1 of 3

Environment Management Assessment of the Fernald Environmental Management Project (FEMP)

**U.S. Department of Energy
Office of Environmental Audit
Washington, DC 20585**

MASTER

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PREFACE

PREFACE

U.S. DEPARTMENT OF ENERGY ENVIRONMENTAL MANAGEMENT ASSESSMENT CONDUCTED AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

In a continuing effort to strengthen environmental protection within the U.S. Department of Energy (DOE), the Office of Environment, Safety and Health (EH) has established, as part of the internal oversight responsibilities within DOE, a program within the Office of Environmental Audit (EH-24), to conduct environmental assessments of DOE programs and operating facilities. The ultimate goal of this program is enhancement of environmental protection and minimization of risk to public health and the environment through systematic and periodic evaluations of the Department's environmental programs within line organizations.

This document contains the results of the Environmental Management Assessment of the Fernald Environmental Management Project (FEMP). This Environmental Management Assessment was conducted by EH-24 from March 15 through April 1, 1993. The assessment's objective is to advise the Secretary of Energy, through the Assistant Secretary for Environment, Safety and Health, as to the adequacy of FEMP's environmental programs and management organization to ensure compliance with Federal, state, local, and DOE environmental requirements and evaluate application of proactive management practices that promote excellence in environmental protection activities.

The scope of the Environmental Management Assessment was comprehensive and covered all areas of environmental management, and included a focused evaluation of Environmental Radiation and Quality Assurance programs at FEMP.

April 1993
Washington, D.C.

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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)**

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report documents the results of the Environmental Management Assessment performed at the Fernald Environmental Management Project (FEMP) in Fernald, Ohio. During this assessment, the activities conducted by the assessment team included review of internal documents and reports from previous audits and assessments; interviews with U.S. Department of Energy (DOE) and FEMP contractor personnel; and inspection and observation of selected facilities and operations.

The onsite portion of the assessment was conducted from March 15 through April 1, 1993, by DOE's Office of Environmental Audit (EH-24) located within the Office of the Assistant Secretary for Environment, Safety, and Health (EH-1).

EH-24 carries out independent assessments of DOE facilities and activities as part of the EH-1 Environment, Safety, and Health (ES&H) Oversight Audit Program. The EH-24 program is designed to evaluate the status of DOE facilities and activities with respect to compliance with Federal, state, and local environmental laws and regulations; compliance with DOE Orders, Guidance and Directives; conformance with accepted industry practices and standards of performance; and the status and adequacy of management systems developed to address environmental requirements.

The Environmental Management Assessment of FEMP focused on the adequacy of environmental management systems. Further, in response to requests by the Office of Environmental Restoration and Waste Management (EM) and Fernald Field Office (FN), Quality Assurance and Environmental Radiation activities at FEMP were evaluated from a programmatic standpoint. The results of the evaluation of these areas are contained in the Environmental Protection Programs section in this report.

The scope of the FEMP Environmental Management Assessment was comprehensive and included all areas of environmental management. At the same time, Environmental Radiation and Quality Assurance activities were evaluated to develop a programmatic understanding of these environmental disciplines, building upon the results of previous appraisals, audits, and reviews performed at the Feed Materials Production Center (FMPC) and FEMP. Although this assessment was designed to be thorough and to consider a representative sample of FEMP activities, programs, and personnel, it was not intended to be exhaustive in scope. Instead, it was meant to provide DOE organizations, including the Secretary, with an indication of the status of FN and Fernald Environmental Restoration Management Corporation (FERMCO) management's effectiveness in achieving its mission in an environmentally responsible manner.

The "Key Findings" can be summarized as follows:

Roles, Responsibilities, and Authorities of an Office of Environmental Restoration and Waste Management (EM) Field Office and an ERM Contractor

The lack of clearly defined and well established roles, responsibilities, and authorities has resulted in confusion among FN/FERMCO staffs. The degree of autonomy allowed under an Environmental Restoration Management Contractor (ERM) contract has not been fully resolved. FN staff are concerned about the level of accountability for FERMCO initiatives at FEMP. Should FN staff continue to see themselves personally responsible for compliance violations at FEMP, relinquishing oversight will be difficult.

Staff and Training

Both FN and FERMCO have shortages of staff with certain environmental skills critical to the FEMP mission. Such staffing shortages, together with a shortage of training resources at FERMCO, may hinder the development and effective implementation of environmental protection programs at FEMP.

During the assessment of the environmental protection programs, some strengths were identified.

- The Environmental Monitoring Plan (EMP) addresses site surveillance in a comprehensive manner and was judged by the Assessment Team to be one of the best EMPs in the DOE complex. The Radon Monitoring Program, which is designed to monitor releases of radon-222 from the waste pits and storage silos, is unique to the DOE complex and was found to be of high quality. Radon compliance monitoring activities are routinely complemented by experimental programs designed to gain a better understanding of radon emissions and to meet stringent measurement criteria.
- Since December 1992, substantial progress has been made in areas of employee training. One especially strong training initiative being implemented is the program for waste facility inspectors which appears to be a model program for ensuring high quality, documented inspections.
- Regulatory tracking and analysis, performed by the Regulatory Policy Department at FERMCO was determined to be comprehensive. Information reviewed by this Department was disseminated to and made readily available for all FERMCO and FN personnel.
- The FEMP Community Relations Program continues to be a model worth emulating DOE-wide. Since the Environmental, Safety and Health Progress Assessment in November 1991, FN and FERMCO are enhancing the program further by assigning a Public Affairs Councilor to each CERCLA/RCRA Unit (CRU) who works with the CRU director to attain complete public involvement and thorough public understanding of the CRU's environmental restoration activities.

The overall conclusion of the Assessment Team is that FERMCO has made progress in developing policies, programs, plans, and procedures since assuming responsibility for FEMP in December 1992. In general, the team found that FN and FERMCO organizations have experienced and dedicated staffs with managers who appear capable and committed to getting work accomplished at the site, however until organization and staffing issues are resolved, the attainment of excellence in environmental protection activities will be hindered.

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

This report documents the results of the Environmental Management Assessment of the Fernald Environmental Management Project (FEMP) located in Fernald, Ohio. The onsite portion of the assessment was conducted from March 15 through April 1, 1993, by the Office of Environmental Audit (EH-24).

DOE 5482.1B, "Environment, Safety and Health Appraisal Program," establishes the mission of EH-24 to provide comprehensive, independent oversight of Department-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is enhancement of environmental protection and minimization of risk to public health and the environment. EH-24 accomplishes its mission using systematic and periodic evaluations of the Department's environmental programs within line organizations, and through use of supplemental activities which serve to strengthen self-assessment and oversight functions within program, field, and contractor organizations.

These evaluations function as a vehicle to apprise the Secretary and Program Senior Officials (PSOs) of the current status and vulnerabilities of Departmental environmental activities and environmental management systems. Several types of evaluations are conducted, including:

- comprehensive baseline environmental audits;
- routine reaudits;
- environmental management assessments; and
- special issue reviews.

The purpose, scope, and approach of this comprehensive baseline environmental audit is described below.

1.1 PURPOSE

The purpose of the Environmental Management Assessment of FEMP is to provide the Secretary of Energy, through the Assistant Secretary for Environment, Safety, and Health, with concise information pertaining to the following areas:

- Adequacy of environmental management programs and organizations;
- Adherence to best management (and accepted industry) practices (BMPs) pertaining to environmental management programs;
- Compliance with DOE Orders and DOE environmental policies (as identified in Table 1-1) which address environmental management programs;
- DOE vulnerabilities and liabilities associated with environmental management practices;
- Probable causal factors of findings;

TABLE 1-1

**LIST OF ENVIRONMENTAL MANAGEMENT
REGULATIONS/REQUIREMENTS/GUIDELINES**

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
Executive Order 11514 and 11991	Protection and Enhancement of Environmental Quality	Office of the President
Executive Order 12088	Federal Compliance with Pollution Control Standards	Office of the President
Executive Order 12580	Superfund Implementation	Office of the President
Public Law 99-499	Superfund Amendments and Reauthorization Act (SARA) Title III, Emergency Planning and Community Right-to-Know Act (EPCRA)	EPA
DOE 1000.3B	Internal Control Systems Manual	DOE
DOE 1280.1	Memorandums of Understanding	DOE
DOE 2300.1A	Audit Resolution and Followup	DOE
DOE 2321.1A	Auditing of Programs and Operations	DOE
DOE 3410.1B	Training	DOE
DOE 4700.1	Project Management Systems	DOE
DOE 5000.3A	Occurrence Reporting and Processing of Operations Information	DOE
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.2A	Environmental Compliance Issue Coordination	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements	DOE
DOE 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE N5400.9	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE

TABLE 1-1

**LIST OF ENVIRONMENTAL MANAGEMENT
REGULATIONS/REQUIREMENTS/GUIDELINES (continued)**

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE 5480.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5480.4	Environmental Protection, Safety, and Health Protection Standards	DOE
DOE 5480.11	Radiation Protection for Occupational Workers	DOE
DOE 5480.19	Conduct of Operations Requirements for DOE Facilities	DOE
DOE 5480.20	Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities	DOE
DOE 5482.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5484.1	Environmental Protection, Safety and Health Protection Information Reporting Requirements	DOE
DOE 5500.2A	Emergency Notification Reporting and Response Levels	DOE
DOE 5700.6C	Quality Assurance	DOE
DOE 5820.2A	Radioactive Waste Management	DOE
DOE 6430.1A	General Design Criteria	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE Memorandum, July 31, 1990	Guidance on Environment, Safety, and Health (ES&H) Self-Assessment	DOE
15 U.S.C. 2601 et seq.	Toxic Substances and Control Act (TSCA)	EPA
42 U.S.C. 6901 et seq.	Resource Conservation and Recovery Act	EPA
42 U.S.C. 7401 et seq.	The Clean Air Act	EPA
10 CFR 20	Standards for Protection Against Radiation	EPA

TABLE 1-1**LIST OF ENVIRONMENTAL MANAGEMENT
REGULATIONS/REQUIREMENTS/GUIDELINES (continued)**

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
29 CFR 1910.12	Occupational Safety and Health Standards	OSHA
40 CFR 61.93	National Emission Standards for Hazardous Air Pollutants (NESHAP)	EPA
40 CFR 112	Oil Pollution Control	EPA
40 CFR 122	EPA Administered Permit Programs: National Pollutant Discharge Elimination System (NPDES)	EPA
40 CFR 125	Criteria and Standards for the National Pollutant Discharge Elimination System	EPA
40 CFR 141	National Primary Drinking Water Regulations	EPA
40 CFR 261	Identification and Listing of Hazardous Waste	EPA
40 CFR 268	Land Disposal Restriction Program	EPA
40 CFR 302	Designation, Reportable Quantities, and Notification	EPA
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution, and Use Prohibitions	EPA

- Root causes of findings;
- Noteworthy environmental management practices; and
- Determining trends and patterns in environmental compliances and BMP deficiencies.

The information gathered during this Assessment and embodied in this report is designed to assist DOE in determining patterns and trends in environmental compliance and BMP deficiencies through the identification of causal factors and probable root causes which may have contributed to the observed deficiencies. The Office of Environmental Restoration and Waste Management (EM), the Fernald Field Office (FN), and the Fernald Environmental Restoration Management Corporation (FERMCO) management are expected to utilize this information when developing their corrective action plans.

1.2 SCOPE

The scope of the Environmental Management Assessment was comprehensive, addressing all areas of environmental management, and assessed environmental management issues at FEMP for FN; FERMCO; and the Oak Ridge Field Office (OR). Additional consideration was given to reporting and oversight relationships with EM, the responsible DOE Headquarters (HQ) Program Office. This assessment is specifically related to environmental management with a focused evaluation conducted in the technical disciplines of quality assurance and environmental radiation only.

1.3 APPROACH

The Environmental Management Assessment followed accepted assessment techniques and was guided by implementation of procedures and programs cited in the DOE Environmental Audit Program Guidance (January 1992) and the draft Protocols for Conducting Environmental Management Assessments (January 1993). The assessment was conducted by a team of professionals managed by a DOE HQ Assessment Team Leader from EH-24, two Team Coordinators, and management systems and technical support specialists from Arthur D. Little, Inc., the EH-24 audit support contractor. Administrative support was provided by Maria Elena Toraño Associates, Inc. The names, areas of responsibility, affiliations, and biographical sketches of the Team Members are provided in Appendix A. The assessment included three phases: planning, onsite activities, and reporting.

During the planning phase, a memorandum was sent to FEMP announcing the assessment and requesting information about FEMP and environmental program activities in general. Included in this memorandum was a request that FEMP notify appropriate Federal, state, and local regulatory agencies of the assessment and solicit their participation. A pre-assessment site visit was conducted January 19 through January 21, 1993, by the DOE Team Leader and the Arthur D. Little Team Coordinators. FEMP's response to the information request memorandum combined with the pre-assessment site visit formed the basis for the Assessment Plan (see Appendix B), which include a preliminary agenda for onsite activities. Once onsite, the Assessment Team modified the agenda on a daily basis as more information was obtained and additional areas of interest were identified. Appendix C provides the final schedule of onsite activities.

Before the initiation of onsite portions of the assessment, interviews were conducted in Washington, D.C. and Germantown, Maryland with members of EM programs that affect activities at FEMP.

Onsite assessment activities were conducted from March 15 through April 1, 1993, and included interviews in Fernald, Ohio with FN and FERMCO personnel and document reviews (including previous audit and self-assessment reports). The Assessment Team conducted daily debriefs that were open to EM, FN, and FERMCO personnel and regulatory officials. No regulatory officials attended the debriefs. A list of site documents reviewed and interviews performed are provided in Appendices D and E, respectively. Using these sources of information, the Assessment Team developed findings as discussed in Sections 2.0 and 3.0 of this report.

Deficiencies identified by the Assessment Team are categorized as findings. Findings are conditions that, in the judgment of the team, may not satisfy environmental regulations, DOE Orders, Consent Agreements with regulatory agencies, environmental permit conditions, DOE or contractor environmental policies and procedures, regulatory agency guidance, accepted industry practice or technical standards, draft DOE Orders, DOE guidance, or professional judgment.

The findings detailed in Section 3.0 are organized into the following eight categories: organizational structure; environmental commitment; environmental protection programs; formality of environmental programs; internal and external communication; staff resources, training, and development; program evaluation, reporting, and corrective action; and environmental planning and risk management. The environmental protection program section includes a more detailed discussion of the status of quality assurance and environmental radiation programs. Each finding is organized into three sections: the performance objective, the finding statement, and a discussion of the facts and observations supporting the finding. The particular standards against which the finding is being evaluated are specified in the performance objectives. The findings are not arranged in order of relative significance.

It is the intent of this Environmental Management Assessment to go beyond the findings and to identify the probable causal factors of observed environmental deficiencies. These probable causal factors are included in the supporting discussion. The probable causal factors are to be used to assist in the determination of corrective actions required to rectify identified findings. A listing and definition of probable causal factors used by the Assessment Team can be found in Appendix F.

1.4 BACKGROUND AND PROJECT DESCRIPTION

FEMP, formerly known as the Feed Materials Production Center (FMPC), is located about 20 miles northwest of Cincinnati in Fernald, Ohio (see Figure 1-1, FEMP Location Map). Uranium metal products for the nation's defense programs were produced at the facility between 1953 and 1989. In July 1989, uranium metal production under the direction of Westinghouse Materials Corporation of Ohio at FMPC was suspended to focus resources on environmental restoration activities. In November 1989, FMPC was placed on the Environmental Protection Agency's (EPA) National Priority List of federal facilities needing remediation. In April 1990, the site entered into a Consent Agreement with the EPA under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

FIGURE 1-1. FEMP LOCATION MAP

As part of this agreement, a comprehensive Remedial Investigation/Feasibility Study (RI/FS) is being conducted involving five CERCLA/RCRA Units (CRUs) established at FEMP. In June 1991, a Fernald Closure Plan was approved and the FEMP mission was redefined as environmental cleanup and restoration. To reflect the new cleanup mission at the Fernald site, DOE officially changed the name of the facility to the Fernald Environmental Management Project (FEMP) on August 23, 1991. Concurrently, Westinghouse Corporation changed the name of its Fernald subsidiary to Westinghouse Environmental Management Company of Ohio (WEMCO). Primary activities onsite now include site characterization, waste characterization, waste and product disposal, and preparation for the permanent shutdown of facilities.

The FEMP site is approximately 1,050 acres. Project facilities, including warehouses, inactive production facilities, administrative buildings, laboratories, utilities, pits, ponds, and tanks are located on approximately 136 acres (see Figure 1-2, FEMP Site Map). WEMCO had managed the site between January 1986 and the summer of 1992. At that time, DOE awarded a contract to manage the cleanup activities at the FEMP and the RMI Titanium Co. Extrusion Plant in Ashtabula, Ohio to FERMCO, an Environmental Restoration Management Contractor (ERMC).

