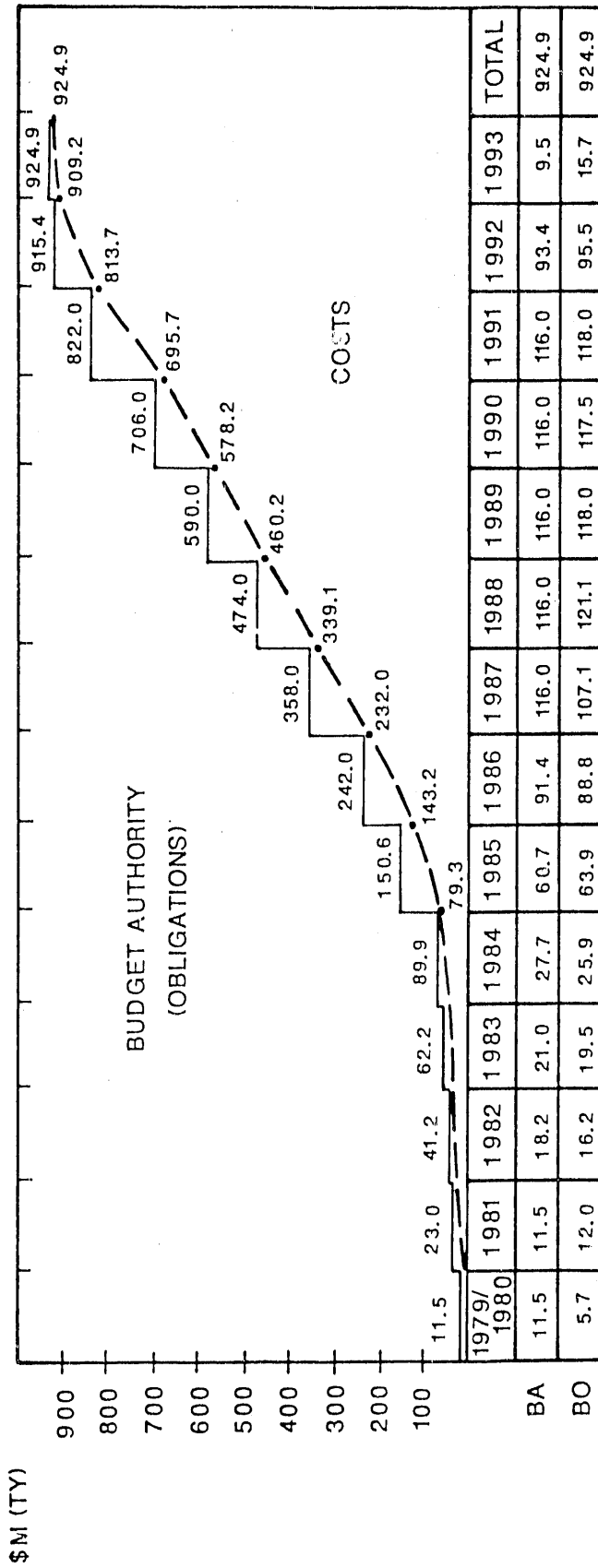
(Escalated - \$000)

|                      | FY '79-80 | FY '81   | FY '82   | FY '83   | FY '84   | FY '85   | FY '86   | FY '87    | FY '88    | FY '89    | FY '90    | FY '91    | FY '92   | FY '93  | Total     |
|----------------------|-----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|----------|---------|-----------|
| Planning & Des Dev   | 2685.00   | 786.00   | 766.00   | 4201.00  | 4542.00  | 14826.00 | 15871.00 | 9907.00   | 6384.66   | 2719.30   | 816.85    | 652.48    | 698.47   | 55.20   | 64910.96  |
| Engineering          |           |          |          |          |          |          |          |           |           |           |           |           |          |         |           |
| Processing Site      | 0.00      | 0.00     | 0.00     | 737.00   | 1560.00  | 2862.00  | 3046.00  | 5720.00   | 5350.19   | 2241.66   | 617.09    | 707.74    | 1084.84  | 875.12  | 24801.64  |
| Vicinity Properties  | 208.00    | 1665.00  | 681.00   | 1347.00  | 3375.00  | 6033.00  | 6501.00  | 9960.00   | 9977.73   | 9451.64   | 7226.83   | 2699.46   | 1526.22  | 163.32  | 60815.20  |
| Env Health & Safety  | 2309.00   | 1104.00  | 4815.00  | 3476.00  | 1301.00  | 2385.00  | 1399.00  | 1294.00   | 990.19    | 472.88    | 481.08    | 696.03    | 271.46   | 62.91   | 21057.55  |
| Technology Develop   | 4045.00   | 4820.00  | 2904.00  | 1264.00  | 0.00     | 0.00     | 0.00     | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00     | 0.00    | 13033.00  |
| Site Acquisition     | 0.00      | 0.00     | 688.00   | 1059.00  | 2227.00  | 78.00    | 547.00   | 4497.00   | 334.55    | 2173.90   | 448.50    | 0.00      | 0.00     | 0.00    | 12052.95  |
| Remedial Actions     |           |          |          |          |          |          |          |           |           |           |           |           |          |         |           |
| Processing Site      | 0.00      | 0.00     | 0.00     | 750.00   | 3705.00  | 22931.00 | 42801.00 | 42929.00  | 51791.84  | 57474.33  | 64334.82  | 84487.50  | 67701.21 | 0.00    | 438905.70 |
| Vicinity Properties  | 0.00      | 1051.00  | 976.00   | 2843.00  | 3902.00  | 7928.00  | 18441.00 | 30494.00  | 31774.75  | 32405.26  | 28773.67  | 12470.78  | 2157.51  | 0.00    | 173216.97 |
| Maint & Surveillance | 0.00      | 0.00     | 0.00     | 0.00     | 0.00     | 12.00    | 31.00    | 232.00    | 530.38    | 301.67    | 508.30    | 755.08    | 1278.57  | 1279.34 | 4928.34   |
| Tech & Mgmt Support  | 2308.00   | 2328.00  | 7551.00  | 5994.00  | 8540.40  | 7384.00  | 8666.50  | 19882.30  | 18069.82  | 18733.98  | 22507.19  | 21963.23  | 24199.71 | 7087.75 | 175215.88 |
| Totals               | 11555.00  | 11754.00 | 18381.00 | 21671.00 | 29152.40 | 64439.00 | 97303.50 | 124915.30 | 125204.11 | 125974.62 | 125714.33 | 124432.30 | 98917.99 | 9523.64 | 988938.19 |

Table 9.2 Total site cost summary

(Escalated - \$000)

|                 | FY '79-80 | FY '81   | FY '82   | FY '83   | FY '84   | FY '85   | FY '86   | FY '87    | FY '88    | FY '89    | FY '90    | FY '91    | FY '92   | FY '93  | Total     |
|-----------------|-----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|----------|---------|-----------|
| Ambrosia Lake   | 435.00    | 322.00   | 335.00   | 188.00   | 0.00     | 1208.00  | 1304.00  | 4220.00   | 10763.86  | 8094.75   | 13182.45  | 252.09    | 221.00   | 140.20  | 40666.35  |
| Beifield        | 864.00    | 642.00   | 726.00   | 428.00   | 0.00     | 666.00   | 1873.00  | 1513.00   | 2811.39   | 1319.68   | 3496.73   | 2561.75   | 1029.54  | 596.12  | 18527.21  |
| Bowman          | 0.00      | 0.00     | 0.00     | 0.00     | 0.00     | 0.00     | 0.00     | 0.00      | 0.00      | 0.00      | 0.00      | 0.00      | 0.00     | 0.00    | 0.00      |
| Canonsburg      | 1115.00   | 2582.00  | 5142.00  | 8537.00  | 11056.00 | 12618.00 | 6624.00  | 3028.00   | 361.57    | 349.76    | 374.90    | 358.75    | 317.38   | 397.42  | 52861.78  |
| Durango         | 450.00    | 370.00   | 930.00   | 990.00   | 1855.00  | 3248.00  | 4339.00  | 14157.00  | 11798.56  | 12318.11  | 2134.40   | 475.10    | 185.02   | 220.49  | 53470.68  |
| Edgemont        | 0.00      | 0.00     | 0.00     | 276.00   | 1481.00  | 779.00   | 882.00   | 560.00    | 1499.44   | 0.00      | 0.00      | 0.00      | 0.00     | 0.00    | 5477.44   |
| Falls City      | 617.00    | 322.00   | 363.00   | 214.00   | 0.00     | 624.00   | 2026.00  | 819.00    | 1324.38   | 1871.21   | 3643.20   | 12343.02  | 13367.81 | 238.18  | 37772.80  |
| Grand Junction  | 447.00    | 291.00   | 334.00   | 2172.00  | 3618.40  | 8808.00  | 18035.00 | 44719.00  | 57752.99  | 59252.20  | 47773.84  | 24068.22  | 15389.00 | 1186.45 | 284147.10 |
| Green River     | 434.00    | 322.00   | 363.00   | 214.00   | 0.00     | 578.00   | 1143.00  | 1276.00   | 3209.36   | 3980.70   | 230.00    | 185.43    | 172.17   | 377.00  | 12484.66  |
| Gunnison        | 621.00    | 291.00   | 353.00   | 771.00   | 872.00   | 1362.00  | 1135.00  | 1947.00   | 1003.45   | 6067.22   | 10741.00  | 13055.66  | 1737.29  | 280.37  | 40236.99  |
| Lakeview        | 435.00    | 322.00   | 363.00   | 214.00   | 615.00   | 1669.00  | 5408.00  | 9082.00   | 2841.53   | 756.34    | 266.80    | 255.73    | 229.99   | 279.01  | 22232.45  |
| Lowman          | 432.00    | 321.00   | 363.00   | 214.00   | 0.00     | 369.00   | 1157.00  | 1125.00   | 1584.20   | 756.34    | 385.55    | 6808.22   | 2121.58  | 553.93  | 16190.82  |
| Maybell         | 432.00    | 321.00   | 335.00   | 188.00   | 0.00     | 483.00   | 1163.00  | 1259.00   | 772.12    | 279.80    | 335.80    | 3459.05   | 14253.20 | 1052.06 | 24333.03  |
| Mexican Hat     | 435.00    | 322.00   | 335.00   | 531.00   | 181.00   | 1340.00  | 1131.00  | 938.00    | 327.19    | 224.06    | 2670.30   | 10760.14  | 21426.05 | 959.51  | 41580.25  |
| Monument Valley | 432.00    | 321.00   | 363.00   | 214.00   | 0.00     | 1061.00  | 855.00   | 993.00    | 776.52    | 153.31    | 2213.20   | 8267.20   | 2368.04  | 353.88  | 18371.15  |
| Naturita        | 435.00    | 322.00   | 335.00   | 188.00   | 0.00     | 978.00   | 1009.00  | 1347.00   | 638.64    | 983.66    | 5820.11   | 9376.54   | 3260.85  | 416.95  | 25110.75  |
| Rifle           | 620.00    | 291.00   | 631.00   | 291.00   | 237.00   | 1474.00  | 1618.50  | 2219.30   | 859.47    | 6261.38   | 18698.90  | 26695.59  | 14380.82 | 408.89  | 74686.85  |
| Riverton        | 448.00    | 291.00   | 353.00   | 761.00   | 1228.00  | 2136.00  | 323.00   | 6296.00   | 11434.88  | 15704.24  | 12214.15  | 293.30    | 229.99   | 279.01  | 51991.57  |
| Salt Lake City  | 980.00    | 2767.00  | 4494.00  | 3451.00  | 5866.00  | 19698.00 | 32835.00 | 21054.00  | 3209.37   | 136.62    | 156.40    | 133.32    | 127.19   | 140.20  | 95048.10  |
| Shiprock        | 623.00    | 370.00   | 930.00   | 964.00   | 1943.00  | 2777.00  | 10952.00 | 836.00    | 269.88    | 290.73    | 307.05    | 300.57    | 274.97   | 334.82  | 21173.02  |
| Slick Rock      | 433.00    | 321.00   | 363.00   | 214.00   | 0.00     | 590.00   | 1218.00  | 809.00    | 1079.51   | 224.08    | 190.90    | 4286.84   | 7410.55  | 807.09  | 17946.97  |
| Spook           | 432.00    | 321.00   | 335.00   | 188.00   | 0.00     | 336.00   | 178.00   | 1807.00   | 2261.15   | 2643.98   | 602.60    | 239.97    | 185.02   | 221.85  | 9751.57   |
| Tuba City       | 435.00    | 322.00   | 335.00   | 463.00   | 200.00   | 1637.00  | 2095.00  | 4911.00   | 8624.63   | 4811.39   | 276.00    | 255.73    | 229.99   | 280.37  | 24876.11  |
| Totals          | 11555.00  | 11754.00 | 18381.00 | 21671.00 | 29152.40 | 64439.00 | 97303.50 | 124915.30 | 125204.09 | 125974.61 | 125714.28 | 124432.22 | 98917.45 | 9523.80 | 988937.65 |



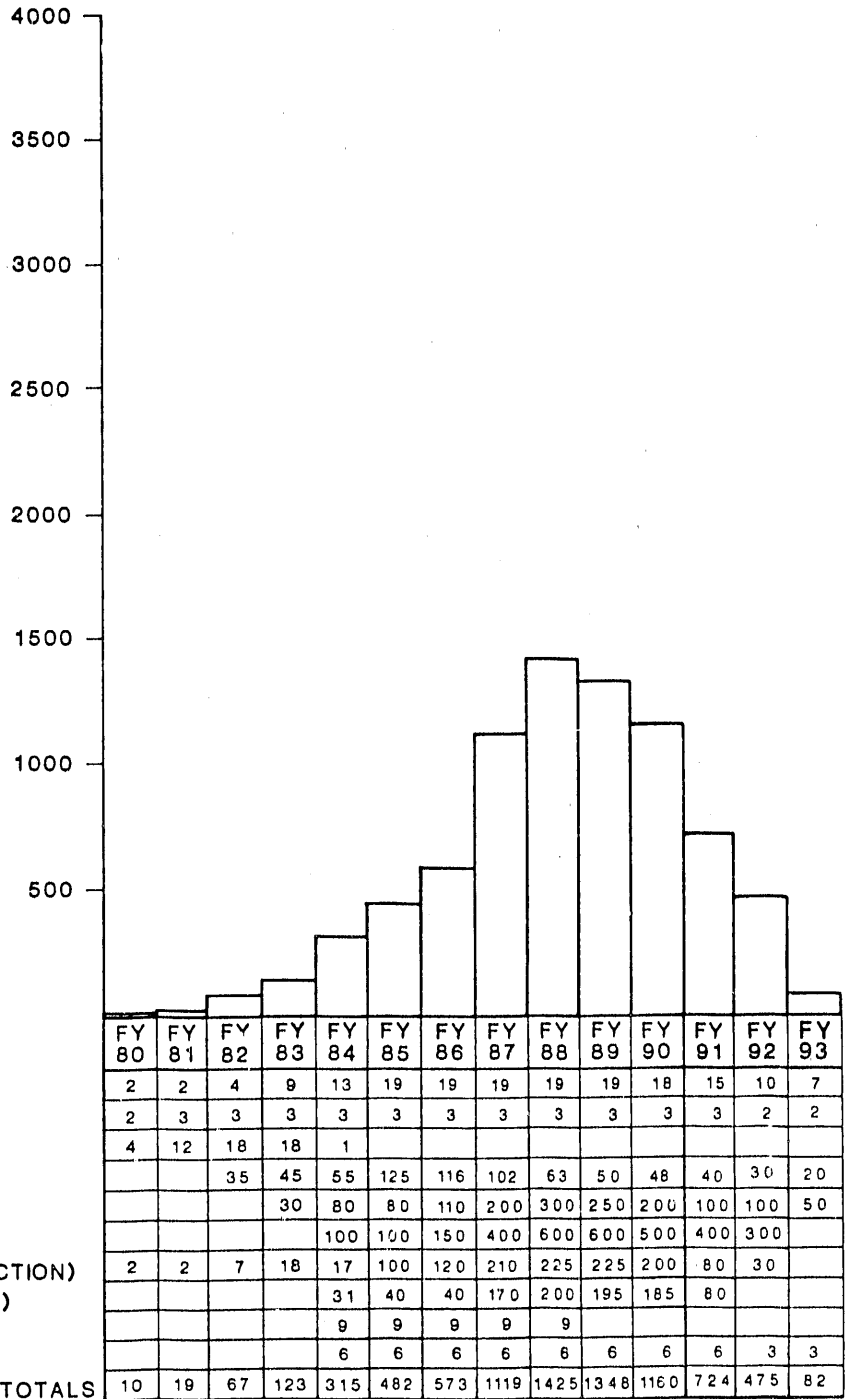
FED SHARE: 11.5 11.5 18.2 21.0 27.7 60.7 91.4 116.0 116.0 116.0 116.0 116.0 116.0 116.0 93.4 9.5 924.9

STATE SHARE: 0.0 0.3 0.2 0.7 1.5 3.7 5.9 8.9 9.2 10.0 9.7 8.4 5.5 0.0 64.0

TOTAL COSTS: 11.5 11.8 18.4 21.7 29.2 64.4 97.3 124.9 125.2 126.0 125.7 124.4 98.9 9.5 988.9

FIGURE 9.1 PROJECT BASELINE RESOURCES PLAN (ESCALATED - \$M)

**PERSONNEL**  
(FULL-TIME  
EQUIVALENTS)



UMTRA PROJECT OFFICE  
AL MATRIX \*  
NEPA CONTRACTOR  
TAC  
RAC (NON-CONSTRUCTION)  
RAC (CONSTRUCTION)  
GRJ & EDG VP RAC (NON-CONSTRUCTION)  
GRJ & EDG VP RAC (CONSTRUCTION)  
INCLUSION SURVEY CONTR.  
RADON MONITORING CONTR.

\*UMTRA PROJECT AUTHORIZED POSITION

**FIGURE 9.2 UMTRA PROJECT STAFFING**

## 10.0 PROJECT FUNCTIONAL SUPPORT REQUIREMENTS

### 10.1 DOE DECISION DELEGATIONS

Within DOE, there is an established chain for identifying DOE functional support requirements for projects resulting from legislation. In accordance with DOE Order 2020.1, "Legislative Implementation System," the DOE responsibility for the UMTRA Project is assigned to the Assistant Secretary for Nuclear Energy (NE). NE's programmatic responsibilities are assigned to the Office of Remedial Action and Waste Technology Division and, in turn, to the Division of Uranium Mill Tailings Projects. NE has assigned day-to-day management responsibilities to AL in the Project Charter which delineates the respective responsibilities and authorities of NE and AL and defines the terms and conditions for management of the UMTRA Project.

AL has been delegated authority to manage and execute UMTRA Project functions within established procurement, real estate, and other operational approval thresholds. Responsibility for AL management of the UMTRA Project is assigned to the UMTRA Project Manager, who, in turn is supported by the Project Office staff and matrixed AL staff (see Figure 3.2).

The major mechanisms for coordinating DOE activities in support of the Project, identifying the head for assistance, measuring progress, and resolving conflicts are through the DOE Project Management System. These include the following:

- o Identification of the UMTRA Project as a Major System Acquisition and the identification of key Project decision points (see Section 2.2).
- o Routine periodic reporting to HQ DOE and AL that includes thresholds for notification on Project cost, schedule, and scope changes (see Section 12.3.1).
- o Conduct of scheduled Project status review meetings that includes attendance by AL and NE representatives (see Section 12.3.2).
- o Agreement with the Division of Uranium Mill Tailings Projects on a set of HQ-controlled milestones for the fiscal year (see Section 11.3).
- o Maintenance of close coordination with the Division of Uranium Mill Tailings Projects on financial, technical, and political implications to Project performance.

### 10.2 INSTITUTIONAL INTERFACES

Section 3.0 describes in considerable detail the roles of the various Project participants. Additionally, the Project management documents listed in Table 12.2 provide detailed coverage of the interaction of the involved participants including lines of authority, operating relation-

ships, and areas of responsibility for DOE organizations and the other participants. Tables 10.1 and 10.2 summarize the responsibilities and reflect the support requirements of the various participants for major documents and activities prepared and conducted by the Project Office.

### 10.3 PUBLIC SUPPORT

In accordance with the Act, the Project Office has implemented a public participation program to encourage public support of and input into the decision-making process (Figure 10.1). The public is given the opportunity to weigh the pros and cons of the various alternatives proposed and to evaluate the advantages and disadvantages of a proposed site's remedial action planning in order to compare the acceptability of its risk with that of other alternatives.

While the Project explains what can be done, the public has input on what it feels should be done. This input influences Project policy decisions and technical choices between site options. Active public participation and support improves the quality of the decisions.

The "Public Participation Plan, UMTRA-DOE/AL-400225.0010" outlines the Project Office approach to achieve compliance with public participation provisions of the Act and the NEPA. A "Public Information Plan, UMTRA-DOE/AL-400224.0184" details Project policy for the dissemination of information to the public by means of various forums and media.

Table 10.1 Major Project document responsibility matrix

|                                  | HQ*<br>DOE | AL | EPA | DOI | NRC | State | Tribes | Task<br>Force | Public |
|----------------------------------|------------|----|-----|-----|-----|-------|--------|---------------|--------|
| Draft CADSAR                     | R          |    |     |     | R   | R     | R      |               |        |
| Final CADSAR                     | R          |    |     |     | R   | R     | R      | I             | I      |
| Draft RAP                        | R          |    |     |     | R   | R     | R      |               |        |
| Final RAP                        |            |    |     |     | C   | C     | C      | I             | I      |
| EA/EIS                           | R/A*       |    | R   | R** | R   | R     | R      | R             | R      |
| Guidance for S&M                 | R          |    |     |     | R   | R     | R      |               |        |
| Site S&M Plan                    | R          |    |     |     | R/A | R     | R      | I             |        |
| Licensing Plan                   | R          |    |     |     | R   | R     | R      |               |        |
| Cooperative Agreement            | R          | A  |     |     | C   | A     | A      |               |        |
| Site Certification Report        | R          |    |     |     | C   | R     | R      |               |        |
| Alternate Site Selection Process |            |    |     |     | R   | R     | R      | R             |        |
| Project Charter                  | A          | A  |     |     |     |       |        |               |        |
| Project Plan                     | A          | A  |     |     |     |       |        |               |        |
| Project Management Plan          | A          | A  |     |     |     |       |        |               |        |
| IPMS Manual                      | R          |    |     |     |     |       |        |               |        |
| PSCE Report                      | R          |    |     |     | I   | I     | I      |               |        |
| Annual Report to Congress        | A          | R  | R   | R   | R   | R     | R      | I             | I      |
| Site Management Manual           | I          |    |     |     | R   | R     | R      |               |        |

A = Approve  
 C = Concur  
 I = Information  
 R = Review and Comment

\* All action by NE except approval of NEPA documents by EH.