1.5 ENVIRONMENTAL MANAGEMENT PROGRAMS AND ORGANIZATIONS

To fully understand the environmental restoration programs and issues at FEMP, it is important to understand the recent transitions that have occurred:

- The site mission has changed from uranium metal production to environmental restoration;
- The contract structure has changed from a management and operations (M&O) contract to an ERMC contract;
- The site contractor has changed from WEMCO to FERMCO, under the direction of management obtained from the four teaming partner companies;
- The site contractor organizational structure has changed from a line management structure to a matrix structure; and
- DOE oversight has changed from OR to FN, with assistance from OR only in critical skill areas.

In October 1990, the management responsibility for FEMP was transferred from the Office of Defense Programs (DP) to EM. The decontamination, decommissioning, and environmental restoration of the Fernald Site was characterized as one of the top priorities in the Department. In April 1991, the Assistant Secretary for Environmental Restoration and Waste Management (EM-40) was given full responsibility and authority for the management, planning, and conduct of FEMP activities. Prior to April 1991, day-to-day DOE oversight and management of the FEMP had been performed by the Fernald Site Office, reporting to and supported by the Oak Ridge Field Office (OR). The EM and OR Field Office organizations are shown in Figures 1-3 and 1-4, respectively. In February 1992, FEMP became a field office with direct reporting to EM-40. A Memorandum of Agreement (MOA), detailing the roles and responsibilities between OR and FN

FIGURE 1-2. FEMP SITE MAP

FIGURE 1-3. EM ORGANIZATION

FIGURE 1-4. OR ORGANIZATION

organizations continues to be in effect. Currently, the FEMP Division Director (EM-424), under the Office of Eastern Area Programs (EM-42), serves as the Program Manager. The EM Eastern Area Programs organization is shown in Figure 1-5.

In the new alignment, FN reports directly to EM, but OR retains a matrixed support role in numerous technical and administrative areas. FN operates in compliance with OR Orders relating to these technical and administrative areas. Policy and programmatic direction to FN is provided by EM. The FN staff has increased to a current level of 71 full-time equivalents (FTEs). FN is authorized 80 FTEs and is developing a proposed plan for a self-sufficient field office of 114 FTEs.

FN has been assigned the responsibility and authority for the field management of the project. Under the current FN organization and structure, responsibility for line management authority, accountability, management, and contract administration for the Project has been assigned to the FN Acting Field Office Manager. The FN organization is shown in Figure 1-6.

Matrix support is available to FN from the OR organization on a request basis. This support currently takes two forms: administrative, such as procurement, budget, finance, quality assurance, and public affairs; and technical oversight support. The FN office is accountable to EM-424 and EM-40 Headquarters management for the successful accomplishment of the Project.

The FN Field Office Manager and Deputy Manager are supported at FEMP by four groups:

- Technical Support is responsible for specialized interdisciplinary matrix support on the ongoing facilities management, project construction, and environmental restoration project work.
- Site Operations is responsible for management, maintenance, shutdown, and waste minimization and/or removal project work associated with all buildings, facilities, and site operations.
- Environmental Restoration is responsible for the design and implementation of the remedial action, and the removal action of all contaminated material in an environmentally safe manner.
- Administration is responsible for all Human Resource and contract administration and support for FN. This group administers all personnel, procurement, and contracting delegations associated with the FN Field Office.

DOE's day-to-day responsibility for planning, coordinating, and conducting environmental restoration activities at FEMP has been assigned by the Acting Field Office Manager to the FERMCO contractor teaming partners: Fluor Daniel; Halliburton NUS Corporation; Jacobs Engineering Group; and Nuclear Fuel Services. The FERMCO organization is shown in Figure 1-7.

FN and FERMCO contractor management continue to experience significant challenges as they endeavor to make employees aware of the changes in their roles, responsibilities, and

FIGURE 1-5. EM EASTERN AREA PROGRAMS

* Formerly Onsite Program Branch

** Formerly D&D Branch

FIGURE 1-6. FN ORGANIZATION

*NOTE: FN has drafted a new organization plan, which is currently under review by OR.

FIGURE 1-7. FERMCO ORGANIZATION

accountability. The change in site mission, transition in contract structure from M&O to ERMCO, change in contractor from WEMCO to FERMCO, transformation from a line management structure to a matrix organization, and the reorganization of the OR to FN oversight function have each had an impact on the site.

SECTION 2.0

SUMMARY OF ENVIRONMENTAL MANAGEMENT ASSESSMENT RESULTS

2.0

SUMMARY OF ENVIRONMENTAL MANAGEMENT ASSESSMENT RESULTS

This section of the report summarizes the results and conclusions of the Office of Environmental Audit's (EH-24's) Environmental Management Assessment of the Fernald Environmental Management Project (FEMP), which took place from March 15 through April 1, 1993.

During the assessment, 20 findings were identified. Fourteen in the management systems area and six in the environmental radiation and quality assurance program areas. The number of findings by discipline are graphically depicted in Figure 2-1 and finding titles are shown in Table 2-1.

At FEMP, FERMCO is entering an ever-changing situation that has undergone significant operational and managerial transformations over the last 5 years. Transition activities have created an atmosphere in which the FERMCO teaming partners must now develop a shared understanding of the issues and opportunities inherent in this atmosphere in order to meet the goals established by DOE. While these changes, to date, have brought about problems, they have also ushered in a new approach to managing closure and restoration of many other DOE sites. Environmental restoration activities at FEMP will continue to undergo scrutiny by governmental organizations at the Federal, state, and local levels, public interest groups, and the general public. While the issues raised in this assessment require examination and action, it is apparent that both FN and FERMCO have begun to take steps to address many issues identified by the Assessment Team.

The overall conclusion of the Assessment Team is that FERMCO has made good progress in developing policies, programs, plans, and procedures since assuming responsibility for FEMP in December 1992. In general, the team found that FN and the FERMCO teaming partners have experienced and dedicated individuals and managers who appear capable and committed to completing the environmental restoration tasks at the site, however roles, responsibilities, and authorities of FN and FERMCO must be clearly communicated and understood by personnel charged with the restoration mission of FEMP. Further, adequate staff with skills necessary to perform restoration activities must be developed or obtained to ensure that both FN and FERMCO can perform efficient cost effective restoration of FEMP.

2.1

FINDINGS SUMMARY

The following paragraphs briefly describe the findings in the management systems areas and technical disciplines included in the FEMP Environmental Management Assessment.

Organizational Structure

Two findings were identified in this portion of the assessment addressing the roles, responsibilities, and accountability of FN personnel under the Environmental Restoration Management Contractor (ERMC) agreement, and the lack of clearly defined roles, responsibilities, and accountability for certain FERMCO functions with important impacts on environmental performance. Efforts by DOE to clarify roles, responsibilities, and accountability of a DOE field office in the ERMC arrangement continue and need resolution to ensure effective FN and FERMCO interaction. Efforts by FERMCO to communicate changes in individuals' responsibilities have not extended throughout the organization.

- OS = Organizational Structure
- EC = Environmental Commitment
- EP = Environmental Protection Programs
- FP = Formality of Environmental Programs
- IC = Internal and External Communication
- SR = Staff Resources, Training, and Development
- PE = Program Evaluation, Reporting, and Corrective Action
- RM = Environmental Planning and Risk Management
- RAD = Radiation
- QA = Quality Assurance

FIGURE 2-1. TOTAL FINDINGS BY DISCIPLINE

TABLE 2-1

ENVIRONMENTAL ASSESSMENT TEAM FINDINGS

Finding Number	Title of Finding	Page
Organizational Structure (OS)		
OS/F-1	Roles of FN Staff Under An Environmental Restoration Management Contractor Agreement	3-4
OS/F-2	Roles of FERMCO Personnel	3-6
Environmental Commitment (EC)		
EC/F-1	Environmental Commitment	3-9
Environmental Protection Programs (EP)		
EP/F-1	Environmental Protection Programs and Plans	3-17
EP/F-2	Environmental Program Implementation	3-20
Environmental Protection Programs (EP) Radiation (RAD)		
RAD/F-1	Radiological Environmental Surveillance Program	3-22
RAD/F-2	Radiological Effluent Monitoring Program	3-24
RAD/F-3	Radioactive Waste Management Planning	3-26
RAD/F-4	Site Radiological Environmental Restoration Program	3-28
RAD/F-5	Environmental ALARA	3-31
Environmental Protection Programs (EP) Quality Assurance (QA)		
QA/F-1	Project-Specific Plans and Procedures	3-32
Formality of Environmental Programs (FP)		
FP/F-1	Environmental Compliance Integration	3-37
FP/F-2	Formality of Environmental Policies, Programs, Plans, and Procedures	3-40
Internal and External Communication (IC)		
IC/F-1	Formal Channels for Lateral Communication	3-45

TABLE 2-1

ENVIRONMENTAL ASSESSMENT TEAM FINDINGS (continued)

Finding Number	Title of Finding	Page
Staff Resources, Training, and Development (SR)		
SR/F-1	Environmental Staffing Levels	3-51
SR/F-2	Strategic Environmental Staffing Plan	3-53
SR/F-3	Environmental Training Resources	3-54
SR/F-4	Environmental Responsibilities in Performance Evaluations and Position Descriptions	3-58
Program Evaluation, Reporting, and Corrective Action (PE)		
	No findings identified	
Environmental Planning and Risk Management (RM)		
RM/F-1	Environmental Planning	3-64
RM/F-2	Risk Identification and Management System	3-66

FERMCO realizes the need to communicate the responsibilities to all teaming partners' employees and is developing the means to ensure that all employees understand their responsibilities.

Environmental Commitment

One finding was identified in this portion of the assessment addressing the need for FERMCO to develop and demonstrate top management support and direction towards an organizational goal of environmental excellence. FERMCO management realizes the need to address this finding, but stresses that DOE needs to realize that strict applications of DOE's policy may impede cost effective cleanup of FEMP.

Environmental Protection Programs

There were two findings in this portion of the assessment relating to inadequate development of key environmental programs and plans, and inadequate implementation of a waste minimization and pollution prevention plan. FERMCO has not fully developed key environmental protection programs and plans that are necessary to ensure compliance with applicable environmental protection laws and regulations, and DOE Orders. Additionally, FERMCO has not effectively implemented all aspects of the Waste Minimization and Pollution Prevention Awareness Program Plan in accordance with DOE and EPA Guidance.

Six findings were identified during the technical portion of the Environmental Protection Programs assessment. These findings were in the technical disciplines of quality assurance and environmental radiation and support the two findings in the Environmental Protection Programs portion. These findings relate to: consistent development, review and implementation of environmental protection project plans and procedures to ensure quality of results; lack of a documented rationale for the surface water, direct radiation, and drinking water components of the radiological environmental surveillance program; lack of a system to review methods used in estimating radiological releases in the effluent monitoring program; lack of a Waste Management Plan for mixed and low-level radioactive waste; lack of formal programs or procedures to adequately address radiological environmental considerations during planning and execution of site facility decontamination and decommissioning (D&D) and remediation activities; and inadequate application of the ALARA process to current and planned activities at FEMP.

These findings are indicative of the problems associated with transition to an ERM contract arrangement and FERMCO is aware of the need to develop and implement the programs and plans. FERMCO is currently taking a graded-approach to development and implementation of all programs and plans that will result in full development and implementation of all programs and plans required by the ERM contract.

Formality of Environmental Program

Two findings were identified in this portion of the assessment addressing the need to develop formal systems to ensure that new environmental requirements are integrated into policies, programs, plans, and procedures and the need to conduct ongoing environmental restoration activities and conducting systematic reviews of WEMCO's policies and requirements to ensure that consistent plans and procedures can be developed that are applicable to the current environmental restoration mission. FERMCO management

recognizes that several improvement opportunities exist in the formal conduct of environmental operations and sitewide policies and requirements for the conduct of operations are currently being discussed and developed at the senior management level.

Internal and External Communication

One finding was identified in this portion of the assessment addressing lateral communications among FERMCO's CERCLA/RCRA Units (CRUs) and between the CRUs and support organizations. Communications among FERMCO's CRUs and support organizations do not ensure that each organization is aware of the other's environmental activities and that lessons learned are shared. FERMCO acknowledges the need for better communication between CRUs and support organizations and believes that frequent cross-organization meetings will eliminate the need for other forms of lateral communications.

Staff Resources, Training, and Development

There were four findings identified in the Staff Resources, Training, and Development portion of the assessment that address: insufficient staffing levels in certain key environmental areas, lack of a strategic environmental staffing plan, inadequate resources for development of a comprehensive training program during transition, and inadequate incorporation of environmental responsibilities in FERMCO performance appraisals and job descriptions. FERMCO, in general, recognizes the need to address these findings and initiatives are underway to deal with these issues.

Program Evaluation, Reporting, and Corrective Action

There were no findings in this portion of the assessment since both FN and FERMCO are on-schedule for development and implementation of self-assessment programs to assist in the quality improvement process and to achieve the environment, safety, and health (ES&H) self-assessment goals established by DOE.

Environmental Planning and Risk Management

Two findings were identified in this portion of the assessment addressing the lack of a formal system to ensure that environmental protection considerations are included during CRU planning, or to ensure environmental review of site modifications, new technologies, projects, and requisitions for new equipment and implementation of a formal and integrated system to identify, evaluate, and manage environmental risks. The newly created Risk Assessment Section will be able to address risks related to the Remedial Investigation/Feasibility Study (RI/FS) process. However, risks that fall outside the RI/FS process have not been assigned a responsible organization.

The Team identified the following strengths during the conduct of the assessment:

- The Environmental Monitoring Plan (EMP) addresses site surveillance in a comprehensive manner and was judged by the Assessment Team to be one of the best EMPs in the DOE complex. The Radon Monitoring Program, which is designed to monitor releases of radon-22 from the waste pits and storage silos, is unique to the DOE complex and was found to be of high

quality. Radon compliance monitoring activities are routinely complemented by experimental programs designed to gain a better understanding of radon emissions and to meet stringent measurements criteria.

- Since December 1992, substantial progress has been made in the areas of employee training. One especially strong program being implemented is the program for waste facility inspectors which appears to be a model program for ensuring high quality, documented inspections.
- Regulatory tracking and analysis, performed by the Regulatory Policy Department at FERMCO was determined to be comprehensive. Information reviewed by this Department was disseminated to and made readily available for all FERMCO and FN personnel.
- The FEMP Community Relations Program continues to be a model worth emulating DOE-wide. Since the Environmental, Safety and Health Progress Assessment in November 1991, FN and FERMCO are enhancing the program further by assigning, to each CERCLA/RCRA Unit (CRU), a Public Affairs Councilor who works with the CRU director to attain complete public involvement and thorough public understanding of FEMP environmental restoration activities.

2.2 KEY FINDINGS

Key findings were developed from the 20 Environmental Management Assessment findings that are documented in this report. These are findings, or groups of findings related to the same issue, which, in the judgment of the Assessment Team, are essential to understanding the nature and scope of the environmental management deficiencies at FEMP. The key findings identified by the Assessment Team are:

Roles, Responsibilities, and Authorities of an Office of Environmental Restoration and Waste Management (EM) Field Office and an ERMC contractor.

FEMP's mission has changed considerably since uranium processing under a management and operations (M&O) contract was discontinued and DOE transferred management of the site from Defense Programs (DP) to EM. In February 1992, EM established a field office to interface with the prospective ERMC contractor, who became FERMCO in August 1992.

The terms of the ERMC contract are different from traditional M&O contracts, in that FERMCO assumes much of the risk associated with restoration activities at FEMP. With the assignment of this risk, FN recognizes it cannot simply oversee FERMCO's restoration initiatives and activities as would be the case in an M&O relationship, but must have a different set of roles, responsibilities, and authorities than Field Offices which direct the operation of M&O contractors. However, the roles, responsibilities, and authorities of both FN and FERMCO are neither clearly defined, now well established and well communicated.

The lack of clearly defined and well established roles, responsibilities, and authorities has resulted in confusion within FN/FERMCO staffs. Uncertainty as to the degree of autonomy allowed under an ERMC contract has not been fully resolved and FN staff are concerned about the level of accountability for FERMCO initiatives at FEMP.

Staffing and Training

Both FN and FERMCO have shortages of staff with certain environmental skills critical to the FEMP mission. Such staffing shortages, together with a shortage of training resources at FERMCO, may hinder the development and effective implementation of environmental protection programs at FEMP.