\*\* When Indian or BLM Land is involved.

Table 10.2 Major Project activity responsibility

|                              | AL | EPA | DOI | NRC | State | Tribes | Task Force | Public |
|------------------------------|----|-----|-----|-----|-------|--------|------------|--------|
| Early Site Appraisal         |    |     |     | P   | P     | P      | I          | I      |
| Alternate Site Selection     |    |     |     | P   | C     | C      | I          | I      |
| Data Collection              |    |     |     | R   | R     | R      |            |        |
| Design Reviews               |    |     |     | P/R | P/R   | P/R    |            |        |
| QA Audits                    | P  |     |     | P   | P     | P      |            |        |
| EH&S Surveys                 | P  |     |     | P   | P     | P      |            |        |
| Radiological Surveys         | P  |     |     | P   | P     | P      |            |        |
| Site Acquisition             | P  |     | C*  | C   | C     | C      | I          | I      |
| Value Engineering            |    |     |     | P   | P     | P      |            |        |
| Site Certification           |    |     |     | C   | R     | R      |            |        |
| VP Certification             |    |     |     | C   | R     | R      |            |        |
| Tailings Reprocessing        |    |     |     | C   |       | I      | I          |        |
| Surveillance and Maintenance |    |     |     | C   | R     | R      |            |        |
| Public Participation         | P  | P   |     | P   | P     | P      | P          | P      |

C = Concur  
 I = Information  
 P = Participate  
 R = Review and Comment

\* When Indian or BLM Land involved.

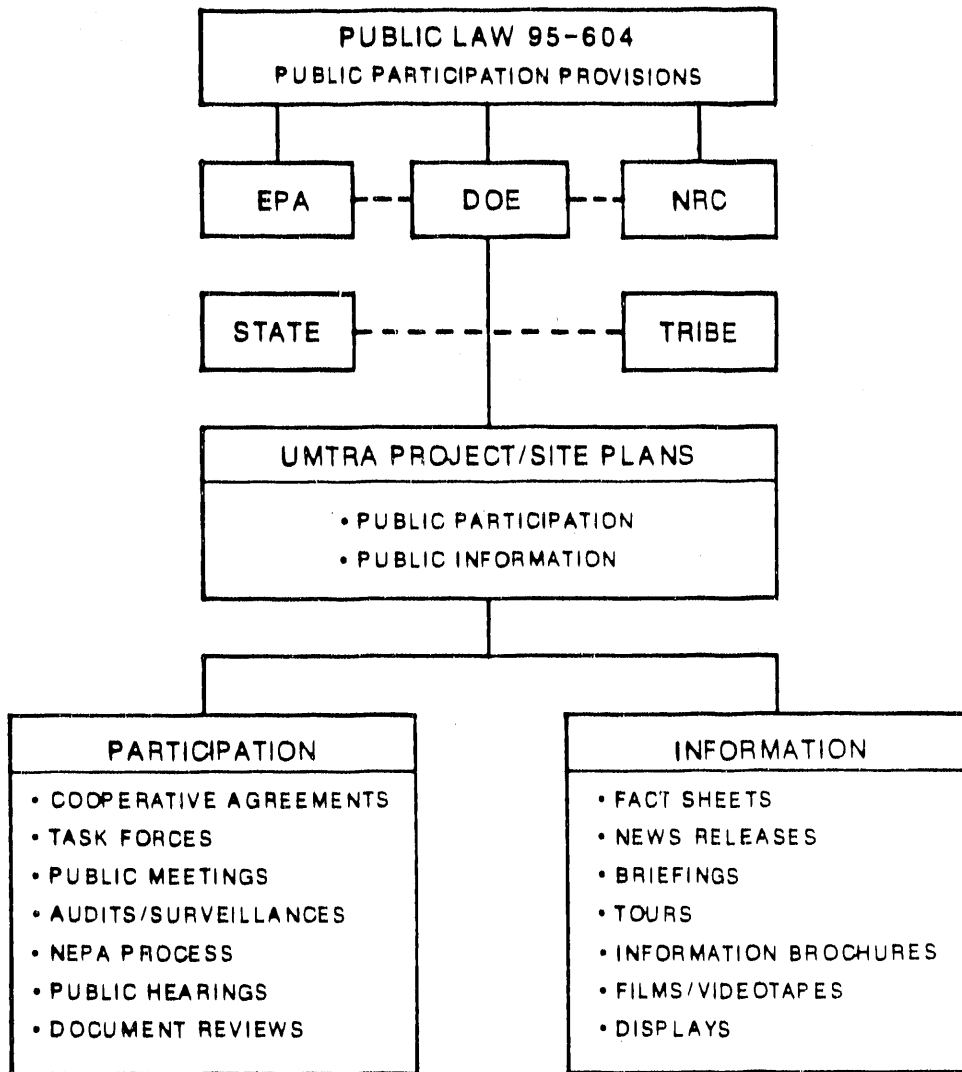


FIGURE 10.1

PUBLIC PARTICIPATION/INFORMATION

## 11.0 PROJECT MANAGEMENT, MEASUREMENT, AND PLANNING AND CONTROL SYSTEMS

### 11.1 INTRODUCTION

The Integrated Project Management Control System (IPMS), operated by the Project Office with assistance from the TAC, provides a uniform structured approach for managing work by the Project Office in compliance with the DOE/MSA requirements. Project management planning documentation is discussed in Section 12.3. The "IPMS Description, UMTRA-DOE/AL-400126" describes system operations and contains the policies, methods, and procedures used to plan, organize, authorize, report, evaluate, and control Project work.

The IPMS is designed to measure and report against the established Project cost and schedule baselines. Contractors establish supporting baselines predicated upon contract value and schedule for their defined scope of work. Contract performance is reported through Uniform Reporting System (URS) reports specified in the contract.

#### 11.1.1 Major subsystems

The IPMS is comprised of the following major subsystems:

- o Work definition. Ensures that all Project work is identified and defined to the PWBS and is planned, scheduled, and budgeted prior to authorization.
- o Work authorization. Provides control of the initiation of work and changes to previously authorized work.
- o Budgeting. Provides for planning and acquiring the funds required to support completion of the Project within the approved TEC.
- o Funds Management. Provides for managing the Project funds acquired through the budgeting subsystem.
- o Performance Measurement. Provides for establishing and maintaining the approved Project cost and schedule baselines, implementing the DOE Cost and Schedule Control Systems Criteria (CSCSC) contractually, measuring work performance systematically and consistently, and performing in-depth variance and impact analyses.
- o Performance reporting. Uses the URS to establish standard procedures for collecting and integrating essential cost and schedule information for managing contractual performance.
- o Analysis and control. Assures that change control procedures are developed and implemented for orderly control and management of changes, and that the integrity of the technical cost and schedule baselines is maintained.

### 11.1.2 System concept

The IPMS uses a feedback control concept; a plan is established, performance is measured against the plan, and action is taken when plan and performance diverge significantly (Figure 11.1). Project planning consists of defining the work to be performed within the PWBS, dividing the work into manageable units, assigning it to performing organizations (DOE participant, another agency, or contractor), establishing a schedule for performing the assigned work, and budgeting the resources necessary for accomplishing the work.

UMTRA Project work is initiated by specific direction. Progress against the authorized work includes measuring performance against Project schedules and budgets, evaluating the technical adequacy of the product, and determining the value of the work accomplished. The results are recorded, analyzed, and reported for management action. Necessary management actions are taken to bring the plan and performance into convergence.

Each UMTRA Project contractor is required to implement management controls and contract reporting commensurate with contract value, duration, and criticalness of the contract. The Project Office uses the CSCSC/URS to manage the contractors' performance and reporting thereof.

Each contractor is also required to prepare and submit a "Management Plan" to the Project Office for approval. The Plan describes the internal controls the contractor proposes to use in accomplishing the contract. After Project Office approval, the contractor implements the plan and submits updates to support Project Office budget office submittals and to reflect final fiscal year (FY) budget appropriations.

The contractor's management system is evaluated for acceptability after implementation. Surveillance is conducted to ensure that the system is maintained as documented throughout the life of the contract. This consists of evaluating the performance reports submitted by the contractor and by conducting on-site reviews. If potential problems are indicated, the Project Manager directs the necessary corrective action.

## 11.2 BASELINE CONTROL

UMTRA Project activities are baselined directly at three levels and controlled by FY and Project life cycle: (1) the Project level; (2) the site level; and (3) the contract level. The baselines are documented at each level by applicable Project and contractor documentation (Table 11.1). Control thresholds are established at each level (see Table 12.5), and performance is measured and evaluated by comparing current performance against the baseline workplan.

A Project Change Control Board (CCB) has the responsibility for reviewing and integrating site activities and for recommending changes to

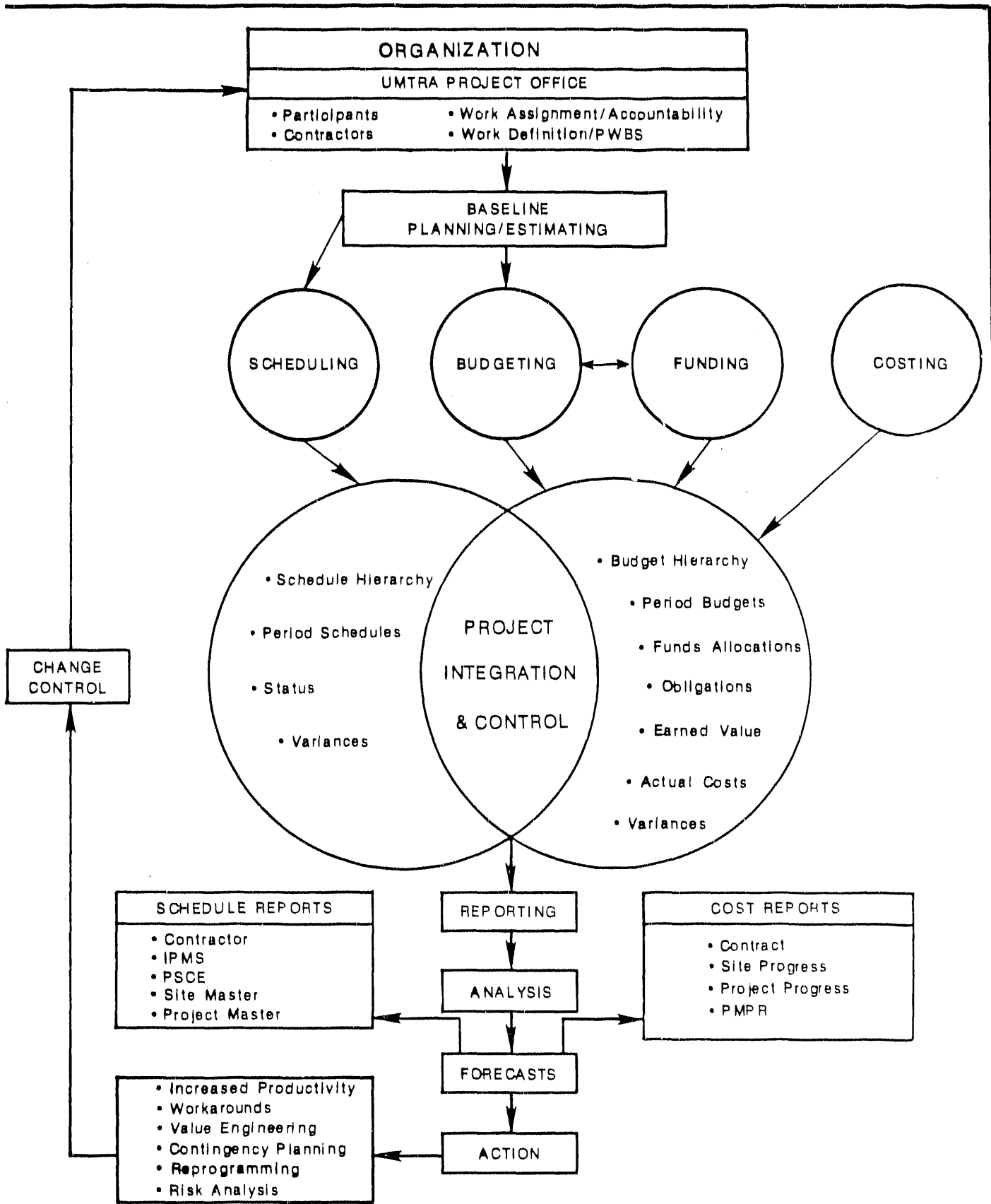


FIGURE 11.1

PROJECT INTEGRATION AND CONTROL

Table 11.1 Control baselines

| Baselines       | Baseline Documentation   |
|-----------------|--|
| <u>PROJECT</u>  |  |
| Performance     | The Project performance objectives are established by the "Project Charter" (PC), "Project Plan" (PP), and "Project Management Plan" (PMP), and are based on the Act, EPA standards, NEPA, applicable Federal and state laws, and DOE/AL Orders. |
| Schedule        | The Project schedule objective is established by the PC and PP (UMTRA sites Master Schedule), is detailed in the "Project Schedule and Cost Estimate (PSCE) Report" (site schedules), and based on the Act.                                      |
| Cost            | The Project cost estimate is detailed by the PSCE Report and based on the PP (TEC).  |
| <u>SITE</u>     |  |
| Performance     | The performance objectives for each site are established by the site RAP and final design and are based on the Performance Baseline.   |
| Schedule        | The schedule for each site is established by the Site Master Schedule based on the UMTRA Processing Site Schedule.   |
| Cost            | A site's estimated cost is established by the PSCE Report and based on the PP.   |
| <u>CONTRACT</u> |  |
| Performance     | The performance objectives for each contractor are established by the contract and are based on the Project Performance Baseline.  |
| Schedule        | The schedule objective is established by the Contracting Officer's Representative Schedule based on the UMTRA Processing Site Schedules.   |
| Cost            | The contract cost is established by the negotiated contract value based on the PSCE Report.  |

the Project baselines that exceed the pre-determined change thresholds. The CCB is composed of Project Office and contractor representatives. It submits recommended changes to the Project Manager for final review and approval. Only after a change is approved by the Project Manager is a baseline revised to incorporate the change.

#### 11.2.1 Cost control

In addition to the change control process, the Project Office controls cost through management of the total estimated cost, selective application of management control system requirements, and use of contractor-submitted reports. These control techniques result in reconciliation and agreement on the Project cost baseline; minimization of changes to the approved baseline; facilitating communication among Project participants on cost matters; highlighting of cost trends; and maintenance of a consistent approach to evaluating and processing changes.

Cost control includes the evaluation of contractors' cost projections to determine their impact on Project cost. Contractor estimate of costs at completion (EAC) are evaluated by the Project Office to ensure that they are based upon current schedules and authorized work and that they are consistent with the Project work plan. Project participants base their development of the EAC on: (1) latest performance data; (2) current assessment of changed conditions; (3) current, realistic pricing factors and rates; and, (4) knowledgeable forecasts of conditions which are likely to exist in the future. EACs are reported monthly to the Project Office in the contractor's Status Report.

#### 11.2.2 Schedule control

The Project has developed and implemented uniform schedule controls to ensure that: (1) all contractors and their subcontractors proceed with schedule development using similar methods to meet common Project objectives; and (2) schedules are updated on a routine basis and reflect the consensus status of the Project Planning Board. These controls include:

- o Project-wide use of the IPMS (65 Point) Schedule (see Section 6.0).
- o Procedures for coordinated schedule planning, maintenance, and status reporting.
- o Maintenance of strict traceability throughout the schedule hierarchy by use of the appropriate PWBS codes.
- o Retaining milestones in subordinate schedules which appear in higher level schedules.
- o Approval of contractor schedules by the Project Manager.

In accordance with the Project Charter, the Project Office and Division of Uranium Mill Tailings Project (NE-22) develop a set of "HQ-controlled" milestones for each upcoming FY. The milestones identified assist NE-22 in carrying out its program management responsibilities. Typically, these milestones represent the initiation or completion of key site activities on the PSCE Site Summary Schedules, significant management tasks, or Project plans. The status of the "HQ-controlled" milestones is reported to NE-22 through the "Site Progress Report and Project Progress Report."

### 11.3 FUNDS CONTROL

#### 11.3.1 Funding process

The objective of funds control is to optimize resource application to assure maximum technical and schedule performance. As part of the process, the Project Office prepares approved funding programs and maintains an obligation tracking system. These are used to analyze planned and authorized funding utilization and actual performance in terms of authorizations, obligations, commitments, expenditures, and contingency.

Funds control requires planning of obligational and outlay requirements and involves the capture, recording, and reporting of the data necessary for the control of obligations and expenditures against allotted funds. The Project funding baseline is predicated on the cost baseline and is developed on a fiscal year basis through the annual AL approved funding program.

The funding process starts with the development of cost estimates for site activities by the contractors for Project Office evaluation. The assessment of the current planning estimates results in the development of preliminary revised site cost estimates, which are phased in accordance with definitized funding allotments and prior year budget requests. Estimates of out-year expenditure requirements are then derived at the site level and compiled along with non-site related costs to develop the total Project requirement for the budget submission. This baseline budget estimate also serves as the basis for long-range funds control pending the authorized funding.

This information is detailed in the PSCE Report which identifies the amounts and sources of funds required to complete the work scope and the planned contingency which may be expended over the life of the Project. The report is updated to reflect changes in technical, cost, and schedule requirements as these changes are authorized and incorporated in Project planning concurrent with the fiscal year appropriations. A record of these changes is maintained to provide traceability from the baseline cost estimate in the Project Plan to the current PSCE Report. Changes in technical requirements and other nonperformance related causes are evaluated and impact established prior to incorporation in the report. Such changes may result from change control action, or may be directed

by the Project Manager. Once the impact of the change is established and the change is approved by the Project Manager, the change will be incorporated in the annual revision of the PSCE Report.

The refined cost estimates form the basis for the Project Office response to the annual budget call. The UMTRA Project budget request is consolidated within those of other programs in NE and submitted to the Office of Management and Budget for review. Following the review process, the budget is sent to Congress for funds appropriation.

Once Congressional action sets funding limits for a fiscal year, the Project Office provides HQ DOE with its initial approved funding program and HQ DOE then issues advice of allotments to the Operations Offices participating in the UMTRA Project. The allotted funds are the control levels established for the Contracting Officers at the various field offices.

### 11.3.2 Contract funding

After advice of allotments has been issued, the Project Office initiates a procurement request for contract modification for the obligation of funds in support of the initial contract authorization to AL Prime Contractors. As part of this process, the contractor's (both AL Prime and GOCO's) proposed Cost Plan is reviewed by the Project Office, with assistance as required from the AL.

After certification of funds for the contract modification by AL Budget, the AL Contracting Officer obligates the funds and, if appropriate, establishes the initial value for the Limitation of Government Obligation clause of the contract. The Project Office Funds Allocation Plan and the Obligation Tracking System are updated to reflect the funds obligated.

The contractors submit invoices and cost reports which the Project Office evaluates to ascertain that requested payments are consistent with actual performance. The Contracting Officer provisionally approves the payment pending audit, and the AL Financial Management Division Disbursing Officer disburses the payments.

## 12.0 INFORMATION AND REPORTING

### 12.1 OBJECTIVE

A formal technical and management information and reporting program is conducted by the Project Office. The objective of the program is to ensure that Project information disseminated to the UMTRA Project Manager and staff, HQ DOE, Project participants, and the public is accurate, timely, thorough, orderly, and meaningful. Its purpose is to promote timely decision-making and awareness of Project status and achievements.

### 12.2 TECHNICAL INFORMATION PROGRAM

This program facilitates planning and control of the Project technical approach, supports the systems engineering effort, and provides the basis for measurement of technical progress through document and design reviews. The program is structured to:

- o Disseminate technical information between Project participants.
- o Provide measurement of progress in achieving technical requirements, including early identification of problems and high risk areas.
- o Provide a formal means of documenting major technical decisions made during the course of the Project.
- o Promote technology transfer.

Technical information reviews are conducted to assess progress against technical requirements and plans. These reviews are discussed in more detail in Section 13.4.

### 12.3 MANAGEMENT INFORMATION PROGRAM

Management information is received from contractors through specified formal reports and through informal reports as required. Contractor reports are checked for accuracy and completeness and analyzed to determine the current status of the contract, to identify significant problem areas, to spot developing trends, and to forecast future status. This is performed as part of the IPMS operation with the TAC assisting the Project Office in this effort. Financial management information on contracts supplied by AL is used in this analysis process. Project Office and contractor-prepared management plans and reports are depicted in Tables 12.1 through 12.4.

#### 12.3.1 Project Office reporting

Information is selected from the contractor reports, internal Project reports (e.g., Project meeting records and Weekly Activity Reports), and AL financial reports to prepare the Project

Table 12.1 Project Technical Documentation

| Documentation                               | Responsibilities |     |     |     |       |
|---|------------------|-----|-----|-----|-------|
|   | Program Office   | PO  | TAC | RAC | Other |
| Site Information Handbooks                  | I                | A   | I   | I   | P     |
| Economic Evaluations                        | I                | A   | P   | I   | P     |
| Technology Development Program              | C                | A/E | P   | I   | I     |
| Technology Development Reports              | C                | A   | P/E | I   | P     |
| NEPA Implementation Plan                    | C                | A   | P   | I   | I     |
| Format for Environmental Documents          | C                | A   | E   | I   | P     |
| Contents of Environmental Impact Statements | C                | A   | P/E | I   | I     |
| Contents of Environmental Assessments       | C                | A   | P/E | I   | I     |
| Criteria for Selection of Disposal Sites    | C                | A   | E   | I   | P     |
| Guidance for UMTRA Project                  |                  |     |     |     |       |
| Surveillance and Maintenance                | C                | A   | P/E | I   | I     |
| Licensing Plan                              | C                | A   | P/E | I   | I     |

Program Office = DOE Headquarters - Nuclear Energy  
 PO = UMTRA Project Office  
 TAC = Technical Assistance Contractor  
 RAC = Remedial Action Contractor  
 Other = Other Project Contractors

A = Approve  
 C = Contribute  
 E = Implement  
 I = Information  
 P = Prepare

Table 12.2 Project Management Documentation

| Documentation   | Responsibilities |     |     |     |       |
|---|------------------|-----|-----|-----|-------|
|   | Program Office   | PO  | TAC | RAC | Other |
| <b>DOCUMENT</b>   |                  |     |     |     |       |
| Project Charter   | A/E              | P/E | I   | I   | I     |
| Project Management Plan                                     | C/E              | P/E | C/I | C/I | C/I   |
| Project Plan  | A/E              | P/E | C/I | I   | I     |
| Project Schedule and<br>Cost Estimate Report                | C                | A   | P   | C   | C     |
| Acquisition Strategy Plan                                   | C                | P/E | I   | I   | I     |
| Project Work Breakdown Structure                            | A                | P/E | C/E | C/E | C/E   |
| IPMS Description  | I                | A   | P/E | E   | E     |
| Contractor Management Plan                                  | I                | A   | P/E | P/E | P/E   |
| Project Document Control System Manual                      | I                | A/E | P/E | C/E | C/E   |
| Site Management Manual                                      | C                | A/E | P/E | C/E | C/E   |
| Vicinity Properties Management<br>and Implementation Manual | C                | A/E | P/E | C/E | C/E   |