Staffing levels at FN are insufficient for it to meet its obligations as a field office. FN currently lacks staff with certain key environmental and contracting skills essential to the development and implementation of programs essential to the mission of FEMP. Such key staff positions include environmental engineers, waste management experts, and contracting and procurement personnel. Although FN is expected to operate as a full field office, currently DOE staffing restrictions limit staff growth to a level substantially below that required of a self-sufficient field office.

The transition in mission from uranium metal production to environmental restoration has resulted in a shortage of staff with certain key environmental skills at FERMCO. Staff shortages exist in the areas of risk assessment, remedial investigations, feasibility studies, geology, and hydrogeology, among others. These shortages, identified through FERMCO internal staffing needs assessments, have only partially been corrected. Staffing issues at FERMCO are complicated by FERMCO's contractual requirement to retain all WEMCO staff, some of whose skills may be better suited to uranium metal production than environmental restoration. The existing union contract further complicates staffing issues, as the contract includes work rule requirements that may be better suited to an M&O operation than to an ERMCO operation.

The shortage of staff with key skills at FERMCO, together with other complicating staffing issues, suggests the need for a strategic staffing plan to formally address staffing issues and guide staffing decisions. The lack of such a plan at FERMCO raises questions regarding the adequacy of FERMCO's strategy for meeting the staffing requirements of FEMP's new environmental mission.

FERMCO inherited a training program with a number of significant deficiencies, including incompletely trained staff, decentralized training coordination and recordkeeping, and inadequate training facilities. Efforts to meet compliance training requirements are hindered by several factors, including a substantial training backlog, inadequate funding, and literacy issues for some staff. Although FERMCO has made substantial progress in overhauling the training program and establishing new professional development training programs, training resources are strained and may not be sufficient to accomplish training objectives in a timely manner. The effort required to meet compliance training requirements, for example, has slowed development of a training plan, training procedures, and technical training initiatives. Given the importance of training to the overall environmental mission of the site, the shortage of training resources raises concern for the timely implementation of important training programs.

2.3

CAUSAL FACTORS SUMMARY

In an effort to understand why a finding occurred, a systematic approach was initiated to perform a "probable root cause" analysis. This is a two-step process which first identifies the likely underlying reasons believed to contribute to each specific finding. This process is completed by asking a series of "why" questions to determine the probable cause(s) for the findings. The "causal factors" and related rationale(s) identified appear in the discussion section of the finding.

The next step is for the Program Secretarial Official to identify the "root cause(s)" for the findings. A root cause is the most basic fundamental cause which, if corrected, will prevent recurrence of the issues of concern.

The probable causal factors considered by the Assessment Team are defined in Appendix F of this report. The team identified 11 casual factors it believes contributed to occurrence of the findings. Of these probable causal factors 8 occurred in the Management Systems findings of which 3 have the greatest frequency (see Figure 2-2 and Table 2-2) are discussed below:

Change - appeared as a causal factor in 50 percent of the management system findings and appeared in findings that reflect issues related to transition from uranium production to environmental restoration operations and the associated problems with transformation from an M&O contract to an ERM contract (see Findings OS/F-1, OS/F-2, EP/F-1, FP/F-2, IC/F-1, SR/F-1, and SR/F-3.)

Procedures - appeared as a causal factor in 43 percent of the management system findings and is the result of instances where observed deficiencies were apparently related to nonexistent, inadequate, or incomplete procedures (see Findings EP/F-1, FP/F-1, FP/F-2, SR/F-2, SR/F-4, and RM/F-1.)

Policy Implementation - appeared as a causal factor in 36 percent of the management system findings and was evident in findings where organizations did not fully implement established DOE policy, Orders, or requirements (see Findings EC/F-1, EP/F-1, EP/F-2, and RM/F-2.)

In addition, in the two technical disciplines of Quality Assurance and Environmental Radiation, policy implementation was determined to be a causal factor in almost all findings. This situation exists because many of the program requirements of these two Technical Disciplines are not being fully implemented in accordance with DOE Orders. However, efforts are underway to fully implement those programs required by the ERM contract.

The following section presents the 20 findings, by discipline, identified during this assessment. The probable causal factors that appeared to contribute to the findings are also discussed in more detail.

**FIGURE 2-2. SUMMARY OF PROBABLE CAUSAL FACTORS
FOR MANAGEMENT SYSTEM FINDINGS**

TABLE 2-2

SUMMARY OF PROBABLE CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY ASSESSMENT FINDING

FINDING NUMBER	CAUSAL AND CONTRIBUTING FACTORS													
	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control	Contributing Factor Appraisals/Audits/Reviews
Organizational Structure (OS)														
OS/F-1	✓					✓	✓							
OS/F-2	✓						✓		✓					
Environmental Commitment (EC)														
EC/F-1		✓												
Environmental Protection Programs (EP)														
EP/F-1		✓					✓							
EP/F-2		✓	✓			✓								
Environmental Protection Program (EP) Radiation (RAD)														
RAD/F-1		✓										✓		
RAD/F-2													✓	
RAD/F-3		✓												
RAD/F-4		✓												✓
RAD/F-5		✓						✓						✓
Environmental Protection Program (EP) Quality Assurance (QA)														
QA/F-1		✓						✓						

TABLE 2-2

SUMMARY OF PROBABLE CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY ASSESSMENT FINDING

CAUSAL AND CONTRIBUTING FACTORS														
FINDING NUMBER	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control	Contributing Factor Appraisals/Audits/Reviews
	Formality of Environmental Programs (FP)													
FP/F-1			✓					✓						✓
FP/F-2		✓	✓				✓							
Internal and External Communication (IC)														
IC/F-1							✓		✓					
Staff Resources, Training, and Development (SR)														
SR/F-1							✓				✓			
SR/F-2	✓		✓											
SR/F-3							✓				✓			
SR/F-4	✓		✓											
Program Evaluation, Reporting, and Corrective Action														
No findings identified														
Environmental Planning and Risk Management (RM)														
RM/F-1			✓					✓						
RM/F-2		✓												
Management Systems	4	5	6	0	0	2	7	2	2	0	2	0	0	0
Technical Assessment Disciplines	0	5	0	0	0	0	0	2	0	0	0	1	1	3
Totals	4	10	6	0	0	2	7	4	2	0	2	1	1	3

SECTION 3.0

ENVIRONMENTAL OVERVIEWS AND ASSESSMENT FINDINGS

3.0

ENVIRONMENTAL OVERVIEWS AND ASSESSMENT FINDINGS

The assessment findings presented in the following pages are not necessarily in order of importance. They are grouped by relevant management system areas as listed in the draft Protocols for Conducting Environmental Management Assessments (January 1993), and are preceded by an overview. The overview describes the approach taken by the management systems specialist in conducting that portion of the assessment, FEMP programs and activities related to the relevant management system areas, characterization of the strengths and weaknesses of FEMP activities, and a brief summary of the findings. Each finding is organized into three sections: the performance objective, the finding statement, and a discussion. The performance objective specifies the particular practices or standards against which the finding is being evaluated. The discussion details the facts and observations supporting the finding and concludes with a summary of the probable causal factor(s) for the finding.

Within each finding, references to other findings, interviews, and documents are presented parenthetically. An example of a referenced finding is: "(see Finding OS/F-1)," in which "OS" stands for "Organizational Structure," and "F-1" is the finding number. Other abbreviations used to identify findings are as follows:

OS	Organizational Structure
EC	Environmental Commitment
EP	Environmental Protection Programs
FP	Formality of Environmental Programs
IC	Internal and External Communications
SR	Staff Resources, Training, and Development
PE	Program Evaluation, Reporting, and Corrective Action
RM	Environmental Planning and Risk Management
RAD	Environmental Radiation
QA	Quality Assurance

Several of the specialists on the assessment team covered more than one of the management systems areas listed above. As such, interviews and document reviews were often completed with multiple areas of responsibility in mind. In order to reduce unnecessary duplication when referencing interviews and documents, they are identified as follows. An example of a referenced interview is (I-A-1) where "I" signifies an interview, "A" represents an individual assessment team member, and "1" is the specifically assigned sequential interview number. An example of a referenced document is (D-A-1) where "D" signifies a document, "A" represents an individual assessment team member, and "1" is the specifically assigned sequential interview number. The list of documents reviewed and interviews conducted are presented in Appendices D and E, respectively. Additionally, apparent causal factors are discussed for each finding and are defined in Appendix F.

3.1 ORGANIZATIONAL STRUCTURE

3.1.1 Overview

The Organizational Structure portion of the Environmental Management Assessment was reviewed to assess the characteristics of the organization such as the definition of functional roles, responsibilities, and authorities; the reporting levels and relationships of environmental staff; layers of management and span of control; and support systems such as management reporting requirements and performance measurement and incentives. FEMP's organizational structure was defined as a system with major components consisting of the Office of Eastern Area Programs - FEMP Division (EM-424) at Headquarters (HQ); FN; and the Environmental Restoration Management Contractor for FEMP, FERMCO. The analysis included a review of the Office of Environmental Restoration and Waste Management (EM), OR, FN, and FERMCO structures, and the relationships among those entities, as well as oversight, support, and line management activities.

In particular, the assessment was designed to consider the following issues: clarity in lines of authority and responsibility; consistency with goals of the larger organizational structure; level of authority of environmental management responsibilities; span of control; definitions/understanding of roles, responsibilities, and accountabilities; functional reporting relationships; management reporting relationships; and line responsibility.

The approach used in this assessment was to review DOE Orders, Secretary of Energy Notices (SENs), and background documents received from DOE and FERMCO prior to arrival onsite. Onsite activities included a review of documentation pertaining to organization structure, and interviews with FN and FERMCO senior management and staffs. Documents reviewed included organizational agreements, organizational charts, program plans and procedures, and guidance regarding roles, responsibilities, and accountability.

Interviews were conducted with EM in Washington, D.C., and Germantown, Maryland, with OR via telephone, and with FN managers and staff, FERMCO's senior managers, selected (CERCLA/RCRA Unit) CRU Directors and CRU Environmental Managers, and selected staff at FEMP.

FEMP has undergone numerous transitions in recent years and even in recent months. For approximately forty years, the FEMP site was the location of the Feed Materials Production Center, a uranium metals production facility. Production of uranium metals was suspended at Fernald in 1989. In October 1990, DOE transferred management responsibility for the site from Defense Programs (DP) to EM, in accordance with the change in mission from production to site environmental restoration. In August 1991, the site was renamed the Fernald Environmental Management Project (FEMP). In February 1992, the Secretary of Energy designated FN an independent Field Office. The original target staff size for the new Field Office was 213 people in fiscal year (FY) 1994, with interim steps of 69 in FY 1992 and 98 in FY 1993. However, a temporary hiring freeze held FN's actual staff size to 57 in FY 1992. During the assessment, the new Secretary capped FN's personnel level at 80 employees for the remainder of this fiscal year. This freeze could remain in effect through FY 1994 as well. The impact of these transitions

has been exacerbated since August 1992, when FN began rotating Acting Managers every 90 days.

Significant changes have also been occurring in the FN/contractor relationship. In December 1992 a new contractor, FERMCO took over management of the restoration project. FERMCO brought in a new senior management team but retained the vast majority of the previous contractor's personnel. The senior management team comprised employees from the FERMCO "teaming partners": Fluor Daniel, Jacobs Engineering Group, Halliburton NUS Corporation, and Nuclear Fuel Services.

A second change critical to the roles of employees in both the FN and contractor organizations was the fact that the new contract was of a different design than either had experienced before. Under the Environmental Restoration Management Contractor (ERMC) agreement, FERMCO must apply to FN for reimbursement of the costs it incurs, and FN must identify base costs that were avoidable and therefore non-reimbursable. The contract makes available to FERMCO an award fee up to 70 percent of the total contract amount, based on the completion of milestones and on general contract performance.

These transitions have caused FN and the contractor management significant challenges as they have endeavored to make employees aware of the changes in their roles, responsibilities, and accountability. Confusion remains within both FN and FERMCO staffs. FN employees are uncertain as to the degree of autonomy that should be allowed the contractor under an ERMC agreement. Personal accountability concerning compliance violations from the contractor's activities, will also need to be clarified. Similarly, FERMCO's staff needs clear definition of how the new ERMC arrangement affects their work. There is not a clear understanding of how the liability concerns and financial incentives built into FERMCO's cost-plus-award-fee contract require extra care in remaining within budgets and meeting milestones and performance criteria. The Assessment Team identified several cases where the functions of organizations within FERMCO have not been clearly defined or distinguished.

Two findings were identified in the Organizational Structure portion of the Environmental Management Assessment, both pertaining to the clarity of roles, responsibilities, and accountability of FN and FERMCO.

3.1.2 Findings

OS/F-1: Roles of FN Staff Under an Environmental Restoration Management Contractor Agreement

Performance Objective: Best management practices suggest that roles, responsibilities, and accountability be well defined, clearly communicated, and understood by all personnel whose activities may impact environmental performance.

Finding: The roles, responsibilities, and accountability of FN personnel under the agreement with the Environmental Restoration Management Contractor (ERMC) have not been well defined or clearly communicated.

Discussion: Senior management within the Office of Environmental Restoration and Waste Management (EM) and FN present a relatively consistent vision of how roles and responsibilities for FN personnel differ between an ERMC and a management and operations (M&O) contractor (I-C-1, I-C-22, and I-C-27). According to this vision, FN staff's role under an ERMC agreement does not include providing the contractor with "detailed technical or programmatic guidance" about how site remediation efforts should be conducted (D-C-6). Instead, FN staff are to review the contractor's proposed initiatives for technical reasoning and potential public impact, and then either approve or disapprove the proposals.

A consistent vision is also held as to how disagreements between FN personnel and FERMCO should be settled. In such cases, the parties from the two organizations should pass the issue up the management levels on both sides until a consensus is reached. In the event that agreement cannot be achieved, the FN Manager has the final decision.

Roles and responsibilities under an ERMC agreement, however, have not been well defined or clearly communicated to FN personnel. Each of the three 90-day Acting Managers has shared his philosophy verbally about the ERMC contract. Formal guidance on roles and responsibilities has been limited to one briefing session in December 1992, led by the Deputy Assistant Secretary for EM-40 (I-C-27) and another in February 1993, led by a former FN Acting Manager (now returned to his position as Director of Office of Environmental Restoration and Waste Management (EM-42) (I-C-22). The current FN Manager has held all-hands meetings and several one-on-one discussions with FN staff to provide guidance on roles and responsibilities under the current ERMC arrangement. Presentations pertaining to the ERMC's accountability for avoidable costs were also held with FN staff.

Confusion remains as to the proper balance between FN's functions as a contract oversight organization and as a partner of the ERMC (I-C-1, 5, 10, 11, 12, 19, 22, 24, 25, 26, and 27). In particular, there is a question as to the degree of autonomy that should be allowed FERMCO. This question has not been fully resolved by the Office of Environmental Restoration and Waste Management (EM) (I-C-22 and I-C-27). FN staff concerns are compounded by questions about accountability. Specifically, they are unsure whether the change in approach to providing guidance has been accompanied by a change in their level of direct accountability for the results of contractor initiatives at FEMP. If FN staff continue to see themselves personally responsible for compliance violations at FEMP,

they will find it difficult not to maintain a level of oversight similar to that for an M&O agreement (I-C-26).

In response to this concern, a training session for FN staff, led by a senior official within the EM-40 organization, is expected to occur next month (I-C-1, I-C-22, and I-C-27). The fact remains, however, that EM has not fully resolved how much autonomy the ERM C should be allowed. This calls into question whether the training session will reduce FN staff's confusion.

The probable causal factors for this finding are training, in that FN staff have received insufficient guidance as to how the change in their roles and responsibilities should be manifested; change, in that the ERM C relationship is new to DOE and is being implemented at a site where every 90 days a different Acting Manager is responsible for supervising the staff's implementation of that relationship; and policy, in that EM has not established a firm policy on the degree of autonomy that should be allowed the ERM C.

OS/F-2: Roles of FERMCO Personnel

Performance Objective: Best management practices suggest that roles, responsibilities, and accountability are well defined, clearly communicated, and understood by all personnel whose activities may impact environmental performance.

Finding: FERMCO has not clearly defined roles, responsibilities, and accountability for certain functions with important impacts on environmental performance. Efforts by FERMCO to communicate changes in individuals' responsibilities have not extended effectively throughout the organization.