Program Office = DOE Headquarters - Nuclear Energy

PO = UMTRA Project Office  
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Other = Other Project Contractors

A = Approve  
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E = Implement  
I = Information  
P = Prepare

Table 12.3 Project Office plans and reports

| Report/document                                       | Purpose                    | Frequency                     | Content   |
|---|----------------------------|-------------------------------|---|
| Project Charter                                       | Designate Responsibilities | One-time, revised as required | Organizational responsibilities, interfaces, and policies for managing the Project.             |
| Project Plan  | Project Baseline           | One-time, revised as required | Summary description, mission, objectives, and acquisition strategy of the Project.              |
| Acquisition Strategy Plan                             | Business Strategy          | One-time, revised as required | Concept for implementing Project contracting structure.   |
| Public Information Plan and Public Participation Plan | Public Involvement         | One-time, revised annually    | Methods and procedures to promote public involvement in the Project decision-making process.    |
| Project Management Plan                               | Project Management         | One-time, revised annually    | Organizational responsibilities, interfaces, workplan, and policies for managing the Project.   |
| IPMS Description                                      | Work Management            | One-time, revised as required | Methods and procedures used to manage the Project work.   |
| Project Schedule and Cost Estimate Report             | Schedule and Cost Control  | Revised annually              | Baseline schedules and cost estimates for each designated site and related vicinity properties. |
| Project Work Breakdown Structure Dictionary           | Work Definition            | One-time, revised as required | PWBS extended to include all Contract WBSs.   |
| Project Document Control System Manual                | Records Management         | One-time, revised annually    | Methods for controlling Project documents.  |

Table 12.3 Project Office plans and reports (Concluded)

| Report/document                   | Purpose                      | Frequency                     | Content   |
|-----------------------------------|------------------------------|-------------------------------|---|
| Funds Allocation Plan             | Funds Management             | Annually, revised as required | Status and distribution of funds.   |
| Project Manager's Progress Report | Project Reporting            | Quarterly                     | Summary of funding/cost status, significant emerging trends, and problems and solutions.  |
| Site Progress Report              | Site Management              | Monthly                       | Narrative on plans and progress, management action required, variances analysis, cost and schedule data for both RAC and TAC by site by fiscal year (equivalent to a site CPR). |
| Vicinity Property Progress Report | Vicinity Property Management | Monthly                       | Cost and schedule status of vicinity properties by site by contractor.  |
| Project Progress Report           | Contract Management          | Monthly                       | Overall Project status by contractor by fiscal year (equivalent to a Project CPR).  |
| Annual Status Report to Congress  | Project Reporting            | Annually                      | Summary of significant accomplishments, status of designated sites, and plans for the following year.   |
| Weekly Activity Report            | Project Reporting            | Weekly                        | Summary of the past and upcoming weekly activities.   |

Table 12.4 Contractor plans and reports

| Report/document                      | Purpose                   | Frequency  | Content   |
|--------------------------------------|---------------------------|--|---|
| Management Plan                      | Work Plan                 | One-time, revised annually                                     | Summary description of the contractor's efforts for the Project or organizational roles and responsibilities, and a management system description which includes policies, methods, and procedures used by the contractor for management of work. |
| CWBS Dictionary                      | Work Definition           | One-time, per negotiated Task Agreement, revised as authorized | Complete work breakdown schedule for the Task Agreement contract, extended from the PWBS, with definitions for each element included in the Management Plan.  |
| Milestone Plan                       | Schedule Plan             | Annually, revised as required                                  | Baseline schedule for selected WBS elements, by month for current fiscal year and by year thereafter.   |
| Milestone Schedule and Status Report | Schedule Control          | Monthly  | Baseline schedule progressed and analyzed.  |
| Cost Plan                            | Cost Control              | Annually, revised as required                                  | Time-phased budget by month for twelve months and by year thereafter.   |
| Cost Performance Report (CPR)        | Cost and Schedule Control | Monthly  | Show costs incurred, budgeted values of scheduled and completed work, estimates at completion, and performance variances by WBS element.  |
| IPMS Report                          | Cost and Schedule Control | Monthly  | Equivalent to a site CPR and provides basic data for the site, vicinity, and Project Progress Reports.  |
| Labor Plan                           | Cost Control              | Annually, revised as required                                  | Planned labor application by contractors.   |

Table 12.4 Contractor plans and reports (Concluded)

| Report/document   | Purpose                    | Frequency                     | Content  |
|---|----------------------------|-------------------------------|--|
| Labor Management Report                                     | Cost Control               | Monthly                       | Actual labor expenditure and planned versus actual labor expenditures by contractor.   |
| Weekly Activity Report                                      | Contract Activity Status   | Weekly                        | Summary of the past week's and upcoming week's site and Project related activities.  |
| Funds Requirement Report or Funding Forecast/Actuals Report | Funds Management           | As required                   | Time-phased plan for commitments, accrued costs, and billings to DOE for authorized and forecast work.   |
| Billing Schedule  | Contract                   | One-time, revised as required | Amount and dates of planned billings to DOE (progress payments).   |
| Status Report   | Status Assessment          | Monthly                       | Includes the CPR and provides narrative cost/schedule progress, problems, variances, funding information, etc.   |
| Conference Record   | Agreements and Commitments | As required                   | Proceedings and results of meetings. Specifically required to document Design Reviews and Technical Progress Reviews.  |
| Procurement Status Report                                   | Procurement Management     | Monthly                       | Status of selected critical procurements.  |
| Various Overview Reports                                    | Activity Management        | On completion of activity     | Contain the results of Radiological and Construction Health and Safety Audits, QA Audits and In-process Surveillances, Design and Bid Package Reviews, Radiological Surveys, and Surveillance and Maintenance Inspections. |

Manager's Progress Report (PMPR) submitted to HQ DOE quarterly. The PMPR presents summary level data in a clear, accurate, and concise manner. The emphasis is on significant accomplishments, emerging trends, and on significant problems and solutions.

The Site and Project Progress Reports are forwarded to HQ DOE monthly. These reports present status and performance information by individual site and Project respectively.

Table 12.5 presents the thresholds for reporting Project schedule, cost, and scope changes to the various levels of management involved with the Project.

#### 12.3.2 Project status review

The main Project status reviews are the AL Project Manager's Briefing and the bi-monthly status reviews. Other reviews conducted (Table 12.6) are variations of these reviews.

### 12.4 INFORMATION DISSEMINATION

Project information is disseminated in a formal structured manner. In addition to the Project Document Control System (PDCS), the Project participates in the DOE Technical Information Center (TIC) and Remedial Action Program Information Center (RAPIC) programs. The Project public information and participation program is discussed in Section 10.3.

#### 12.4.1 Project Document Control System (PDCS)

The purpose of document control is to provide an active and continuing program for the acquisition, control, dissemination, retention, retrieval, retirement, and disposition of all UMTRA Project documents.

The PDCS applies to all Project participants and the records and documents generated relevant to the management, support, and performance of the UMTRA Project. It processes information requests from Project participants, the general public, and all Freedom of Information requests. Details are contained in the "UMTRA Project Document Control System Manual, UMTRA-DOE/AL-400424.0000."

#### 12.4.2 Technical Information Center (TIC)

The R&TD reports, prepared for the Project by contractors and laboratories, were input to the DOE Central Energy Information Data Base and related information systems. The Office of Technical Information, through the TIC at Oak Ridge, Tennessee, ensures that the UMTRA Project related information is available to DOE and its contractors, other government agencies, other members of the energy community, and, when appropriate, the general public.

Table 12.5 Thresholds for notification on Project schedule, cost, and scope changes

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Acquisition Executive

- o Project scope changes.\*
- o Total estimated cost (TEC) increase greater than 15%.
- o Project schedule slip of 6 months.

Assistant Secretary for Nuclear Energy

- o Project scope and changes.\*
- o TEC increase greater than 10%.
- o Project schedule slip of 3 months.

Office of Remedial Action and Waste Technology

- o Review and approval of site technical, cost, and schedule baselines.
- o TEC changes.
- o Review and approve annual baseline plan and major changes thereto (change in Budget Authorization (BA) at WBS Level 2 greater than 41.0M).
- o Variance analysis of  $\pm 15\%$  or schedule slippage of 30 days on HQ controlled milestones.

UMTRA Project Office

- o Contractor site schedule slips of 30 days in site characterization, NEPA, design, remedial action, and certification stages.
- o Contractor schedule and cost variance analysis at threshold of 10% and designated dollar values.
- o Change Control Board thresholds at varying percentages and dollar values by contractor, site and PWBS element.

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\* Scope changes - significant Project policy changes (decision to conduct aquifer restoration, Congressional approval to add/delete Project sites, etc.).

Table 12.6 Project Meetings

| Meeting   | Participants  | Period        |
|---|---|---------------|
| Staff Meeting   | Project Office Personnel                                | Weekly        |
| Site Status Meeting                                   | Project Office,<br>TAC,RAC                              | Weekly        |
| Management Status Meetings                            | UMTRA/TAC/RAC<br>Project Managers                       | Periodically  |
| State/Tribe Meeting                                   | Project Office, TAC,<br>State, Tribe                    | " " "         |
| Quarterly Progress Review                             | Project Office, Program<br>Office Contractors           | Quarterly     |
| Annual Progress Review                                | Program Office, Project Office,<br>Project Participants | Annually      |
| Mid-Year Review                                       | Program Office, Project Office,<br>Project Participants | Semi-Annually |
| Remedial Action Program<br>Coordination<br>Conference | Program Office, Project Office,<br>Project Participants | Annually      |

#### 12.4.3 Remedial Action Program Information Center (RAPIC)

The RAPIC is funded by the Division of Remedial Action Projects and provides a technical information service with respect to DOE's remedial action programs. Close liaison is maintained between the RAPIC and the PDCS operation to ensure that UMTRA Project documentation is included in the RAPIC.

## 13.0 SYSTEMS ENGINEERING

### 13.1 PROJECT PROCESS

The Project's systems engineering effort provides for the direction and control of a site's design development and construction progressing from the initial Project requirements to site surveillance and maintenance. It includes planning and control of the technical program, integration of the total engineering effort, and the measurement of progress through document and design reviews.

The process is commensurate with the complexity involved with stabilizing UMTRA Project sites. The primary role of systems engineering is to ensure that the many and diverse activities contributing to a stabilized site are compatible and ready when needed.

The objectives of the Project systems engineering effort are to:

- o Assure the systematic planning and control of an integrated engineering effort to transform Project technical requirements into stabilized sites.
- o Assure the integration of engineering specialties (maintainability, environmental, health and safety, and the like) into the total design effort.
- o Integrate related technical parameters and assure compatibility of interfaces.
- o Provide measurement of progress in achieving technical requirements, including early identification of problems and high risk areas.

### 13.2 PROJECT OPERATION

The UMTRA Project Manager exercises overall direction and control of contractor-performed engineering efforts through the contracting process and through concurrence with a contractor's "Management Plan." Reviews and approval authority for selected reports, plans, and engineering documentation provide further control of the contractor's effort.