Discussion: The Assessment Team identified several cases where the functions of organizations within FERMCO have not been clearly defined or distinguished. These include the following:

- The distinction between newly divided functions of the Quality Assurance Division and the Remediation Support Operation's (RSO's) Quality Control organization has not been clearly established. Disagreements exist within the two groups as to who has responsibility for activities such as ensuring procurement quality and offsite laboratory quality (I-H-6, 8, 9, 10, 15, 16, and 17). FERMCO is currently addressing this issue through the revision of a Quality Assurance Program Description.
- RSO does not have an organizational plan that assigns roles and responsibilities to its various departments. This has led to some confusion over departmental functions. For example, the Assessment Team interviewed three individuals within RSO, each of whom thought it was his responsibility to plan for the storage of low-level radioactive waste (I-K-3, I-K-14, and I-K-16).
- The roles and responsibilities for the investigation and remediation of soil and groundwater at the site are not clearly defined. CRU5 understands that its responsibility is to characterize the deep aquifer and to manage the long-term remediation of soils and groundwater, whereas CRUs 1 through 4 are responsible for the characterization of the CRU hydrogeology and nature and extent of contamination. The Remedial Investigations performed by CRUs 1 through 4 thus far, however, have not characterized the hydrogeology or nature and extent of contamination in their CRUs, deferring that responsibility to CRU5 (D-L-1 and D-L-3; I-L-10 and I-L-16).

FERMCO acknowledges that a large portion of the staff that it retained from the previous contractor does not yet understand how responsibilities have changed under an Environmental Restoration Management Contractor (ERMC) agreement. FERMCO has liability issues and financial incentives that the prior contractor did not have. FERMCO must apply to FN for reimbursement of previously incurred costs, and FERMCO will not be reimbursed for avoidable costs. The contract provides for a substantial award fee (up to 70 percent of the total fee available for the contract) to be determined by DOE based on the completion of milestones and on general contract performance. For individual employees, the liability and incentive issues mean changes in how they perform their jobs. FERMCO often describes this as a change from a customer to a client relationship with

DOE. In order to stay within the bounds of allowable costs, FERMCO personnel must carefully monitor the scope of work called for and the budget provided by the client. In order to maximize the award fee, they must see that FERMCO meets the milestones and other performance criteria required.

FERMCO's senior management has been reinforcing and continues to reinforce to direct reports that roles, responsibilities, and accountability are different under an ERM agreement than under a management and operations (M&O) contract. In addition, FERMCO cites two formal mechanisms designed to address the confusion in some employees' minds. An all-employees briefing will be led by FERMCO's president later in the month. In this session, he will reinforce the message about staff roles and responsibilities under the new agreement with DOE. In addition, a 3-day training session is planned for next month for all supervisors and managers at FERMCO (see Finding SR/F-3). Among other things, attendees will be trained in the changes FERMCO expects in the way supervisors, managers, and their staffs perform their functions under an ERM agreement.

The ERM concedes, however, that these two mechanisms are unlikely to change the corporate culture developed under customer-oriented, M&O contracts over a number of years. An additional opportunity to reinforce the change in the way jobs should be performed is through a change in the performance appraisal system. The procedure for evaluating individuals' performance, however, has not been clearly defined by FERMCO (see Finding SR/F-4). An effort is underway to formalize the performance appraisal system, and FERMCO expects to have it in place in the third quarter of calendar year 1993 (I-B-7).

The probable causal factors for this finding are design, in that FERMCO has not clearly defined and distinguished the functions of some of its organizations; change, in that FERMCO is attempting to alter the way in which many employees have performed their functions under a previous employer for several years; and policy, in that FERMCO has not fully implemented its new approach to performance appraisal.

3.2 ENVIRONMENTAL COMMITMENT

3.2.1 Overview

The Environmental Commitment portion of the Environmental Management Assessment was reviewed to assess the organization's overall awareness of relevant environmental issues, and its commitment to environmental excellence. More specifically, the review included an assessment of FERMCO's Environmental Protection Policy, senior management's support of and involvement in environmental initiatives, the extent to which all employees take personal responsibility for the potential impacts of their activities and decisions, and FERMCO's overall attitude towards environmental excellence.

The general approach used in the assessment was to review DOE Orders, Secretary of Energy Notices (SENs), and background documents from FERMCO prior to arrival onsite. Onsite activities included a review of documentation pertaining to organizational structure and interviews with knowledgeable and responsible FERMCO personnel. Documents included FERMCO's Comprehensive Environmental Occupational Safety and Health Program manual, policies and procedures, FERMCO's site mission statement, training documentation, and the Waste Minimization and Pollution Prevention Awareness Plan. Interviews were conducted with Executive Vice President of Environmental Programs, Vice President of Environmental Safety and Health, and numerous section and line management personnel and the December 1, 1992 "all employee" meeting video was shown. The assessment also relied on input from all Assessment Team Specialists.

FERMCO, as an organization, has not achieved a culture of environmental excellence. Although the organization has placed an emphasis on health and safety excellence, it has not emphasized such excellence in environmental protection activities. FERMCO has stressed its commitment to worker and public safety by including safety as a fundamental theme in the site mission statement, employee training, and onsite meetings. Site personnel indicated that FERMCO's main concern and focus during remedial activities are ensuring the safety and health of site personnel and the public. A similar commitment to environmental protection excellence has not been achieved.

While FERMCO has widely disseminated its overall mission statement, which is to provide "safe, early, and least-cost completion of cleanup of the Fernald site in compliance with all regulations, DOE Orders, and commitments," it has not clearly communicated its overall environmental policy. Furthermore, while environmental awareness at FERMCO is high and personnel interviewed are dedicated to achieving the site's mission, many perceive that management's environmental objectives do not go beyond strict compliance with environmental requirements. As a result, an impression may have been created that management has not mandated a commitment to environmental excellence.

There was one finding in the Environmental Commitment portion of the Environmental Management Assessment that FERMCO has not yet developed and demonstrated top management support and direction towards an organizational goal of environmental excellence.

3.2.2 Finding

EC/F-1: Environmental Excellence

Performance Objective: The Secretary of Energy's Memorandum Guidance on Environment, Safety, and Health (ES&H) Self-Assessment, July 1990, emphasizes the initiative "of setting a new course of accountability and excellence in the areas of ES&H at DOE." Further, the first point of the ten-point initiative resets priorities to weigh environment, safety, and health more heavily than production. Implicit within this initiative is the goal of "making permanent the desired culture change throughout the line organizations within the Department and its contractors, and help contractor and DOE staff develop a more proactive approach to ES&H management."

DOE 5400.1, Chapter III, "Environmental Protection Program Plans," Section 4.c. states that "A Pollution Prevention Awareness Program shall be specifically identified in his or her [Head of Field Organization] environmental protection statement" In addition, "All mission statements and project plans shall recognize a requirement for pollution prevention, where appropriate." The Head of OR delegated primary responsibility for implementation of the Waste Minimization and Pollution Prevention Awareness Program to WEMCO.

Finding: FERMCO has not yet developed a formal approach towards an organizational goal of environmental excellence for environmental protection activities.

Discussion: The Secretary of Energy has stated that excellence in environmental protection activities is one of the top priorities for all DOE facilities and operations. To assess environmental excellence, government agencies and corporations use the following criteria to benchmark the organization's commitment:

- The willingness of an organization to allocate resources to ensure, at a minimum, full compliance with applicable requirements;
- A basic level of understanding of environmental requirements by all individuals with line responsibility for environmental performance, as well as other key managers and employees whose activities and decisions may have environmental impact;
- The existence of an assurance function that provides senior management with information on the status of environmental performance;
- A high level of awareness at all levels of the organization that environmental performance is intrinsically important, beyond the need to minimally comply with laws and regulations;
- A willingness of all employees to take personal responsibility for environmental performance; and
- Top management commitment and support of environmental initiatives, including a level of personal involvement that is visible to the organization and clearly demonstrates its commitment.

The Environmental Restoration Management Contractor (ERMC) contract requires FERMCO to operate site remediation activities in compliance with Federal, state and local regulations and applicable DOE Orders. While FERMCO is addressing basic environmental compliance and contractual performance requirements, a clear commitment of pursuing environmental excellence is not demonstrated consistently across the FERMCO organization. Selected examples are discussed below:

- FERMCO conducted an "all employee" meeting on December 1, 1992 to introduce the new organization. FERMCO emphasized its commitment to health and safety, that employees have the responsibility to identify and report to their supervisors activities that they "feel" are not conducted safely, and that the reason for the new Environmental, Safety, and Health program was to promote higher standards for public and worker health and safety. These statements indicated that FERMCO wanted to reach a level of health and safety excellence. The meeting did not, however, emphasize the need to conduct environmental activities in a manner that exceeds compliance with all applicable regulations; that is, FERMCO stated repeatedly during the meeting that environmental restoration activities will be conducted to comply with regulations and DOE Orders and never indicated its intention to go beyond these requirements to strive for achieving excellence in environmental protection activities (D-D-9).
- FERMCO lacks a documented waste minimization policy and lacks recognition of Pollution Prevention Awareness that is broadly communicated to all FERMCO employees (D-D-2; I-D-2).
- In 1989, the site contractor developed an ALARA Committee to implement occupational ALARA. In 1990, the site contractor was directed to include environmental ALARA as part of the Committee's charter. The ALARA Committee has not addressed environmental ALARA and neither FN nor FERMCO has fully applied the ALARA process to current and planned environmental activities at FEMP (see Finding RAD/F-5).
- FERMCO has not effectively supported the Waste Minimization and Pollution Prevention Awareness Program Plan by addressing waste minimization efforts with a sufficient number of adequately trained personnel nor have CRUs actively participated in the waste minimization program (see Finding EP/F-2).

The recent change to an ERMCO contract has required a shift in emphasis to an environmental restoration focus. However, FERMCO has not effectively redefined its staffing, training, and development needs:

- Specific staffing shortages exist at FERMCO. A number of vacancies exist in key environmental positions. These openings include risk assessment, fate and transport modeling, remedial investigation/feasibility study (RI/FS) engineering and report writing, hydrogeology, waste management, and treatability studies. FEMP's ability to hire personnel with certain specific environmental skills has proven difficult (see Finding SR/F-1).

- Managers have voiced concern that some staff may not be fully committed to the environmental restoration mission of the site because staff desire long-term employment while the site mission is to cleanup and shutdown the site as quickly as possible (I-D-12, I-B-7, and I-B-33). While this concern has been recognized throughout the organization, FERMCO has not addressed increasing the staff's level of commitment by professional development training and/or career counseling to prepare staff for careers after the mission is complete. Professional training provided to site personnel, as stated in the professional development plan, is for the enhancement of "... skills, knowledge, and attitudes of the FERMCO workforce" and not for ensuring long-term employment after environmental restoration activities are completed (D-B-8).
- Responsibilities in performance evaluations and position descriptions at FERMCO do not consistently emphasize environmental considerations or environmental performance criteria. No formal guidelines or policies exist to direct staff to include such criteria in performance evaluations (see Finding SR/F-3).
- Section I of the Comprehensive Environmental Occupational Safety and Health Program ES&H Manual describes FERMCO's Safety Philosophy, Safety Principles, Responsibilities for Safety and Health. However, Section I does not include references to FERMCO's position on environmental excellence.

Management lacks an effective mechanism for communicating its environmental goals and expectations to employees that would assist in developing a high level of awareness to strive for environmental protection excellence. For instance:

- The ES&H Manual was distributed to 144 individuals throughout the organization:
 - The Executive Vice President, Environmental Programs, was not on the distribution list (D-D-8);
 - Five individuals on the distribution list were interviewed, and two were unaware of an environmental protection policy (I-D-5 and I-D-10);
 - Eight individuals not on the distribution list were interviewed, and none was aware that FERMCO had an environmental policy nor could they describe FERMCO's position on the environment, other than compliance with regulations and DOE Orders (I-D-1, 2, 3, 4, 8, 12, 13, and 16).
- The environmental protection policy statement is not posted throughout the organization and reinforced through periodic letters, memoranda, or other correspondence to FEMP personnel.

Lack of a formal policy that communicates FERMCO's environmental goals and expectations to employees may create the perception that management's objectives do not go beyond minimum compliance with environmental regulations and, therefore, can result in the impression that there is inadequate emphasis on management's commitment for attaining excellence in environmental protection activities.

The probable causal factor for this finding is policy implementation, in that the S-1 guidance memorandum and DOE Order requirements are not reflected in the FERMCO Environmental Protection Policy and demonstrated in site activities.

3.3 ENVIRONMENTAL PROTECTION PROGRAMS

3.3.1 Overview

The Environmental Protection Programs portion of the Environmental Management Assessment reviewed the extent to which FERMCO has developed and implemented specific environmental programs, plans, and standards. In conjunction with this Environmental Management Assessment, indepth Technical Assessments were conducted of the FEMP Quality Assurance and Environmental Radiation programs. The Technical Assessment was coordinated by quality assurance and environmental radiation specialists who were supported by specialists in the areas of air, surface water, drinking water, waste management, groundwater, soil, sediment, and biota, and inactive waste sites.

Environmental Protection Programs

The Environmental Protection Programs portion of the Environmental Management Assessment evaluated the extent to which FERMCO has developed and implemented specific environmental protection programs, plans, and procedures required by DOE 5400.1, "General Environmental Protection Program"; DOE 5480.4, "Comprehensive Environmental Response, Compensation, and Liability Act Requirements"; and Federal, state, and local environmental protection laws. Environmental programs were reviewed from a programmatic perspective to determine if program components exist and to determine the effectiveness of those programs through a review of program plans, previous audit reports, and corrective action requests (CARs). FN and FERMCO management and staff were interviewed.

The site remediation and restoration activities at FEMP are primarily governed by RCRA and CERCLA. However, other Federal laws (e.g., the Clean Water Act (CWA), the Clean Air Act (CAA), and the Toxic Substances Control Act (TSCA)) and parallel Ohio laws and regulations also impact activities at the site. The requirements of CWA apply to the management of process water, sanitary sewage, boiler blowdown, recovered groundwater, and stormwater runoff at FEMP. The National Emissions Standards for Hazardous Air Pollutants (NESHAP), promulgated under CAA, apply to the control of emissions of radionuclides and asbestos at FEMP. The requirements of RCRA and DOE Orders govern the generation and management of hazardous wastes and mixed wastes at FEMP. Management of polychlorinated biphenyl (PCB) wastes contaminated with radioactive materials is governed by TSCA and DOE Orders. Management of asbestos wastes contaminated with radioactive materials is governed by CAA and DOE Orders. Management of low-level radioactive waste is governed by DOE Orders.

FERMCO's environmental protection plans are managed within three divisions: Environmental Safety and Health, Remediation Support Operation, and Regulatory Programs. Collectively, these divisions address the environmental requirements applicable to FEMP. However, no single division has been designated to provide oversight to ensure that these programs are properly integrated and consistently implemented.

Two findings were identified in the Environmental Protection Programs portion of the assessment. The first related to incomplete development of plans and programs to ensure compliance with selected environmental protection standards. The second concerned the

lack of implementation of the Waste Minimization and Pollution Prevention Awareness Program Plan.

Quality Assurance

The Quality Assurance portion of the Technical Assessment evaluated the site's adherence to the requirements of DOE 5400.1; DOE 5700.6C, "Quality Assurance"; Federal and state laws and regulations; Executive Orders; other DOE Orders and Directives; and accepted industry standards. The review included an assessment of the organization and structure of quality assurance programs in general, and the environmental protection technical areas discussed above.

The Quality Assurance Technical Specialist, with assistance from the Support Specialists, conducted interviews and reviewed the Office of Environmental Restoration and Waste Management (EM), FN, and FERMCO documents to evaluate the adequacy of the quality assurance management systems and environmental activities in the field. In conducting the Technical Assessment, the Quality Assurance Technical Specialist developed issues at the project plan and procedures level addressing the effectiveness of environmental work processes from a programmatic standpoint. Support Specialists looked at implementation of environmental activities at the project plan and procedural level to develop an understanding of both historic activities and current operations related to quality assurance issues.

In addition, environmental management issues such as program formality, functional responsibilities, and interfaces were evaluated with respect to quality assurance programs as required by DOE 5700.6C. Issues identified with respect to these programs were incorporated into the discussion in the Environmental Management findings.

At FEMP, the quality assurance program is an integral part of the sitewide Quality Assurance Program. The FN Quality Assurance Branch is responsible for quality assurance oversight of the contractor, FERMCO. The management of the FERMCO quality assurance program is the responsibility of the Quality Assurance Division. The Director of Quality Assurance reports to the Office of the President. Responsibility for day-to-day process level quality control activities is handled by the Quality Control Department within the Remediation Support Operation Division. Day-to-day quality assurance activities are the responsibility of the Quality Assurance Division. FERMCO uses a matrix structure where quality control staff are assigned to the CERCLA/RCRA Units (CRUs) and operation sections at the site. It is the responsibility of the Quality Assurance Division, through its surveillance and assessment functions, to ensure the effectiveness of the Quality Control Department. Many of the support programs for the quality assurance program, such as document control and records management, are undergoing changes as a result of the change in site management. While many of these changes are in the developmental stage, it is apparent that the intention of these changes is to make these support programs consistent throughout the site.

One finding was identified in the Quality Assurance portion of the Technical Assessment relating to project-specific plans and procedures.

Environmental Radiation

The Environmental Radiation portion of the Technical Assessment included a review of all activities, buildings, and facilities, that involve or potentially involve radiation or radioactive material. FEMP environmental radiation programs for radiological environmental surveillance, radiological effluent monitoring, radioactive and mixed waste management, groundwater monitoring, inactive waste sites, and environmental ALARA were assessed to determine compliance with Federal and state regulations, requirements, and guidelines, DOE Orders, and other DOE guidance documents regarding environmental radiation. Radiation issues were specifically evaluated against DOE 5400.1; DOE 5400.3, "Hazardous and Radioactive Mixed Waste Program"; DOE 5400.5, "Radiation Protection of the Public and the Environment"; DOE N5400.9, "Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance"; DOE 5480.1B, "Environment, Safety, and Health Appraisal Program"; DOE 5480.4; DOE 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting Requirements"; DOE 5700.6C; DOE 5820.2A, "Radioactive Waste Management"; DOE 6430.1A, "General Design Criteria"; and DOE/EH-0173T, "Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance," (DOE/EH-0173T) as well as accepted industry practices and standards of performance.

The assessment entailed interviews with FERMCO and FN personnel, reviews of documentation, and inspections of onsite activities. During their reviews, the Support Specialists developed concerns relating to the adequacy of programs at FEMP to manage site activities. In addition to an assessment of environmental radiation compliance issues, the team evaluated how the required programs were being integrated into the site restoration activities. Specifically, the interest is in how environmental radiation issues were addressed in the decontamination and decommissioning (D&D) and remediation activities of each CRU in order to maintain ALARA from copies or in document for offsite releases and doses.

Implementation of radiological environmental monitoring programs is the responsibility of various organizations within FERMCO, depending on the type of media being sampled. In general, the Technical Assessment Team found that implementation of the air, sediment, and biota monitoring programs met the applicable DOE Orders, Federal and state regulations, and accepted industry practices and standards of performance. In particular, the Radon Monitoring Program designed to monitor releases of radon 222 from the waste pits and storage silos, which is unique to the DOE Complex, was found to be of high quality.

The radiological effluent monitoring programs for process water and air are conducted by those organizations within FERMCO that generate the effluent. The monitoring results are processed by a separate division within FERMCO to ensure that the appropriate reporting is performed.

Management of low-level radioactive and mixed waste at FEMP includes programs for planning, minimization, and characterization. Historically, the site has generated low-level and mixed wastes, of which approximately 200,000 drum equivalents of this waste remains onsite (backlog waste). In the near future, the five CRU Divisions will generate large quantities of low-level waste as a result of remediation activities at FEMP. The Remediation Support Operation Division of FERMCO is responsible for all aspects of waste

management at the site except waste characterization, which is the responsibility of the Environmental Safety and Health Division.

Each CRU has its own management system to conduct the investigation and cleanup of radiologically contaminated areas, and it is supported by specialists from other organizations who are matrixed to the CRU organization as required.

FEMP programs, which were evaluated during this assessment, are required to have integrated the ALARA philosophy in the management of their activities, from the planning stage to the completion of remedial actions. According to DOE 5400.1, the approach that a site takes to integrate the ALARA philosophy must be presented in an Environmental ALARA Program. The Environmental Assessment Team evaluated FEMP's integration of environmental ALARA into the various environmental programs that were included in the review.

Five findings were identified in the Environmental Radiation portion of the assessment relating to the surface water, drinking water, and groundwater portions of the radiological environmental surveillance program; liquid and air effluent monitoring programs, radioactive waste management planning and minimization, inactive waste site management programs, and application of environmental ALARA to all activities at FEMP.

3.3.2 Findings

EP/F-1: Environmental Protection Programs and Plans

Performance Objective: DOE 5400.1, "General Environmental Protection Program," establishes the environmental program requirements for DOE operations necessary to ensure compliance with applicable Federal, state, and local environmental protection laws and regulations, Executive and DOE Orders, and Secretary of Energy Notices (SENs).

Finding: FERMCO has not fully developed key environmental protection programs and plans necessary to ensure compliance with applicable Federal, state, and local environmental protection laws and regulations, Executive and DOE Orders, and SENs.

Discussion: Parts of environmental protection programs and plans are developed independently among three divisions: Environmental Safety and Health, Remediation Support Operation, and Regulatory Program. Collectively, these divisions address the environmental requirements applicable to FERMCO. However, no single division has assumed oversight to ensure that FERMCO has fully developed programs addressing applicable Federal, state, and local environmental protection laws and regulations, Executive and DOE Orders, and SENs.

- **Groundwater Protection Management Program Plan**

WEMCO prepared a Groundwater Protection Management Program Plan in May 1990. The plan was reviewed during 1992, and the review concentrated on identifying organizational changes rather than identifying inaccuracies in the plan and gaps in program implementation. As a result, the plan does not reflect current conditions at FEMP. Strategies for controlling sources of contaminants at the south plume are inaccurate, and the plan does not address all plumes or sources of contaminants:

- The plan may not accurately describe the hydrogeological setting for the site since hydraulic conductivity and transmissivity parameters of the aquifer characteristics were determined using regional data from literature, historical site data based on 1961 pump tests on the production wells, and slug tests (I-M-18). This setting has not been verified using site-specific field pump tests. (The site is currently addressing site-specific hydrogeology through a pump test in the south plume. In addition, an extensive hydrologic investigation is planned for the glacial overburden (D-D-10 and D-D-12; I-D-20).)
- The strategies for controlling sources of contaminants in the plume do not provide adequate coverage to capture the entire south plume. These strategies were based upon the Swift Model, which was prepared using data which had not been validated, data from draft documents, and regional data which may not be representative of site conditions. Hydraulic properties have not been adequately characterized (as discussed above); vadose zone contaminate fate transport has not been modeled; saturated zone contaminate fate transport data was obtained from a report issued in 1989 by

Advanced Sciences Incorporated/IT Corporation (ASI/IT) which contained preliminary, unvalidated data; and colloid chemistry has not been evaluated for the saturated zone. (The data from the Swift Model has been used for development of several risk assessments (I-M-38).) (The site has developed a draft work plan to address the Swift Model calibration issue. The work plan is currently undergoing review and revision, and the following activities are anticipated: sensitivity/uncertainty analysis, capture zone/particle tracking analysis, and recalibration/validation (D-D-11; I-D-20).)

- The Groundwater Protection Management Program Plan did not include strategies for controlling sources of contaminants from the east plume (D-M-5) nor the south field contamination area (I-M-38).

- Waste Management Plan

FEMP generates and manages radioactive, hazardous, mixed, low-level, asbestos, and polychlorinated biphenyl (PCB) wastes. FERMCO's waste management program is implemented by three separate divisions (I-D-13, I-D-14, and I-D-18):

- Environmental Safety and Health conducts generator hazardous waste determination and characterization;
- Regulatory Programs is responsible for RCRA permitting; and
- Remediation Support Operation is responsible for movement, processing, interim placement, and tracking of FEMP's waste streams.

Each division's waste management activities are directly related to and influenced by the other divisions' activities. However, FEMP does not have a comprehensive waste management plan that includes each division's waste management responsibilities and describes the procedures for integrating and implementing the waste management program (see Finding RAD/F-3). Furthermore, FERMCO has not fully implemented its Waste Minimization and Pollution Prevention Awareness Plan (see Finding EP/F-2).

- PCB Management Plan

FEMP currently has forty-eight 55-gallon drums of PCB/radioactive wastes stored onsite which are contaminated with radioactive materials. Various divisions are responsible for managing the PCB program (I-D-13 and I-D-17):

- Regulatory Programs prepares and submits the PCB Annual Report and Semi-Annual Status Report;
- Remediation Support Operation inspects the drums and provides inventory information to Regulatory Programs; and

- Environmental Programs, CRU3, is in the process of developing standard operating procedures (SOPs) for PCB management and is attempting to remove and dispose of the PCB waste.

The site does not have a written management plan that describes the PCB management program and division responsibilities to allow for consistent program oversight and implementation (I-D-13 and I-D-17).

- Radionuclide Air Emissions Program

FERMCO has a Radionuclide Air Emissions Quality Assurance Project Plan (RAEQAPjP), which describes the program for monitoring stacks and vents for radionuclides that are subject to National Emissions Standards for Hazardous Air Pollutants (NESHAP). However, the plan does not describe the program for identifying and characterizing sources, evaluating a source to determine whether it is subject to NESHAP and whether a NESHAP application must be submitted, and whether the source must be monitored (D-D-5; I-D-1 and I-D-8).

- National Pollution Discharge Elimination System (NPDES) Program

FERMCO is revising its NPDES Compliance Plan, dated September 10, 1991, which describes compliance with the site's NPDES permit for eight discharge points. The compliance plan does not address identification of sources, developing permit applications, and obtaining NPDES permits (D-D-6; I-D-8 and I-D-9).

The probable causal factors for this finding are change, in that FERMCO is in the process of changing Division responsibilities; and policy implementation, in that all environmental protection plan requirements have not been implemented.

EP/F-2: Environmental Program Implementation

Performance Objective: DOE 5400.1, Chapter III, "Environmental Protection Program Plans," states that "each Head of Field Organization shall prepare a separate plan of sufficient scope and detail to reflect program significance, as appropriate, for each of the following activities."

Section 4.b. requires development of "a Waste Minimization Program that will contain goals for minimizing the volume and toxicity of all wastes that are generated, with annual reductions if programmatic requirements allow. The proposed methods of treatment, storage, and disposal that accomplish waste minimization that are technically and economically practicable shall be reported as appropriate."

Furthermore, Section 4.c. requires A Pollution Prevention Awareness Program that shall be specifically identified in his or her [Head of Field Organization] environmental protection statement.

Finding: FERMCO has not effectively implemented all aspects of the Waste Minimization and Pollution Prevention Awareness Program plan.

Discussion: OR delegated primary responsibility for implementation of the Waste Minimization and Pollution Prevention Awareness Program at FEMP to WEMCO. On December 1, 1992, FERMCO assumed full responsibility for FEMP environmental activities.

WEMCO combined the Waste Minimization Program and Pollution Prevention Awareness Program into a single plan, which was issued on April 30, 1991 (D-D-4). The Waste Minimization and Pollution Prevention Awareness Program Plan, however, focuses on Waste Minimization but lacks most aspects of Pollution Prevention, with the exception of identification of source reduction opportunities (I-D-2 and D-D-4).

WEMCO updated the Waste Minimization and Pollution Prevention Awareness Program Plan on July 30, 1992, to include an additional set of goals (D-D-1). The update assigned responsibility to specific organizational units for completion of these goals along with scheduled completion dates. In addition, these goals were entered into the WEMCO Commitment Tracking System. FERMCO, however, has not met many of the goals committed to in WEMCO's Waste Minimization and Pollution Prevention Awareness Program Plan Update (July 1992) (D-D-1; I-K-21). These goals may not have been met for the following reasons:

- The annual review of the plan did not include an evaluation of the effectiveness of the Waste Minimization and Pollution Prevention Awareness Program plan (I-D-2). However, additional waste minimization opportunities were identified.
- The Waste Minimization Program Coordinator and Waste Minimization team members lack formal training on waste minimization implementation techniques (I-D-2).
- There is only one full-time employee assigned to the Waste Minimization Program and the current staffing level request is eight employees. (The

Waste Minimization Coordinator is matrixed to the Technology Group and will be leaving the program in June 1993. However, FERMCO has not identified a replacement to fill this position (I-K-21).)

- Only one of five CRUs attends the biweekly Waste Minimization meetings (I-K-21).

FERMCO has organized a Waste Minimization team that meets biweekly to evaluate waste minimization opportunities and progress. In addition, FERMCO has continued to promote its Waste Minimization and Pollution Prevention Awareness Program by publishing waste minimization activities, achievements, and concepts in site newsletters and on a cafeteria bulletin board, and these activities have increased employee awareness of Waste Minimization and Pollution Prevention. Waste Minimization and Pollution Prevention Awareness Program methodologies, however, have not been completely integrated into the site remediation activities. For example:

- There is no formal policy which outlines the preferred waste management hierarchy, and as a result, middle and lower FERMCO management are unclear whether offsite disposal or onsite decontamination and release is the preferred option for low-level radioactive waste management (I-K-10, 11, 14, and 25).
- Aspects of the waste minimization program have not been formally integrated into future projects that will generate waste (I-K-2, I-K-4, and I-K-21), and FERMCO lacks a mechanism to evaluate the technical and economic feasibility of waste minimization opportunities, either for specific projects or multiple projects generating similar waste (I-K-21).

The probable causal factors for this finding are lack of policy implementation, in that FERMCO has not adequately supported the Waste Minimization and Pollution Prevention Plan through development of procedures and training for personnel responsible for implementation of the plan.

3.3.3 Technical Assessment

3.3.3.1 Environmental Radiation Findings

RAD/F-1: Radiological Environmental Surveillance Program

Performance Objective: DOE 5400.1, "General Environmental Protection Program," requires that a program for environmental surveillance be conducted for radiological and nonradiological parameters to "monitor the effects, if any, of DOE activities on onsite and offsite environmental and natural resources." It requires that the environmental surveillance program be based on an evaluation of need for a permanent surveillance program and to meet certain program objectives. It also states that, "Programs should reflect facility characteristics, applicable regulations, hazard potential, quantities and concentrations of materials released, the extent and use of affected air, land, and water, and specific local public interest or concern." The elements of the environmental surveillance program must meet requirements of DOE Orders in the 5400 series, and the program must be documented in an Environmental Monitoring Plan.

Finding: The radiological environmental surveillance program at FEMP lacks a fully documented rationale for the surface water, direct radiation, and drinking water components, and is inadequate for the groundwater components.

Discussion: The radiological environmental surveillance program at FEMP is documented in the Environmental Monitoring Plan (D-F-1). Components of environmental surveillance conducted at FEMP for radioactivity are based on an evaluation of the significant pathways and include sampling of surface water, air, direct radiation, soil, sediment, biota, drinking water, and groundwater. Each component of the environmental surveillance program was reviewed with respect to its ability to meet the program objectives as stated in DOE 5400.1, and the requirements of DOE Orders in the 5400 series. Deficiencies were identified in the surface water, direct radiation, drinking water, and groundwater components of the environmental surveillance program for radioactivity, and are discussed below.

Surface Water Sampling for Radioactivity

Surface water is sampled for radioactivity at three locations on the Great Miami River and six locations on the Paddy's Run Creek. Concentrations of radionuclides in surface waters are used by FERMCO to compare against DOE 5400.5, "Radiation Protection of the Public," limits, and for input into dose assessment models to estimate dose to the public from the irrigation of crops by surface water pathway. Sampling of the surface water for radioactivity at the outfall from the FEMP Effluent Line is not conducted (I-F-5). The closest sampling location is approximately 2 miles downstream of the effluent outfall. FERMCO has not documented site-specific rationale for the sampling locations (D-F-1).

Direct Radiation Monitoring

Direct radiation dose to the public results from materials stored in facilities and silos at FEMP, and is monitored through a network of boundary and offsite radiation detectors (thermoluminescent detectors (TLDs)). The highest contributor to the radiation dose of the nearest resident documented in the 1991 Annual Site Environmental Report (ASER)

resulted from the material stored in the K-65 Silos. However, the procedure used to determine the dose to residents nearest to the K-65 Silos is based on assumptions which may not be adequate (D-F-1). The dose to the nearest resident reported in the 1991 ASER is slightly below the annual dose level of 10 millirem (mrem) which requires reporting to DOE Headquarters (HQ) (D-F-2).

Drinking Water Sampling for Radioactivity

There are three drinking water production wells at FEMP. One well (#2) is currently used for onsite drinking water (I-J-12). This well is tested at the well head for radioactivity on a quarterly basis to ensure that concentrations do not exceed the 4 millirem per year (mrem/yr) effective dose equivalent from the drinking water pathway (D-F-11). However, in the event that backflow prevention devices do not operate as designed (I-J-11), or if contaminated liquids and soils infiltrate the drinking water piping, drinking water may become contaminated between the well head and the receptor location. FERMCO has not periodically evaluated whether monitoring is necessary at the drinking water receptor locations to ensure that radioactive contamination has not been introduced (I-J-11 and I-J-12).