At the Project level, the system engineering effort includes:

- o Participant Overview/Concurrence. Provisions of the Act require various participants (e.g., NRC) to overview or concur in certain Project activities (see Tables 10.1 and 10.2). Thus, there are both internal and external controls operating with regard to a site's progress toward stabilization and meeting the EPA standards. These efforts are integrated through close coordination with the various agencies and use of the IPMS (65 point) Schedule as a common planning vehicle.

- o The Acquisition Strategy Plan. Selection of supporting contract effort is based on the special technical expertise the contractors can bring to the Project. Through the scopes of work with these contractors a series of checks and balances operates whereby one contractor reviews the efforts of another to ensure that the Project Office approved, concurred-in site design approach is maintained or a technical activity is performed in accordance with the approved plan. Additionally, the contractors are required to implement, operate, and maintain management control systems in accordance with the DOE CSCSC. These Criteria have been applied to all contractors in a modified format and are accompanied by reporting requirements from the DOE URS.
- o Project Plans. Critical activities of Project operation have been further detailed in the numerous Project plans described in pertinent sections of this plan. These plans provide a level of detail and assignment of responsibilities that promote the basic purposes of controlling and integrating the Project and avoid, to a significant extent, the number of problems that will be encountered in performing the activity concerned. Of particular importance are the "Plan for Implementing EPA Standards for UMTRA Sites" and the "Technical Approach Document" which basically guide the Project's test and evaluation and engineering efforts.
- o Project Scheduling (see Section 6.0). The basic Project planning document is the IPMS (65 Point) Schedule which ties together the total flow of remedial action planning, design development, construction certification, and the like, into a complete picture of all the activities related to major Project milestones for a site. This schedule is maintained by the TAC and updated monthly. It establishes the framework for subtier schedules, thereby serving as the basis for detailed scheduling by Project contractors; it is issued to all involved participants routinely on a monthly basis.
- o PWBS (see Section 5.0). The Project Office defines the technical elements of the PWBS and identifies and defines interfaces among PWBS elements and the contractors responsible for their accomplishment. The CWBS submitted by each contractor is reviewed to assure that work definition is directly related to the PWBS. The risks associated with related cost, schedule, and technical parameters are analyzed to identify critical areas and needs. Each contractor establishes internal procedures for the identification, definition, control, and status communication of element interfaces.

### 13.3 ENGINEERING INTEGRATION

The systems engineering effort provides for the integration and logical sequencing of Project activities and decisions. This iterative process is performed at progressively lower levels of the PWBS to provide definitive descriptions of the UMTRA Project products.

Functional analysis is performed to derive performance and design requirements which must be satisfied to accomplish the Project objectives. Specialty engineering studies provide non-functionally derived requirements. Studies are conducted to evaluate design concepts and risk assessments are performed to assure that design solutions are derived in light of acceptable technological risks. Trade-off studies are conducted to provide quantitative and/or qualitative comparisons of performance parameters, costs, schedules, and resource constraints. The evaluation process determines: (1) the preferred remedial action concept; or (2) that additional study is necessary.

Throughout the design process, engineering specialties, such as health and safety, quality assurance, and the like, are integrated with design engineering to ensure their influence on design.

The configuration of the preferred concept is described by the Project engineering documentation. General responsibility for preparation and approval of the documentation is shown in Table 13.1. The formats and contents of the documentation are prescribed by the UMTRA Project Manager. In addition, other engineering outputs are maintained by the contractors to support engineering activities. These outputs include trade-off studies, risk assessments, test results, calculations, design verification analyses, and similar data constituting the basic engineering data base.

#### 13.4 PROGRESS REVIEWS

Visibility on the engineering effort is provided through periodic technical and design reviews either on individual site or total Project bases. These are participated in by the Project Office, TAC, RAC, NRC, and affected state or tribe, to assess progress against technical requirements and plans.

- o Technical Reviews. These are conducted to assess a site's progress and to determine whether the planned technical approach (e.g., stabilization in place versus movement to a new disposal site) should be altered as uncertainties are disclosed. They are scheduled on an as-needed basis and the agenda may include the entire site technical effort, selected systems or specialties (e.g., radiological health and safety concerns), or special subjects (e.g., sources for borrow material).
- o Design Reviews and Value Engineering. These are conducted to assess the technical adequacy and cost effectiveness of the design and to coordinate design dependent activities. They are scheduled to correspond with each significant phase of a site or vicinity property planned remedial action. Design and value engineering review requirements are specified in each contract.

The proceedings and results of these reviews are recorded and formally reported in minutes with assigned action items. These activities promote a cost effective design that will meet the EPA standards.

Table 13.1 Engineering Documentation

| Documentation   | Responsibilities |     |     |     |       |
|---|------------------|-----|-----|-----|-------|
|   | Program Office   | PO  | TAC | RAC | Other |
| Engineering Assessments                                   | I                | A   | R   | R   | P     |
| Environmental Assessments                                 | A                | R   | P   | R   | P     |
| Environmental Impact Statements                           | A                | R   | P   | R   | P     |
| Plan for Implementing EPA Standards                       | A                | R/E | P/E | E   | E     |
| Technical Approach Document                               | I                | A   | P/E | R/E | E     |
| Design Criteria   | I                | A   | P   | R/E | E     |
| Comparative Analysis of Disposal Site Alternatives Report | R                | A   | P   | R   | I     |
| Draft Remedial Action Plan/Site Conceptual Design         | R                | A   | P   | R   | I     |
| Final Remedial Action Plan/Final Design                   | R                | A/E | R   | P/E | I     |
| Radiological Survey Plans                                 | I                | A   | R   | P/E | I     |
| VP Radiological and Engineering Assessments               | I                | A   | R   | P/E | P     |
| Design Review Reports                                     | I                | A   | P   | E   | I     |
| Bid Package Review Reports                                | I                | A   | P   | E   | I     |
| Site/Vicinity Property Radiological Survey Audit Reports  | I                | A   | P   | R/E | I     |
| Engineering Feasibility Studies                           | I                | A   | R   | I   | P     |

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 Other = Other Project Contractors

A = Approve  
 E = Implement  
 I = Information  
 P = Prepare  
 R = Review

## 14.0 CONFIGURATION MANAGEMENT

### 14.1 PROJECT PROCESS

The Project's configuration management process is designed to be consistent with the scope and complexity involved with stabilizing the designated sites. Since the Project is basically a routine construction effort, the controls have been tailored to:

- o Allow design latitude consistent with the configuration control necessary to comply with the EPA standards and have the site certified.
- o Attain maximum efficiency in the management of engineering changes with respect to their necessity, cost, timing, and implementation.
- o Provide to the ultimate agency performing site surveillance and maintenance activities a complete site characterization data and as-built drawing package for accurate configuration identification.

The overall process is predicated on establishing progressive technical baselines, defined by a site planning document or set of design drawings, related to completion of designated site milestones.

Changes to the baselines are controlled through contractor configuration management and change approval by the Project Office. Each contractor maintains and controls the approved configuration of a document or drawings and changes thereto. This is accomplished by: (1) data control that results in validated site characterization data for design purposes; (2) document control that results in a controlled number designated recipient that ensures that the users have the latest approved revisions; (3) drawing control that results in an approved revision indicated by a revised drawing number and the reason for the change; and (4) levels of approval authority commensurate with the proposed change.

Project configuration management is illustrated in Figure 14.1. The baseline identifications for all elements of a site's remedial action are not established simultaneously. The baselines are established based on progress of the selected remedial action design and the schedule for design-dependent activities. Responsibility for the baseline is delegated to the appropriate contractor as the Project work progresses.

### 14.2 TECHNICAL BASELINES

The technical baselines for an UMTRA Project site progress through the following phases:

- o Functional Requirements Baseline. This baseline consists of the initial design parameters deemed to be applicable to a site's remedial action. It identifies a proposed option (i.e., stabilization in place, stabilization on site, or movement to a new disposal site), need for a water treatment plant, site restoration

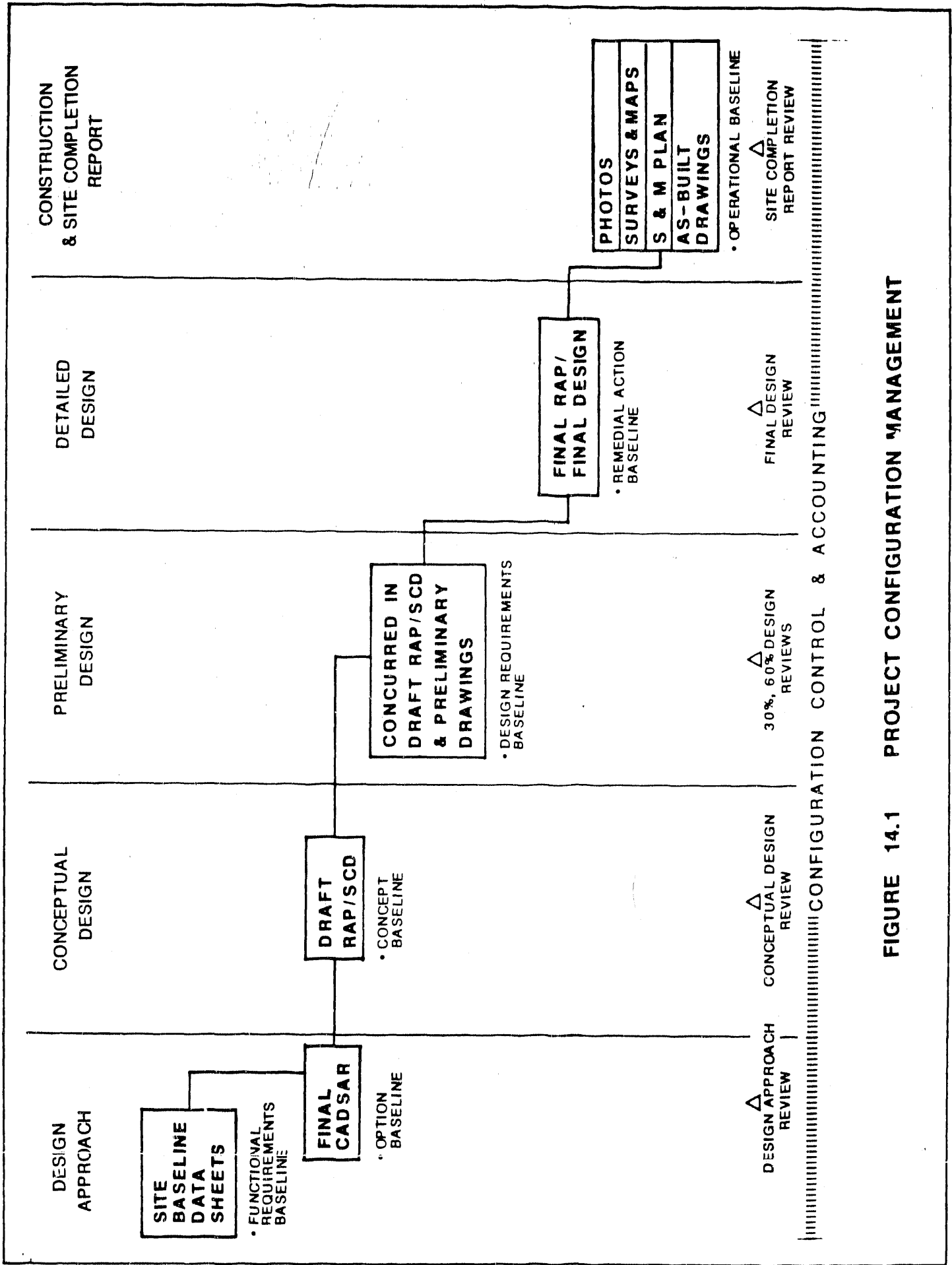


FIGURE 14.1 PROJECT CONFIGURATION MANAGEMENT

requirements, and other pertinent design considerations. It is used for early site planning and cost estimating that is refined through the technical baseline progression cycle.

- o Option Baseline. This baseline is established upon concurrence in a preferred option by NRC and the affected state or tribe. It consists of the approved final CADSAR which describes the selected site remedial action option to be used for the site design.
- o Concept Baseline. This baseline is established based on the site's selected design approach in the final CADSAR. It consists of the draft Remedial Action Plan (RAP) which includes the Site Conceptual Design.
- o Design Requirements Baseline. This baseline is established after concurrence by the NRC and affected state or tribe in the draft RAP and provides the basis for the final design. It is the collection of drawings and specifications which define the approved site remedial action design.
- o Remedial Action Baseline. This baseline is established when the final design is complete. It describes all the details of the design necessary for construction, accomplishing the selected remedial action, and preparing a site for certification. It is composed of the final design (specifications and drawings), quality assurance provisions, test procedures, and preliminary surveillance and maintenance requirements.
- o Operational Baseline. This baseline is established upon completion of a site's remedial action and the issuance of a license from NRC. It consists of the site's surveillance and maintenance plan, as-built drawings, final topographic survey, vicinity map, ground and aerial photographs, and the like required to define and characterize the final site conditions in order that any subsequent changes are readily discernable.

### 14.3 CONFIGURATION CONTROL

Project configuration control provides for the systematic evaluation, coordination, approval/disapproval, and implementation of changes in configuration of the document composing the various baselines.

Changes are limited to those necessary to:

- o Correct deficiencies.
- o Satisfy a change in Project requirements or significantly improve effectiveness.
- o Affect substantial cost savings.
- o Prevent slippage or allow desired slippage in an approved schedule.

Every proposed configuration change is evaluated, including the impact of not making the change. Evaluation takes into consideration all aspects of the change. Such evaluations are conducted via the technical, design, and value engineering processes and formalized by the Project Change Control Board (CCB)(Section 11.2).

The CCB assists the UMTRA Project Manager in evaluating, processing, recommending approval/disapproval, and monitoring implementation of proposed changes. The CCB has Project Office and contractor representation.

#### 14.4 CONFIGURATION ACCOUNTING

Configuration accounting consists of contractor recording and reporting with Project Office oversight: (1) the approved baseline configuration; (2) the status of change proposal; and (3) the implementation status of approved changes. Only the information necessary to manage configuration effectively and economically is recorded and reported.

## 15.0 CONTINGENCY

### 15.1 SENSITIVITY ANALYSIS

Since the UMTRA Project basically involves managing 24 major construction projects (processing sites) and approximately 4500 smaller construction activities (included vicinity properties), numerous and varied parameters contribute to the Project's cost and schedule sensitivity. Furthermore, the requirements of the Act, the NEPA process, the number of Project participants, the political environment, and technological considerations compound the situation. Therefore, a contingency is required to provide coverage for potential growth in scope resulting from unforeseen and unpredictable conditions. The PSCE Report contains the details on the process.

### 15.2 CONTINGENCY DEVELOPMENT

The current state of the identified risks was taken into consideration in developing the contingency allowance to be applied against individual cost components during development of the total estimated cost of \$988.9 million. These factors are re-evaluated to reflect changing Project conditions and the related risk, as necessary, each time the total estimated cost is revised and reflected in the annual updating of the PSCE Report.

### 15.3 CONTINGENCY APPLICATION

During the current fiscal year (FY), the amount of contingency available is determined by the Congressional funding authorized. The original FY budget plan (including the contingency) is revised to reflect the authorization. Application of the contingency requires recommendation of the Project Change Control Board and approval of the Project Manager.

If contingency is applied to an outyear requirement, the Project budget baseline for the concerned FY is increased and the contingency reduced per the amount of the application. The planned budget submission for that FY is also re-evaluated to determine the adequacy of the contingency remaining.

9/92

## 16.0 QUALITY ASSURANCE (QA)/ENVIRONMENTAL, HEALTH, AND SAFETY (EH&S)

### 16.1 PROJECT PROGRAM

The Project Office fulfills its QA responsibilities with support from the Director of the Engineering Division and the TAC (Figure 16.1). The QA program is described in the "Management and Overview Quality Assurance Program Plan, UMTRA-DOE/AL-400325.000" and "UMTRA Project Quality Assurance Plan, UMTRA-DOE/AL-400324.0185."

As an adjunct to the QA Program, the Project Office also conducts an environmental, health, and safety (EH&S) program, with support from AL and the TAC (Figure 16.2). The EH&S program is described in the "Project Environmental, Health, and Safety Plan, UMTRA-DOE/AL-150224.0006."

The individual roles and responsibilities of Project participants for preparation of QA and EH&S documentation are shown in Table 16.1.

### 16.2 SITE PROGRAM

Site remedial action activities are required to be performed in such a manner that the quality of work performance and the health and safety of workers and the public are not jeopardized. To assure this the Project Office conducts an active QA and EH&S overview program. The RAC is responsible for documenting, implementing, and operating the site programs in accordance with their approved QA and EH&S documentation. The Project Office assures that the programs have been implemented and are operating properly by having the TAC conduct appraisals of the RAC's site operations.

These appraisals are conducted through a structured approach with the TAC assigned the responsibility for their coordination, scheduling, performance, reporting, and conducting any required follow-up activities. Checklists are prepared prior to each appraisal and tailored to the activities (i.e., quality control, radiological measurements, or health and safety) and site being reviewed. They take into account the appraisal purpose and the stage of remedial action activity being reviewed. Details are contained in the "UMTRA-TAC Audit/Surveillance Program Plan."

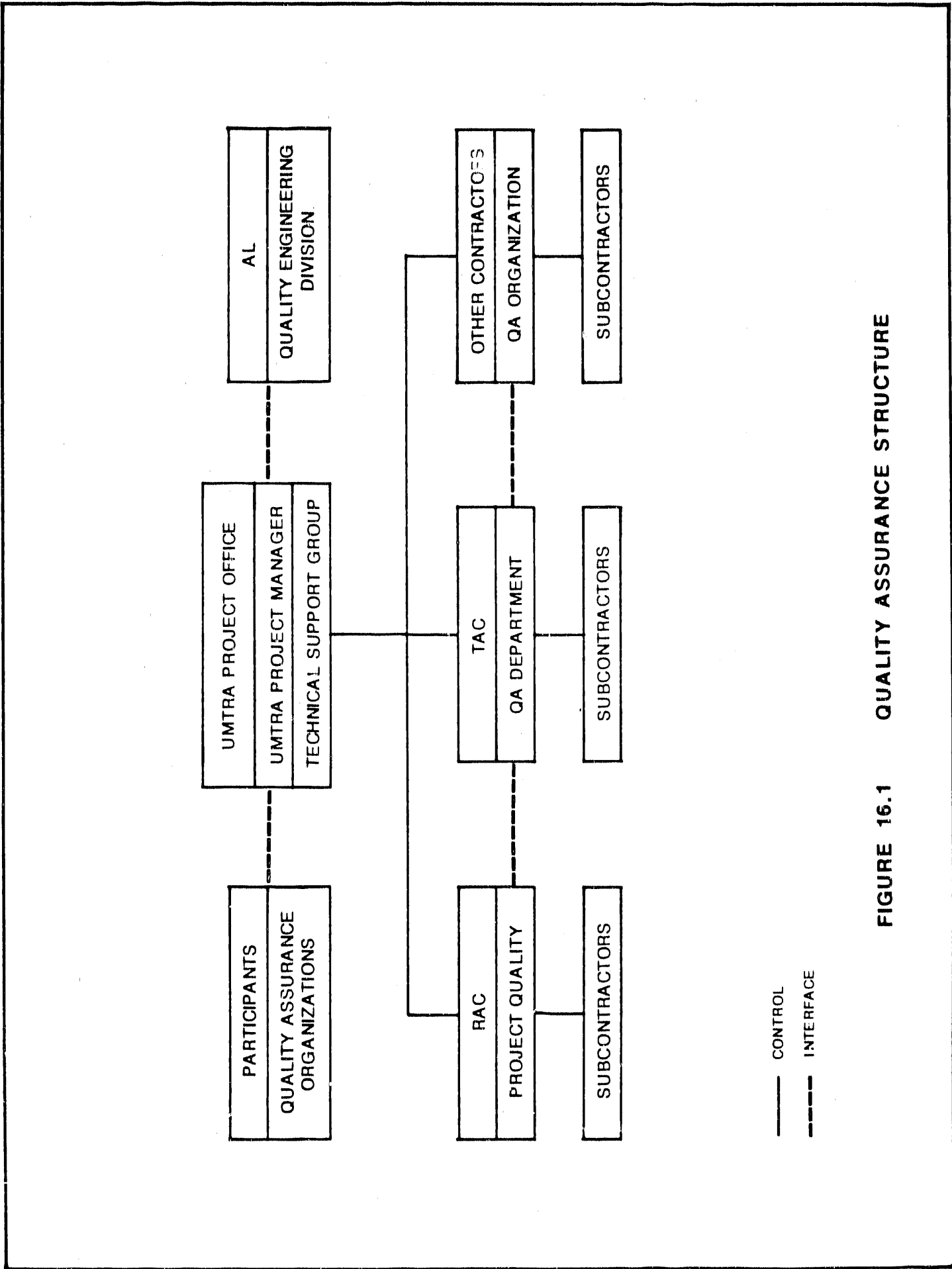
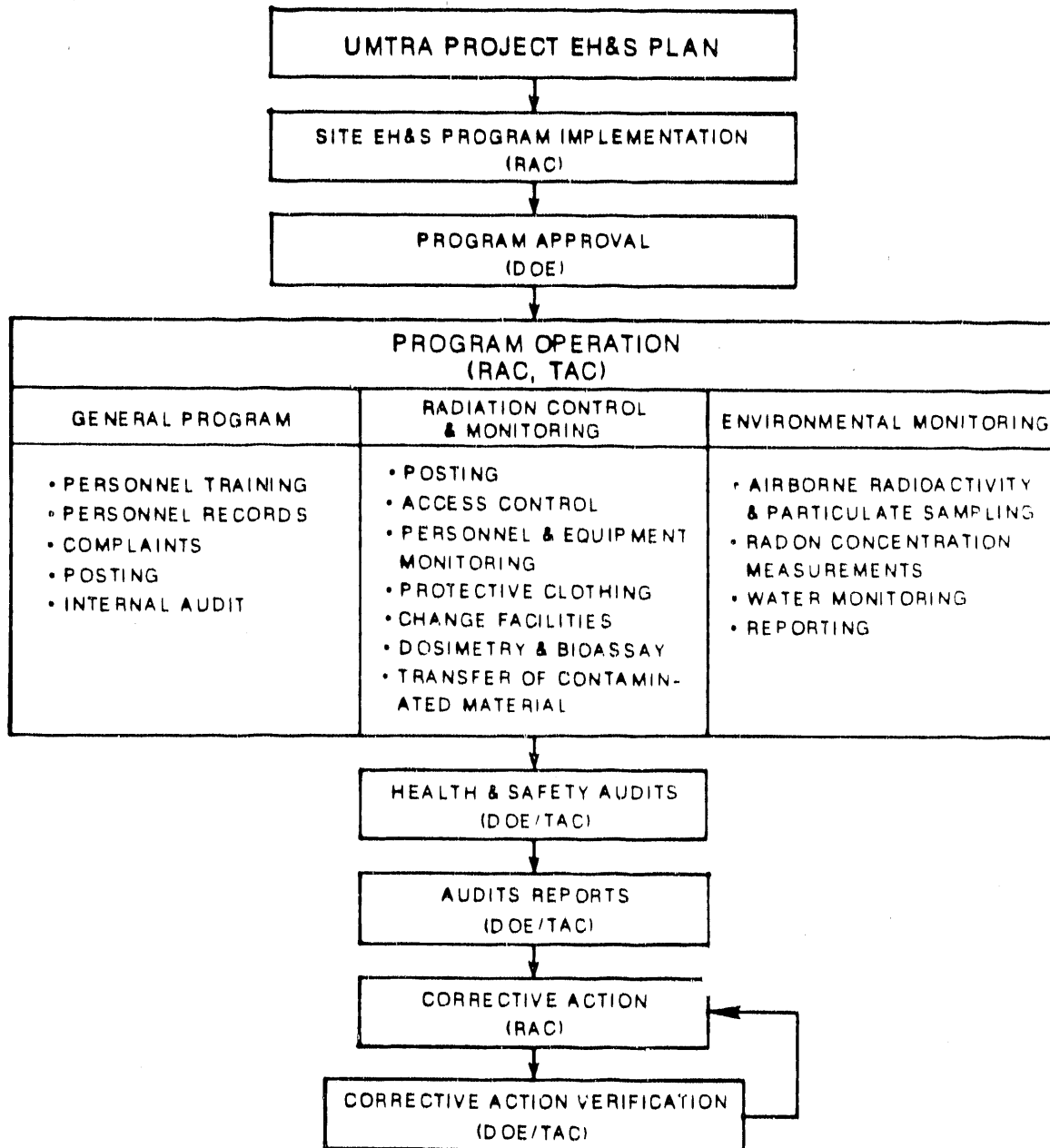