FERMCO frequently samples approximately 40 offsite private drinking water wells for uranium to identify whether groundwater contamination created by FEMP has affected the private wells (D-F-2). Currently, FERMCO has identified levels of uranium in seven private drinking water wells that exceed the area background concentration established by DOE for this purpose. As a result, FERMCO has either supplied these residents with bottled drinking water or installed a new drinking water well. The site-specific rationale for the analysis of only uranium in the private drinking water wells has not been documented. Additional radionuclides have the potential for being present in the groundwater contaminated by FEMP.

Groundwater Sampling for Radioactivity

There is an extensive network of groundwater monitoring wells at FEMP which are monitored to determine the transport of radionuclides in the aquifer. Samples of the groundwater taken from wells have identified elevated concentrations of uranium which define a south plume and, to a lesser extent, an east plume (I-M-31 and I-M-38). This information has not been incorporated to modify the groundwater model used by FERMCO for risk assessments (I-M-38). In addition, groundwater monitoring samples are not prepared in a manner which would allow for the determination of dissolved uranium versus total uranium (D-M-33). As a result, FERMCO does not fully understand the transport, retention, and ultimate fate of uranium within the groundwater aquifer and unsaturated zone (I-M-33). Although WEMCO commissioned a study to examine this issue in 1989, the report was not formally reviewed, and data were not validated (D-M-4; I-M-38). Given these concerns, the current groundwater model may not accurately reflect site conditions.

The probable causal factors for this finding are policy implementation, in that FERMCO did not implement the requirements for documenting the rationale for the environmental surveillance program components; and supervision, in that the individuals implementing the groundwater monitoring program were not provided adequate oversight.

RAD/F-2: Radiological Effluent Monitoring Program

Performance Objective: DOE 5400.1, "General Environmental Protection Program," Chapter IV, contains requirements for environmental monitoring programs designed to measure and monitor effluents from DOE operations. The Order requires an Environmental Monitoring Plan (EMP) which must include the rationale and design criteria for the monitoring program, as well as other information. The Order also states "Effluent monitoring shall . . . provide representative measurements of the quantities and concentrations of pollutants in liquid and airborne discharges." It further requires that airborne releases from DOE facilities comply with the requirements of 40 CFR 61.93, "National Emission Standards for Hazardous Air Pollutants (NESHAP)."

40 CFR 61.93, Subpart H, requires stack monitoring for emissions of radionuclides to the ambient air from DOE facilities. Continuous emissions monitors are required for all release points that have the potential to discharge radionuclides that could cause an effective dose in excess of 0.1 millirem per year (mrem/yr) to any member of the public. American National Standards Institute (ANSI) N13.1-1969 and Appendix B of Subpart H define the methods to be used for sample extraction, monitoring effluent flow rates, and measuring radionuclide concentrations. A quality assurance program that meets the performance requirements of Appendix B of Subpart H is also required to ensure that measurements are representative, and are of a known precision and accuracy. DOE 5400.5, "Radiation Protection of the Public and the Environment," includes requirements for radionuclide effluent monitoring.

Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance (DOE/EH-0173T), incorporates and expands on the requirements embodied in DOE 5400.1 and DOE 5400.5 by describing the elements of an acceptable effluent monitoring and surveillance program.

Finding: The FEMP radiological effluent monitoring program does not include a system to review methods used in estimating radiological releases.

Discussion: FEMP releases radioactivity in air and liquid effluents to the environment. The stack effluent monitoring program at FEMP is based on an inventory of stacks included in the EMP developed by WEMCO during the production operations. The list contained in the EMP identifies those sources that require sampling systems for continuous or periodic monitoring. However, the EMP does not describe whether sampling systems meet ANSI-N13.1 standards, nor does it provide a schedule for those sites requiring periodic confirmatory monitoring.

Specific deficiencies observed in the area of monitoring radioactivity in air effluents include:

- Work plans that include new sources of radioactive emissions are not consistently routed through the Environmental Safety and Health Division (ESH) to ensure that potential monitoring requirements are fulfilled (I-I-5) (see Finding RM/F-1).

- The stack for the analytical laboratories fume hoods does not meet ANSI standards in that the current system is non-isokinetic and the sample extraction probe is a single port instead of a multiport probe (I-I-7).
- The current stack monitoring design for the rotary kiln stack, which will be used during normal operations, possesses long sample delivery lines and a few 90 degree bends which could affect the representativeness of the sample collected (D-I-53; I-I-7).
- The rotary kiln emergency stack is not monitored (I-I-7).
- Confirmatory monitoring has not been conducted in recent years. However, a long-term schedule and strategy for monitoring all stacks has recently been developed, but they are not documented in the EMP (D-I-5; I-I-19).

The Radionuclide Air Emissions Quality Assurance Project Plan (D-I-6), which specifies the activities required to achieve the quality level required by 40 CFR 61, Subpart H, has not been updated to reflect the new responsibilities and procedures of the FERMCO organization (I-I-1 and I-I-5).

In addition, FERMCO does not develop accurate estimates of radionuclide emissions from unmonitored sources for use in the NESHAP reports. For example:

- FEMP has not demonstrated that the sampling frequency currently used in determining uranium releases from the cooling tower is accurate or representative. Therefore, the cooling tower emissions estimated by FERMCO are relatively low, the extra effort to generate data of high quality is not considered by FERMCO or FN to be cost effective (I-I-21 and I-I-22).
- Fugitive radioactive emissions from roadways and construction projects were not included in the NESHAP report.

In the area of monitoring liquid effluents for radioactivity, uncontrolled stormwater runoff from approximately 445 acres of land at the Fernald site discharges to Paddy's Run. The basis for reporting uranium discharges to Paddy's Run is through the Amended Consent Agreement (ACA) with the EPA. For the purposes of the ACA monthly report, FERMCO provides estimates of the uranium in this discharge to Paddy's Run using calculations based on uranium concentrations of the soil, the average annual precipitation at the site, and a runoff coefficient for the soil type in the region (D-F-3). However, the accuracy of these estimates has not been demonstrated by FERMCO (I-F-5).

The probable causal factor for this finding is quality assurance/quality control, in that the required performance objectives for the effluent monitoring program have not been met.

RAD/F-3: Radioactive Waste Management Planning

Performance Objective: DOE 5820.2A, "Radioactive Waste Management," requires a Waste Management Plan that is updated annually. In addition, DOE 5820.2A establishes policies for DOE low-level waste operations including: management on a systematic basis, an auditable program to ensure that the amount of low-level waste generated and/or shipped for disposal is minimized, segregation of uncontaminated waste from low-level waste, and incorporation of waste minimization principles into process designs.

Finding: FEMP lacks an updated Waste Management Plan for mixed and low-level radioactive waste.

Discussion: Historically, operations at FEMP have generated large quantities of low-level radioactive waste (LLW) and mixed waste. This waste is currently stored onsite pending ultimate disposal at the Nevada Test Site, recycling, or other management methods. FERMCO plans to ship 188,000 drum equivalents of LLW offsite in Fiscal Year 1993, which roughly constitutes the current onsite storage backlog. In addition, FEMP is expected to generate large quantities of LLW and some mixed waste as a result of future site remedial activities. Waste management options for these activities are typically considered in individual Removal Actions as part of the ongoing CERCLA process.

FEMP has not prepared a Waste Management Plan for mixed and low-level waste that meets the current requirements of DOE 5820.2A (I-K-1, 2, 3, 7, 8, and 16). FEMP prepared a plan in 1986, but has not performed required annual updates or revised the plan to reflect DOE 5820.2A, which was issued in November 1988 (I-K-2).

The lack of an updated Waste Management Plan at FEMP has contributed to the following programmatic deficiencies:

- The site does not integrate estimates of projected long-term waste generation quantities to enable proactive planning for waste minimization, recycling, treatment, storage, and/or disposal (I-K-2 through I-K-4, I-K-7, and I-K-8). There is limited planning and communication between the CERCLA/RCRA Units (CRUs) to ensure appropriate capacity estimates are used to evaluate waste management options (I-L-10, I-L-23, and I-L-29).
- The Construction Waste Identification/Disposition (CWID) form, which is used to estimate the anticipated characteristics and quantities of waste from construction projects, is not adequate. Some common categories of waste (e.g., personal protective equipment, packaging, etc.) are not identified, and the procedure does not include a methodology for estimating waste quantities (D-K-4). In addition, CRU personnel involved in the planning process were not aware of any procedures to assist them in estimating waste soil volumes (I-L-13 and I-L-23).
- The policy that establishes roles and responsibilities for waste management is outdated and does not reflect the current FERMCO organization (D-K-20; I-K-2, 7, 8, and 10). This lack of defined roles and responsibilities has contributed to delays in implementation of the waste minimization program (I-K-4, 10, 11, and 21).

- The FEMP waste minimization program is understaffed, and waste minimization has not been formally integrated into future projects that will generate waste (I-K-2, I-K-4, and I-K-21). Currently, FEMP does not have systems to evaluate the technical and economic feasibility of waste minimization opportunities, either for specific projects or multiple projects generating similar waste (I-K-21). The five CRUs are the primary waste generators at the site. However, only one participates in waste minimization policy discussions held by the Waste Minimization and Pollution Prevention Team (I-K-21).
- There is no formal policy which outlines the preferred waste management hierarchy. Interviews with middle and lower management in FERMCO revealed uncertainty over whether offsite disposal or onsite decontamination and release is the preferred option for LLW management (I-K-10, 11, 14, and 25).
- FN currently does not have a program to oversee waste management planning at FEMP (I-K-8). The need for such a program has been recognized by FN but current staffing limitations has impeded implementation.
- The Waste Management Program Section, of the Remediation Support Operation Department, has recently been established to develop systems for waste management; however, their organizational charter does not specifically include DOE 5820.2A requirements (D-K-19).

The probable causal factor for this finding is policy implementation, in that the Waste Management Plan does not conform with the requirements of DOE 5820.2A.

RAD/F-4: Site Radiological Environmental Restoration Program

Performance Objective: DOE 5400.5, "Radiation Protection of the Public and the Environment," Chapter II, Section 5, identifies requirements for the release of property having residual contamination.

DOE 5820.2A, "Radiation Waste Management," Chapter V, establishes policies and guidelines for the management and decontamination and decommissioning (D&D) of radioactively contaminated facilities under DOE ownership or control. Section 3.d.(2) relating to the environmental review process, states that a preferred decommissioning alternative be selected based on the results of an environmental review.

DOE 5400.4, "Comprehensive Environmental Response, Compensation, and Liability Act Requirements," establishes CERCLA policies and procedures as prescribed by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and under the authorities of Executive Order 12580, "Superfund Implementation," within the framework of the environmental programs established under DOE 5400.1. A program should be in place to plan for and carry out investigations and characterizations of the site including identifying, within acceptable statistical parameters, the horizontal and vertical extent of suspected releases in all media. Procedures should be in place to conduct an accurate assessment of human health and environmental risks that are posed by the site.

Finding: FERMCO has not implemented formal programs or procedures to adequately address radiological environmental considerations during planning and execution of D&D and remediation of site facilities and environs.

Discussion: In early 1991, DOE stated its intention to formally end uranium metal production at the Feed Materials Production Center (FMPC). At that time a closure plan, which became effective June 1991, was submitted to Ohio EPA, and the mission of the site was changed to environmental cleanup and restoration. Prior to that, on July 18, 1988, DOE entered a consent agreement with the EPA which provided a schedule for remedial investigation/feasibility study (RI/FS) and remedial action to study and cleanup releases and threatened releases of hazardous substances at FMPC. Subsequent discussion and agreement between DOE and EPA has segmented the RI/FS and remedial action into five distinct operable units (OUs) which have subsequently been reidentified as CERCLA/RCRA Units (CRUs). These CRUs are as follows: CRU1, waste pit area; CRU2, other waste units; CRU3, former production area; CRU4, K65-silos 1 through 4; and CRU5, environmental media. A review of the site restoration programs, operations, documentation, and activities within the five CRUs, as they relate to environmental radiation, has indicated a number of deficiencies. Selected examples are as follows:

- A thorough and systematic investigation to identify potential source/disposal areas at the site has not been performed. An initial investigation to identify potential source areas was conducted in 1988-1989 as part of a historical investigation. The investigation included a review of aerial photographs and interviews of long-time employees. Areas identified were primarily screened by a radiological walkover survey, but little intrusive sampling was performed to locate uranium contaminated waste at depth. Investigation to verify the location of areas indicated on the aerial photograph prior to field sampling activities (e.g., by use of ground penetrating radar or

magnetometer survey) was not conducted. No sitewide source identification activities have occurred since that time (I-L-29).

- A review of the summary of applicable or relevant and appropriate requirements (ARAR) for the Plant 7 dismantling Removal Action 19 work plan (D-G-3) has indicated misapplication of appropriate radiological regulatory requirements relating to both environmental and occupational radiation. Specifically, the regulations of the Nuclear Regulatory Commission (NRC) (i.e., 10 CFR 20, "Standards for Protection Against Radiation," are cited as "relevant and appropriate" and the Orders of the DOE (i.e., 5400 series, 5820.2A, 5480.11, "Radiation Protection for Occupational Workers") are cited as "to be considered." As noted in the Atomic Energy Act (as amended) and in the NRC regulations, DOE has the regulatory authority to protect the public, environment, and workers relating to operations involving source, special nuclear, and byproduct materials under its control. The potential for conflicting regulatory requirements during site RI/FS and remedial actions due to functionally overlapping regulations and Orders has not been evaluated.
- The site has encountered difficulties in implementing time-critical removal actions at the site and meeting EPA Remedial Investigation goals and objectives. These projects have been delayed due to problems in designing, sampling, and analysis programs (e.g., inadequate sample number, inappropriate sample location, analytical method, data validation, etc.). There has been some improvement in recent months; however, inconsistencies between EPA and FERMCO data interpretation still exist (I-L-24). Examples of this situation would be the recent EPA rejection of the CRU2 Draft RI Report (I-G-7), and delays in implementing the time-critical Removal Action 13 (RA13) work plan (draft 2 of the RA13 work plan was dated July 1992 and was not implemented until March 1993).
- The CRU2 group has recently located high resolution historic aerial photographs which they are using to assist in scoping the CRU2 Draft RI Report addendum workplan. As part of their review, they have noted a disposal area (i.e., South Field) that was not identified during past investigations. The CRU responsible for the site has just been notified of its existence. However, it is not clear whether this disposal area will be part of the RI (I-L-29 and I-L-31). The RI activities are focusing on evaluating the existing data generated from past sampling events, and do not appear to be addressing the identification of additional source areas. This is a concern because the remediation activities planned for this site cannot be successful if contaminant source areas are left undiscovered (I-L-29).
- Work plans and remediation decision documents examined have very extensive occupational worker health and safety review. However, the plans do not consistently address potential offsite environmental impact due to incidental fugitive emissions associated with D&D or field activities. Even where these concerns are addressed with proposed control measures, appropriate monitoring is not consistently recommended to ensure that

control measures are effective and that offsite dose limit compliance is documented (D-G-8).

- A review of the Removal Action number 14 work plan for contaminated soil adjacent to the sewage treatment plant incinerator revealed a lack of rationale for not remediating off-property soil with uranium concentrations in excess of 35 picocuries per gram (pCi/g). Lacking specific regulatory limits for allowable levels of uranium and thorium in off-property soil, the site has utilized the October 23, 1981, U.S. NRC Branch Technical Position published in the Federal Register, for disposal or onsite storage of thorium and uranium wastes from past operations. This publication states various maximum concentrations permitted under four disposal options. The most restrictive scenario relates to uncontrolled release of property at 35 pCi/g for depleted uranium (DU) and 10 pCi/g for natural uranium or thorium with decay products present and in equilibrium. Alternate disposal options are allocated for higher concentration levels (i.e., 100 pCi/g for DU), if property use restrictions are introduced. This has not been proposed for the wooded area in question.
- CRU5 is currently planning for short- and long-term containment and cleanup of contaminated groundwater. The CRU5 treatment systems are in the preliminary design phase. However, the other four CRUs have not provided estimates of potential volumes or contaminant concentrations they anticipate sending to the treatment systems. Some of this information is not currently available because sufficient characterization of the site hydrology has not been performed. In addition, interviews with the CRUs revealed that they intend to discharge contaminated perched groundwater and surface water to CRU5's Advanced Waste Water Treatment (AWWT) Plant. Phase III of the treatment system, designed to handle this water, will not be in operation by the time remedial activities are initiated by the other CRUs. Phases I and II are scheduled to be in operation, and have been determined to have approximately 200 to 300 gallons per minute (gpm) of excess capacity. A determination has not been made whether this will be adequate to treat the wastewater generated during the remedial activities (I-L-17 and I-L-27).
- Procedures for the free release of material and equipment from FEMP may not be adequate to detect the required level of uranium contamination. Specifically, the calculated minimum detectable activity for survey instruments and techniques employed, and allowed level of area surface radioactivity in uncontrolled areas are identical. Under the conditions of uniformly distributed contamination and/or high background count rates, activity above the prescribed release limits may not be detected. The site is currently investigating alternate survey equipment and methods (I-G-17).