FIGURE 16.1 QUALITY ASSURANCE STRUCTURE

— CONTROL  
 - - - INTERFACE



**FIGURE 16.2 EH&S PROGRAM**

Table 16.1 QA and EH&S documentation

| Documentation  | Responsibilities |     |       |     |       |
|--|------------------|-----|-------|-----|-------|
|  | Program Office   | PO  | TAC   | RAC | Other |
| UMTRA Project Quality Assurance Plan                   | R                | A/E | P/E   | E   | E     |
| Management and Overview Quality Assurance Program Plan | I                | A/E | P/E   | I   | I     |
| UMTRA-TAC Audit Surveillance Program Plan              | I                | A   | P/E   | I   | I     |
| Contractor QA Program Plans                            | I                | A   | P/R/E | P/E | P/E   |
| RAC Remedial Action Inspection Plans                   | I                | A   | R     | P/E | E     |
| UMTRA Project Environmental, Health, and Safety Plan   | R                | A/E | P/E   | E   | E     |
| Contractor EH&S Plans                                  | I                | A   | P/R/E | P/E | P/E   |
| Site Health Physics Monitoring Plan                    | I                | A   | R     | P/E | E     |

Program Office = DOE Headquarters - Nuclear Energy  
 PO = UMTRA Project Office  
 TAC = Technical Assistance Contractor  
 RAC = Remedial Action Contractor  
 Other = Other Project Contractors

A = Approve  
 E = Implement  
 I = Information  
 P = Prepare  
 R = Review

## 17.0 UTILITIES

During the initial remedial action planning and design effort, the location of all existing utilities on a site is determined. A systematic search of public and private sources is conducted by the TAC to identify the location of any existing utility conveyance which may impact site characterization or remedial action activities. Every city, county, and state agency that may possibly have information regarding the existence of pipes, ducts, transmission lines, and cables located on or near the processing and disposal site (if appropriate) and which may be situated underground, on the surface, or overhead is contacted.

Once the information is evaluated, a memorandum documenting the investigation and a composite map showing the existing utilities at the site are prepared by the TAC. The TAC uses the information during data collection activities (e.g., drilling) to identify areas to avoid. The map is included in the draft Remedial Action Plan and the RAC uses this information in their site design. Basically, if the utilities hinder effective site stabilization, they are removed, relocated, or abandoned by the individual utility company.

The availability of utilities during the time the remedial actions are being conducted is also considered in the final site design. The RAC makes arrangements for temporary requirements for water, electricity, telephone services, and gas or butane by specifying the need in the main subcontracting bid package. After the site's remedial action is complete, the temporary utility services are terminated, since there are no permanent utility requirements during the surveillance and maintenance phase. If the need should arise after remedial actions, temporary arrangements would again be made. A similar process exists for vicinity property design and remedial action with the RAC doing all the involved work.

## 18.0 RESPONSIBILITY MATRIX

The UMTRA Project Responsibility Matrix is depicted in Table 18.1 at the end of this section. Basically, decisions on the Project can be categorized into the major management categories of Project, Technical, Contract, and Cost and Schedule. These major categories have been divided into subsets that expand on the typical decisions involved. The following discussion further elaborates on the planning and execution involved with the decision.

| <u>Decision</u>             | <u>Planning and Execution Involved</u>   |
|-----------------------------|--|
| <u>Project Management</u>   |  |
| Documentation               | Determination of need for a document or revisions to an existing plan.   |
| Procedures                  | Determination of need for routine operating procedures revisions to an existing procedure that govern routine office operations (e.g., leave administration).            |
| Personnel                   | Determination of staffing levels, promotions, and the like.  |
| Cooperative Agreements      | Determination of original contents and revisions thereto.  |
| Memoranda of Understanding  | Determination of need, content, and revisions thereto.   |
| Site Acquisitions           | Determination of location, acreage involved, value, schedule, and other related considerations.  |
| Reporting                   | Determination of format, content, variance thresholds, frequency, and distribution of reports (including briefings) to AL, HQ DOE, Project participants, and the public. |
| <u>Technical Management</u> |  |
| Technical Baseline          | Establishment and changes to a site's baselined technical approach.  |
| Design Guidance             | Determination and revisions thereto of the specifications, codes, standards, and Project guidance applicable to remedial actions.  |

Decision

Planning Documentation

Design Documentation

Remedial Actions

Audit Findings

Contract Management

Contract Administration

Task Agreement

Reporting

Cost and Schedule Management

Budget Baseline

Funding Baseline

Schedule Baseline

Planning and Execution Involved

Determination of need for a planning document in the area of site remedial actions (e.g., Alternative Site Selection Process) or revision thereto (e.g., Remedial Action Plan modification).

Determination of a site's design acceptability and cost effectiveness and changes thereto resulting from the design review and value engineering process.

Determination of compliance with EPA standards and design efficiency, resolution of problems and incidents, and establishment and maintenance of public relations.

Determination that audit findings are corrected in a timely fashion and not repeated.

Determination of contract performance, quality of deliverables, and compliance with contract articles.

Determination of contract Task Agreement value, scope of work, duration, and deliverables.

Determination of types, formats, contents, variance thresholds, copies, and frequency of contract reporting.

Determination of the Project total estimated cost and individual FY Year budget submissions (including contingency) and changes thereto (including "what if" exercises).

Determination of the allocation of carry-over and FY funds and changes thereto for funded participants and contractors.

Establishment and changes to the UMTRA Project Master Site and Vicinity Property Schedule and HQ-controlled milestones.

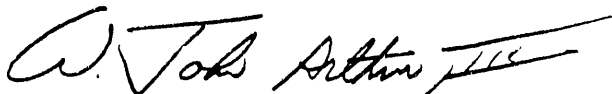
Table 18.1 UMTRA Project Responsibility Matrix

| Decision                              | <u>Project Office</u> |        | <u>Office Groups</u> |                   |                 |     | Program Office<br>DOE/HQ-NE |
|---------------------------------------|-----------------------|--------|----------------------|-------------------|-----------------|-----|-----------------------------|
|                                       | Manager               | Deputy | Operations           | Technical support | Project support | AL  |                             |
| <u>Project Management</u>             |                       |        |                      |                   |                 |     |                             |
| Documentation                         | A                     | C      | C                    | C                 | R               | C   | A/C                         |
| Procedures                            | A                     | C      | I                    | I                 | R               |     |                             |
| Personnel                             | C                     |        |                      |                   | R               | A/C |                             |
| Coop. Agree.                          | C                     | C      |                      |                   |                 | R   | C                           |
| MOUs                                  | A                     | C      |                      |                   |                 | C   | C                           |
| Site Acquis.                          | C                     | C      | C                    |                   | I               | R   | C                           |
| Reporting                             | A                     | C      | I                    | I                 | R               | I   | C/I                         |
| <u>Technical Management</u>           |                       |        |                      |                   |                 |     |                             |
| Technical Baseline                    | A                     | C      | R                    | I                 | I               |     | A                           |
| Design Guidance                       | C                     | C      | R                    | I                 |                 |     | I                           |
| Planning Doc.                         | A                     | C      | R                    | C                 | C               | I   | C                           |
| Design Doc.                           | A                     | C      | R                    |                   |                 |     |                             |
| Remedial Action                       | A                     | C      | R                    |                   |                 |     | A                           |
| Audit Findings                        | C                     | A      | I                    | R                 |                 | C/I | I                           |
| <u>Contract Management</u>            |                       |        |                      |                   |                 |     |                             |
| Contract Administration               | C                     | C      |                      |                   |                 | R   | I                           |
| Task Agreement                        | C                     | R      | C                    | C                 | C               | C   |                             |
| Reporting                             | A                     | I      | I                    | I                 | R               | C   | I                           |
| Billings                              | C                     | I      |                      |                   |                 | A   |                             |
| <u>Cost &amp; Schedule Management</u> |                       |        |                      |                   |                 |     |                             |
| Budget Baseline                       | A                     | C      | C                    | C                 | R               |     | A                           |
| Funding Baseline                      | A                     | C      | I                    | I                 | R               | C   | A                           |
| Schedule Baseline                     | A                     | C      | C                    | C                 | R               |     | A                           |

A = Approve  
 C = Consult  
 I = Information  
 R = Responsible

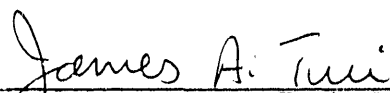
19.0 SUBMISSIONS AND APPROVALS

This UMTRA Project Management Plan is submitted by:



W. John Arthur, III, Acting Project Manager  
Uranium Mill Tailings Project Office

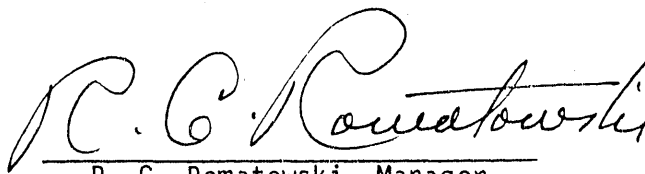
It is concurred in by:



James A. Turi, Director  
Division of Uranium Mill Tailings Projects

The approved workload of the UMTRA Project is stated in the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604). In brief, the workload consists of planning, designing, and performing remedial actions at the 22 designated inactive uranium processing sites and vicinity properties (including those at Edgemont) in a safe and environmentally sound manner in cooperation with the states and Indian tribes. The remedial actions are to be performed in accordance with the pertinent Environmental Protection Agency Standards, consistent with other applicable law, and with the concurrence of the Nuclear Regulatory Commission.

Approved:



R. G. Romatowski, Manager,  
Albuquerque Operations Office

**- END -**

**DATE FILMED**

01 / 29 / 91