The probable causal factor for this finding is lack of policy implementation during planning of D&D and remediation activities. A secondary contributing factor for this finding is appraisals/audits/reviews, in that these deficiencies were not previously identified.

RAD/F-5: Environmental ALARA

Performance Objective: DOE 5400.5, "Radiation Protection of the Public and the Environment," adopts the ALARA process in planning and carrying out all DOE activities including the monitoring, cleanup, and control of residual radioactive material. It requires the Field Office to develop a program and to direct the contractors to implement the ALARA process for all DOE activities and facilities that cause public dose. Factors that must be considered in the ALARA Program, at a minimum, include: the maximum dose to members of the public; the collective dose to the population; and an assessment of doses, costs, and societal impacts associated with alternatives for activities. It further requires that applications of the ALARA policy be documented and filed as a permanent record.

Finding: Neither FN nor FERMCO has fully applied the ALARA process to current and planned activities at FEMP.

Discussion: When DOE 5400.5 was issued by DOE Headquarters (HQ) in February 1990, FEMP was within OR's purview. In March 1990, OR instructed the site contractor to determine its compliance status with the requirements of DOE 5400.5. The site contractor responded that it was in compliance with most, but not all, of the requirements of DOE 5400.5 (D-F-5). This response, however, did not address the lack of implementation of the ALARA process in environmental programs.

In 1989, the site contractor formed an ALARA Committee to implement occupational ALARA. In 1990, OR directed the site contractor to implement environmental ALARA. The site contractor responded by including environmental ALARA in the ALARA Committee's charter (D-F-14; I-F-15). The ALARA Committee did not formally address environmental ALARA (I-F-15). However, some environmental ALARA activities have been implemented at FEMP. The most notable example is FERMCO's addition of a bentonite cap to the material in the K-65 Silos as a diffusion barrier to reduce the radon-222 emissions to the environment.

When FN was created in 1991, FN did not develop an Environmental ALARA Program, nor did they review the site's implementation of the ALARA process (I-F-15). As a result, environmental ALARA has not been, nor is it planned to be, incorporated in the site's restoration activities. An example of where environmental ALARA has not been incorporated into a sitewide program is in the development of Work Plans. FERMCO does not consistently consider Environmental ALARA issues when assessing alternatives during the development of work plans for short-term removal and long-term remediation activities (I-F-14). Environmental ALARA issues would include evaluating the potential, and control measures necessary, for airborne and surface water releases during the assessment of various remediation techniques. In addition, the work plan and one removal action in progress at the sewage treatment and incineration plant, did not provide for the control of airborne and surface water releases to the environment during removal and remediation activities (D-L-5).

The probable causal factors for this finding are a lack of policy implementation, in that FN did not develop an Environmental ALARA Program as required by DOE 5400.5; the site contractor has not assessed the degree of risk to the public resulting from restoration activities; and as a secondary contributing factor, appraisals/audits/reviews, in that neither OR nor FN identified the lack of the ALARA process in programs and plans at FEMP.

3.3.3.2 Quality Assurance Finding

QA/F-1: Project-Specific Plans and Procedures

Performance Objective: DOE 5400.1, "General Environmental Protection Program," requires that a quality assurance program consistent with DOE 5700.6B, "Quality Assurance" (revised to DOE 5700.6C), be established for each element of environmental monitoring and surveillance programs.

DOE 5700.6C, "Quality Assurance," requires that work be performed under controlled conditions using approved instructions, procedures, or other means, and that the document be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design.

Finding: Project plans and procedures for environmental protection activities at FEMP have not been adequately or consistently developed, reviewed, or implemented to ensure the quality of results.

Discussion: Environmental protection activities at FEMP fall into three broad program categories: environmental monitoring, waste management, and environmental restoration. Each program or subprogram (e.g., Clean Air Act (CAA), Clean Water Act (CWA), RCRA groundwater) must be managed in accordance with the applicable requirements (DOE Orders or EPA/state regulations) in a manner that ensures that project quality objectives are met.

During the assessment, activities, documents, procedures, and performance associated with each major environmental program were reviewed. This review confirmed that environmental protection quality assurance requirements have not been adequately incorporated into past plans or procedures for environmental protection activities.

There have been, and continue to be, important quality disconnects between environmental programs at FEMP which limit the site's ability to utilize information collected for one program in support of another. This has resulted in missed or inadequate environmental data, excess level of effort in sampling and analysis, and excessive time or cost necessary to meet site goals. Because many of these disconnects have been previously recognized at FEMP, an umbrella environmental quality document, the Sitewide CERCLA Quality Assurance Project Plan (SCQ), has been developed. As designed, this document will govern all site environmental activities and is intended to ensure that all environmental programs are supported by defensible information. Under the SCQ, each project will develop project-specific plans and implementing procedures in accordance with the overall quality framework contained in the SCQ. At the time of the assessment, the SCQ had not yet been implemented.

Many current problems at FEMP are a result of historic conditions. Under FERMCO, environmental programs continue to be managed with plans and procedures that do not incorporate quality concepts or regulatory quality requirements. The following sections highlight quality problems associated with the various environmental programs at FEMP.

Environmental Monitoring Programs

- The DOE/EH-0173T, "Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance," for radiological effluent monitoring and environmental surveillance requires documentation of the quality of data used for dose calculations. The following are specific instances in which the quality of the data may not be demonstrated by FEMP air monitoring activities:
 - The FEMP site-specific meteorological data used for assessment modeling for the 1991 FEMP National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart H report, were not subjected to quality control checks (I-I-12);
 - The process by which air filter samples from the waste pit area are stored during an interim holding period may not ensure their security for chain-of-custody purposes (I-I-10 and I-F-12); and
 - Data quality from the waste pit air monitor samples may exhibit levels higher than actual because the folders used to transport clean and used sample filters, are reused folders (I-I-10 and I-F-12).

Waste Management

- There are no procedures to review projects to identify opportunities for waste minimization, or to perform technical and economic feasibility analyses of waste minimization opportunities in support of the waste minimization program. As a result, some materials, that could be recycled or otherwise minimized, may be disposed of as hazardous or mixed waste rather than decontaminated and released for unrestricted use (I-K-4 and I-K-21).
- There is no procedure to conduct verification sampling of containers stored in the RCRA warehouses to ensure that waste acceptance criteria are being met (I-K-3 and I-K-6).
- There are no procedures to evaluate field duplicate results to determine sample representativeness (I-K-27 and I-K-28).

Environmental Restoration

- There are no procedures for notifying natural resource trustees for site Remedial Investigation/Feasibility Study (RI/FS) activities as required by CERCLA. Failure to consult with the trustees may result in a site characterization which does not satisfy their needs; as a result, additional characterization would be required (D-L-7; I-L-25). In addition, the site has not developed natural resource damage assessment (NRDA) procedures; therefore, the site is unable to estimate and evaluate potential NRDA claims.

- There are no approved procedures for performing risk assessments for remedial investigations. This contributed to the rejection of the CRU2 Remedial Investigation Report by EPA and the State of Ohio because EPA standard protocols were not followed (I-L-2 and I-L-15).

The probable causal factors for this finding are the lack of policy implementation of DOE 5700.6C requirement for procedures, and inadequate assessment of the risk of performing environmental activities with inadequate plans or procedures.

3.4 FORMALITY OF ENVIRONMENTAL PROGRAMS

3.4.1 Overview

The Formality of Environmental Programs portion of the Environmental Management Assessment was conducted to determine whether formal systems and procedures are in place to support environmental protection programs and to ensure quality and consistency of environmental management operations. Specific areas of the assessment include an analysis of the management systems to review, track, and interpret regulations and DOE Orders; an evaluation of FEMP's guidance procedures and standards to implement specific environmental programs; an evaluation of FEMP's systems for the conduct of routine inspections to identify and prevent environmental problems; and, a review of systems to collect, report, and maintain environmental data.

The general approach to this portion of the assessment was to review DOE Orders and Secretary of Energy Notices (SENs), and background documents provided by the FEMP Program organizations prior to the onsite portion of the assessment. In addition, two management team specialists conducted interviews with the Office of Environmental Restoration and Waste Management (EM) at Headquarters prior to onsite activities.

Onsite activities included interviews with management and staff from FERMCO and FN, and document review at FEMP. This portion of the assessment also relied on input from technical and management specialists on the Assessment Team.

During the transition of site management from WEMCO to FERMCO, FERMCO management began a re-evaluation of the formality of environmental programs at FEMP. In the opinion of FERMCO management, WEMCO had a conservative philosophy when establishing formal environmental policies, programs, plans, and procedures. FERMCO maintains that several WEMCO environmental programs may not be applicable or may exceed the requirements outlined in the Environmental Restoration Management Contractor (ERMC) contract.

FERMCO has acquired a strong group of environmental regulatory and policy experts from several WEMCO organizations. FERMCO assembled these specialists into the Regulatory Programs Division (RP). These specialists are matrixed into CERCLA/RCRA Units (CRUs) within the Environmental Programs Division (EP) to act as a liaison between RP and EP and to provide regulatory guidance to the CRUs.

FERMCO has an effective system to track, interpret, and distribute to FERMCO managers relevant regulatory information which may impact restoration activities. However, FERMCO has continued to rely on organizations to independently integrate all applicable environmental compliance requirements into their operations. To date, FERMCO compliance specialists have not been consistently used as a technical and regulatory resource when programs, plans, and procedures require a change to satisfy an environmental compliance requirement. As a result, environmental compliance reviews have not been completely integrated into all FEMP operations and environmental compliance oversight has not been consistent.

FERMCO organizations responsible for specific site programs have begun to develop and implement their own set of environmental plans and procedures. These organizational plans and procedures have not been consistent and uniform.

The FEMP Policy and Requirement Manual is in the early stage of development. When finalized, this manual should provide consistent and uniform guidance on the conduct of environmental operations (e.g., formality of plans and procedures). However, milestones for implementation of the manual have not been established.

Various FERMCO organizations have established document control systems that are formalized, controlled, and auditable. Typically, these systems have been developed for specific operations and are commonly not based on a central sitewide system. As a result, multiple document control systems exist at FEMP. Most records generated from sitewide operations are retained, but records are not always retained in a central records management center under the supervision of a records manager (e.g., in either a sitewide-, division-, department-, or project-level system). Record retention requirements are not consistently stated in specific plans and procedures. This has caused confusion among staff when determining which records management system should retain original records or documents (i.e., CERCLA Administrative Record or a site record system).

FERMCO has developed and implemented formal plans and procedures for routine site inspections. These inspections have been consistently performed to ensure compliance with regulatory requirements and best management practices (e.g., RCRA and Spill Prevention Control and Countermeasure (SPCC) inspections, inspections on critical operating equipment). Finally, FERMCO organizations have designed corrective action tracking systems to followup on exceptions resulting from these inspections.

Environmental reporting/notifications systems have been established to ensure that plans, reports, and permits, which are required by DOE and Federal and state agencies are prepared and submitted in a timely manner. Regulatory specialists within RP coordinate and complete most of FERMCO's permit and reporting requirements.

The Environmental Safety and Health (ESH) Division supports FERMCO's environmental reporting requirements by coordinating and completing the DOE environmental notification and occurrence reports. These reports are in accordance with the requirements in DOE 5484.1, "Environmental Protection, Safety and Health Protection Information Reporting Requirements"; DOE 5000.3A, "Environmental Compliance Issue Coordination"; and 5500 Series (i.e, emergency management).

In summary, FERMCO has many formal and documented systems in place for the management and control of environmental programs. FERMCO management recognizes that several improvement opportunities exist in the formal conduct of environmental operations. New sitewide policies and requirements for the conduct of environmental operations are currently being discussed and developed at a senior management level.

Two findings were identified in the Formality of Environmental Programs portion of the assessment relating to environmental compliance integration and oversight for all FERMCO operations (see Finding FP/F-1) and formality of environmental policies, plans, and procedures (see Finding FP/F-2).

3.4.2 Findings

FP/F-1: Environmental Compliance Integration

Performance Objective: DOE 5400.1, "General Environmental Protection Program," Section 5, "Policy," (a) requires that operations be conducted in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards, and that efforts to meet environmental obligations be carried out consistently across all operations and among all field organizations and programs.

Best management practices suggest that it is important to integrate environmental compliance management with restoration activities to (1) identify and track Federal and state statutory and regulatory developments and DOE Orders and Directives that impact current and future restoration operations; (2) disseminate this information to organizations responsible for integrating new environmental requirements into policies, procedures, and environmental restoration activities; and (3) ensure that new requirements have been integrated into policies and procedures and implemented into ongoing environmental restoration activities through an effective oversight mechanism.

Finding: FERMCO lacks a complete formal system to ensure that new environmental requirements are integrated into policies, programs, plans and procedures and ongoing environmental restoration activities.

Discussion: FERMCO regulatory analysis and policy specialists are organized under the Regulatory Programs Division (RP). These specialists are matrixed into CERCLA/RCRA Units (CRUs) within the Environmental Programs Division (EP) and act as liaisons between RP and EP and provide regulatory guidance to the CRUs.

Regulatory specialists from RP also interface on a frequent informal basis with representatives from the Environmental Safety and Health (ESH) and Remediation Support Operation (RSO) Divisions. These informal exchanges have assisted ESH and RSO personnel in determining the applicability of environmental compliance requirements to the operations they supervise (I-E-7, 12, 14, 21, 23, and 24).

Although environmental regulatory specialists within RP, ESH, and EP actively track, review, interpret, and disseminate environmental compliance information, environmental compliance activities have not been fully integrated into environmental restoration and monitoring activities. The following examples illustrate cases where environmental compliance activities have not been fully integrated into FEMP activities.

- A mechanism has not been established to formally link RSO operations with FERMCO regulatory specialists to ensure that environmental compliance requirements are consistently integrated into RSO's daily operation (I-E-19 through I-E-21, I-E-23, and I-E-24).
- Currently, new or revised FERMCO procedures and guidelines are not consistently reviewed by regulatory compliance specialists to ensure that environmental compliance requirements have been included. Further, regulatory compliance specialists do not routinely assist in the development

and review of environmental procedures and guidelines (I-E-3 through 7, 10, 12, 14, 16, 19 through 21, 23, and 24).

- FERMCO has not established a process to ensure that regulatory specialists receive appropriate information to evaluate the need for a permit for a particular activity or piece of equipment. Currently, these specialists rely on their own cognizance of ongoing activities and work plans and informal communication with project managers to identify instances when the need for an environmental permit should be evaluated (see Finding RM/F-1; I-E-21). This approach has been effective; however, FERMCO personnel do not typically notify the specialists directly (see Finding RM/F-1) (I-D-8, I-E-20, I-I-4, and I-I-8).
- Since the transition from WEMCO to FERMCO, FERMCO has been evaluating the applicability of DOE Orders and Directives to environmental restoration activities under the Environmental Restoration Management Contractor (ERMC) agreement. FERMCO management has identified several DOE Orders and Directives (e.g., as DOE 5400.1, "General Environmental Protection Program"; DOE 5400.4, "Comprehensive Environmental Response, Compensation, and Liability Act Requirements"; DOE 5400.5, "Radiation Protection of the Public and the Environment"; and DOE 5820.2A, "Personnel Section, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities"), and they have begun to integrate these Orders in ongoing restoration activities. However, FERMCO's review of DOE Orders and Directives has not been completed. This has led to some confusion among FERMCO managers. For example, the Training Manager initiated action to develop a training accreditation program and was later told by FN that the Order requiring the program did not apply. Managers continue to request guidance on a case-by-case basis as to the applicability of DOE Orders (I-B-1 and I-E-27).

FERMCO has established an effective environmental compliance tracking and translation process that benefits all site organizations. This information is distributed sitewide by regulatory specialists on a scheduled basis. However, FERMCO has continued to rely on organizations to independently integrate all applicable environmental compliance requirements into their operations. To date, FERMCO compliance specialists have not been consistently used as a technical and regulatory resource when programs, plans, and procedures require a change to satisfy an environmental compliance requirement.

FERMCO lacks an effective oversight mechanism that ensures that changes in Environmental Compliance requirements are thoroughly understood by employees and implemented in ongoing and future environmental restoration activities. For example, FERMCO has not provided guidance and oversight on a consistent basis to subcontractors who perform human health and ecological risk assessment (I-L-5).

The probable causal factors for this finding are a lack of procedures to ensure that environmental compliance requirements are integrated into the development and implementation of environmental policies, programs, plans, and procedures; risk, in that FERMCO has not assessed the potential consequences from incomplete integration of environmental compliance requirements into environmental restoration activities; and as a

secondary contributing factor, appraisals/audits/reviews, in that reviews are not conducted of programs, plans, and procedures and environmental restoration activities to ensure that environmental compliance requirements, which have been disseminated to field personnel, have been incorporated.

FP/F-2: Formality of Environmental Policies, Programs, Plans, and Procedures

Performance Objective: Best management practices suggest that a systematic review of environmental policies, programs, plans, and procedures be conducted to determine consistency and applicability to the revised mission of an organization.

Finding: FERMCO has not conducted a systematic review of WEMCO's policies and requirements to ensure that plans and procedures are consistent and applicable to the current environmental restoration mission.

Discussion: WEMCO instituted a site document system, (D-E-12) this system was designed to formalize the development, process, and control of site documents at FEMP in a management and operations (M&O) environment. During the organizational transition from WEMCO to FERMCO in December 1992, FERMCO adopted numerous WEMCO sitewide policies and requirements. Since that time, FERMCO management has continued to rely extensively on these existing policies and requirements during the development of Environmental Restoration Management Contractor (ERMC) policies, programs, plans, and procedures. A formal review to determine the applicability of these policies and requirements to the current environmental restoration mission has not been completed.

FERMCO continues to use the existing WEMCO site document system; however, personnel responsible for establishing organizational plans and procedures have not relied exclusively on this sitewide system (D-E-20 through D-E-24). Oftentimes they have developed specific environmental policies and procedures to manage their operations (I-E-2, 11, 16 and 24). Inconsistencies exist in format, style, and technical matter in these plans and procedures (I-A-25 and I-A-35; I-E-1, 8, 10, 17, and 22). For example, FERMCO has not communicated and integrated formal sitewide policies and requirements for the planning and design of all environmental restoration and monitoring activities at FEMP. These factors have led to sitewide plans, procedures, data quality objectives, and project planning/scheduling that are not consistent or complete (I-E-1, 3, 8, 10, 16, 24, and 28 through 30). FERMCO's sitewide CERCLA Quality Assurance Project Plan (SCQ) will address this issue (D-E-9). Two sections of the SCQ have not received formal approval from EPA. In addition, FERMCO has not developed complete sitewide implementation procedures for the SCQ.

FERMCO has recently begun to consider a sitewide FEMP Policy and Requirement Manual (D-E-14). The manual's objective, as noted by FERMCO personnel, is to ensure sitewide programmatic development and implementation of environmental policies, programs, plans, and procedures, to ensure that FERMCO organizations have consistent environmental guidelines, and to implement management's vision of conducting environmental activities at FEMP (I-E-9, 16, 19, 24, 28, and 29).

FERMCO management has recognized that sitewide policies and requirements have not been effectively developed for all FEMP activities. It has been widely known that different plans and procedures have been used in FERMCO's organization to manage similar operations. However, FERMCO has not taken definitive steps to develop a system to ensure that policies, programs, plans, and procedures are consistent sitewide with the goals of the current environmental restoration mission. Interim and final milestones have not been established for completion of this system. In the absence of such a system, FERMCO's plans and procedures will not be consistent.

The probable causal factors for this finding are lack of policy implementation to provide sitewide guidance on the development and implementation of environmental plans and procedures; procedures, in that formal guidelines and requirements have not been established for all critical environmental operations; and change, in that FERMCO has not developed a strategic plan for developing and implementing sitewide policies and requirements during the FEMP organizational transition.

3.5 INTERNAL AND EXTERNAL COMMUNICATION

3.5.1 Overview

The Internal and External Communication portion of the Environmental Management Assessment was conducted to evaluate the appropriateness of the communication system both internal and external to FEMP. The review of this system was designed to determine whether formal or informal channels of communication are effectively used to emphasize management commitment toward environmental protection; to promote awareness and support of environmental policies and programs throughout the organization; and to share information with external organizations, such as regulatory agencies, environmental groups, and the community.

Elements of an internal communication system considered during the assessment include regular formal processes such as staff meetings, management reporting, routing of key documents, distribution of employee newsletters, electronic mail messages, memoranda from senior management and so forth, and also include informal processes such as telephone calls and informal meetings. The scope also encompassed anonymous reporting systems and common perceptions of information/communication effectiveness. The assessment considered communication among Office of Environmental Restoration and Waste Management (EM), FN, and FERMCO. External communications efforts that were reviewed include regulatory reporting activities, public meetings, and newsletters.

The general approach to this assessment was to review DOE Orders and Secretary of Energy Notices (SENs), findings from the Environmental, Safety, and Health Progress Assessment of FEMP, and other background documents received from DOE and FERMCO prior to the onsite portion of the Assessment. Interviews were conducted in Washington, D.C., and Germantown, Maryland with EM organization responsible for providing guidance to FN. Onsite activities included interviews and FERMCO personnel who participate in the exchange of environmental information internally and externally; a review of written communication, policies, and other documents pertaining to environmental information exchange.

Interviews were held with EM and FN managers and staff, FERMCO's senior managers, selected CERCLA/RCRA Unit (CRU) Directors and CRU Environmental Managers, and other selected FERMCO staff. During the conduct of the assessment, interviews were not conducted with external groups. External groups include the following: EPA; Ohio Environmental Protection Agency (OH/EPA); Fernald Residents for the Environment, Safety and Health (FRESH); and local communities.

Communications-related documents reviewed included FERMCO employee communication publications, slides from senior management briefings, external communication policies, and public communication publications from FERMCO's and FN's public affairs organizations.

In reviewing internal communications, it was found that FN and FERMCO have made significant efforts to create and use formal and informal channels both for the vertical exchange of information, in both the top-down and bottom-up directions, and for the lateral exchange of information across their organizations.

FERMCO faces particularly significant internal communication challenges, given that it has more than 2,200 employees; that senior management has been in place for less than 4 months; and that the mission of the site has changed from uranium metal production to environmental restoration. In addition to a monthly employee newsletter, FERMCO promotes communication by convening task teams made up of employees selected from across the company. These teams are tasked with improving performance in assigned areas. Anonymous communication is encouraged through an ombudsman's office. The ombudsman listens to any employee concern, asks the employee what she or he would like to see happen, obtains a commitment (within 24 hours) from the employee's Division Director to address the concern, then follows up with the manager(s) responsible to see that the concern is resolved.

In addition to these approaches, FERMCO has addressed its internal communications challenge by implementing a matrix reporting structure. Under this structure, the majority of FERMCO's line employees report administratively to one manager, but perform functions for, and reside in the office of, another manager. As a result, meetings are regularly (e.g., weekly or biweekly) held that bring together employees who work across the company. At the senior management level, several weekly meetings are held among the President, Executive Vice Presidents, Vice Presidents, and CRU Directors.

Despite FERMCO's efforts to foster internal communication, the Assessment Team found room for improvement. During interviews, the team identified several examples which indicate that lateral communications efforts do not ensure that each FERMCO organization is kept adequately informed of the others' environmental activities. It was determined that communication is incomplete among line organizations that have interlocking responsibilities, and between line and support organizations.

In reviewing external communications, it was found that FEMP's Community Relations Program continues to be a success, as was identified during the Environment, Safety, and Health Progress Assessment in November 1991. FEMP conducts community meetings, required by the CERCLA, to provide information on cleanup activities at the site. Roundtable meetings are routinely held with the public on various topics of interest and monthly meetings are held with members of Fernald Residents for the Environment, Safety and Health (FRESH). FEMP develops CRU facts sheets, newsletters, and CERCLA-driven progress reports to keep the public informed.

FN and FERMCO are in the process of enhancing FEMP's Community Relations Program through the development of a public participation strategy. Each CRU has been assigned a Public Affairs Counselor. They work closely with the relevant CRU to identify regulatory reporting milestones, cleanup alternatives, future site use scenarios, and other issues of concern to external parties. Having done this, the counselor will work with the CRU Director and FN Branch Chief to map out the decision-making process, identify the affected external parties, determine their likely information needs, and develop a plan for involving these parties in the decision-making process. The philosophy behind this strategy is that FEMP will not limit itself to implementing those communication mechanisms required by law but will strive for attaining complete public involvement and thorough public understanding of FEMP environmental activities.

One finding was identified in the Internal and External Communication portion of the assessment related to incomplete formal channels for lateral communication of environmental information across the FERMCO organization.

3.5.2 Finding

IC/F-1: Formal Channels for Lateral Communication

Performance Objective: Best management practices suggest that formal channels of lateral communication be established to facilitate an exchange of information and lessons learned among colleagues within the same line or support organization, and across all line and support organizations.

Finding: Lateral communications among FERMCO's CERCLA/RCRA Units (CRUs) and between the CRU and support organizations do not ensure that each organization is aware of the other's environmental activities and that lessons learned are shared.

Discussion: FERMCO is not participating in the Fernald Remediation Integration Program (FRIP), an organization designed to foster and control integration among FEMP restoration elements. FERMCO identified two reasons that FRIP was not the appropriate mechanism to achieve this goal (I-C-21, I-C-24, and I-C-25). First, FRIP was largely staffed by a subcontractor, EBASCO, that does not share in the responsibility or accountability for site management. Second, FERMCO's matrix structure requires that personnel in its separate organizations communicate with one another on a regular basis, thereby obviating the need for a separate group to promote integration.

FERMCO does conduct an extensive set of regularly scheduled meetings that brings together managers whose groups perform similar line functions, as well as managers whose groups provide support that impacts the line organizations' environmental performance. Selected examples include (I-C-4 and I-C-25):

- A biweekly strategic planning meeting that gathers the managers of all of FERMCO's line and support organizations. This meeting is open to FN personnel.
- Three other separate, weekly sessions bring together the directors of each of the five CRUs:
 - FERMCO's president meets with the senior officials of all of the line and support organizations (i.e., all of his direct reports);
 - FERMCO'S president and executive vice presidents meet with the five CRU directors; and
 - The executive vice president of environmental programs meets with all of his direct reports, including the CRU directors.

Despite the existence of these formal channels for lateral communication, important information frequently is not exchanged among CRUs or between CRUs and support organizations. During interviews, the Assessment Team identified the following examples of inadequate lateral communication:

- The CRUs are expected to report through their construction safety representatives to the Environmental Safety and Health Division (ESH) any

activity that will result in emissions to air or water or the generation of waste. This does not happen on a consistent basis, and no formal mechanism exists to ensure that it occurs. Staff in ESH's Environmental Protection organization indicated that they plan to assign their own representatives to each CRU to improve communication between the two divisions (I-I-4).

- CRUs do not report anticipated changes in the service of tanks. These changes are not reported to the appropriate support organization personnel to ensure that corresponding changes are made to affected site documents (e.g., the Spill Prevention Control and Countermeasure (SPCC) and Best Management Practice (BMP) plans), as required by regulation (I-J-15).
- CRU3 has been assigned the task of identifying short-term, onsite waste storage alternatives. CRU1 is responsible for evaluating permanent onsite storage options. Currently, there is only informal communication between the two CRUs. The future waste storage needs of the other CRUs have not been formally communicated to CRUs 1 and 3 (I-J-13 through I-J-17, I-J-21, and I-J-22).
- Although most of the future waste generation at FEMP will occur as a result of CRU activities, the Waste Minimization and Pollution Prevention Team includes a representative from only one of the five CRUs. As a result, the team may not address opportunities for waste minimization and pollution prevention that may exist in another CRU. Moreover, opportunities may exist that would not be financially attractive for a single CRU, but that may be cost effective for all CRUs due to economies of scale (see Finding EP/F-2; I-K-21).
- CRUs 1 through 4 intend to discharge contaminated perched groundwater and surface water to CRU5's planned advanced wastewater treatment system (AWWT). Phases I and II of the AWWT system implementation process are estimated to be able to treat discharges generated, with an excess capacity of 200 to 300 gallons per minute (gpm). However, CRUs 1 through 4 have not provided CRU5 estimated discharge volumes, therefore, the 200 to 300 gpm excess capacity may not be adequate.
- CRU3 is responsible for all production area and production-associated facilities and equipment, both above- and below-grade. CRU5 is responsible for soils, groundwater, and surface water. The two CRUs have yet to resolve which of them has responsibility for the management of contaminated soil and groundwater from excavation of underground utilities during CRU3 decontamination and decommissioning (D&D) activities (I-L-16 and I-L-29).
- More than one tank numbering system exists onsite. This has led to duplicate tank numbers within the plant, thereby complicating such tasks as matching existing tanks to those shown in plans and drawings (I-J-13 through I-J-17, I-J-21, and I-J-22).

Furthermore, no organization or other central mechanism has been created to take over FRIP's responsibility to track integration efforts or to provide FN with monthly reports on these issues. Accordingly, FERMCO has no central source of information on activities to integrate the efforts of the CRUs and support groups (I-C-20).

FERMCO acknowledges that FN perceives a need for greater lateral communication across FERMCO. FERMCO believes, however, that the frequent cross-organization meetings fostered by its matrix reporting structure will eliminate the need for other forms of lateral communication. It is also FERMCO's belief that FN and former WEMCO staff will come to agree with FERMCO's point of view as they become more accustomed to FERMCO's matrix structure (I-C-25).

The probable causal factors for this finding are change, in that FERMCO is attempting to implement a new matrix reporting structure for the conduct of restoration activities at FEMP; and design, in that FERMCO's reporting structure has not ensured the conduct of all necessary lateral communication and the structure does not include a central organization or other mechanism designed to track and report on issues related to cross-FERMCO integration.

3.6 STAFF RESOURCES, TRAINING, AND DEVELOPMENT

3.6.1 Overview

The Staff Resources, Training, and Development portion of the Environmental Management Assessment examined the systems in place to ensure that staffing and resources are sufficient for FEMP's mission. This assessment reviewed programs to ensure that all personnel receive environmental protection training appropriate for their job responsibilities. Emphasis was placed on the quality and quantity of staff resources for environmental activities, the delineation of environmental responsibilities and the documentation of these responsibilities in job descriptions and performance standards, the implementation and development of training programs, the identification of necessary environmental training needs for each job classification, and the systems for maintaining training records.

The general approach to this portion of the assessment was to review DOE Orders, Secretary of Energy Notices (SENs), and site documents prior to the onsite portion of the assessment. Onsite activities included review of documentation pertaining to staff resources, training, and development, and interviews with knowledgeable and responsible FN and FERMCO employees. Documents reviewed included job descriptions, transition interviews, performance appraisals, training records, course materials, and relevant procedures.

Interviews were held with FN and OR staff within the respective administrative departments, and with FERMCO staff in the Office of the President and in the administrative departments (Human Resources, Training, and Professional Development), Environmental Programs Division, Remedial Support Operation Division, and the CERCLA/RCRA Units (CRUs).

To fully understand issues at FERMCO related to staff resources, training, and development, it is important to understand the recent transitions that have occurred:

- Transition in site mission from uranium metal production to environmental restoration;
- Transition in contract structure from a management and operations (M&O) contract to an environmental restoration and management contractor (ERMC) contract;
- Transition in contractor from WEMCO to FERMCO, under the direction of management obtained from four teaming partner companies: Fluor Daniel, Halliburton NUS Corporation, Jacobs Engineering Group, and Nuclear Fuel Services;
- Transition in organizational structure from a line management structure to a matrix structure; and
- Transition in DOE oversight, from OR to FN.

With regard to staffing issues, the transition in mission from uranium metal production to environmental restoration resulted in a shortage of staff with certain key environmental

skills at FEMP. These shortages, identified through FERMCO internal staffing needs assessments, have only partially been corrected. To make up for this shortage, there is substantial reliance on subcontractors and staff from the teaming partner companies. No formal strategic staffing plan has been developed for FERMCO.

Staffing at FN is currently insufficient to meet its basic obligations as a field office. FN currently lacks staff with certain key environmental and contracting skills. Because FN is supposed to operate as a full field office. However, staffing issues at FN are complicated and current staffing restrictions limit staff growth. In addition, many new FN staff have only limited DOE experience, and training programs are insufficient to train them in DOE procedures.

Staffing issues at FERMCO have been complicated by FERMCO's contractual requirement to retain all WEMCO staff. Many of these personnel have skills particularly suited to uranium metal production rather than environmental restoration. This has placed an increased burden on the Training Department to increase the environmental awareness and environmental skill level of these employees and to affect a change in culture from that of a production M&O orientation to an environmental restoration/ERMC orientation. It may also have resulted in a less than optimum organizational efficiency, as staff with production-oriented skills may be working in departments for which they are not well suited. The existing union contract further complicated staffing issues. The union contract includes work rule requirements which may be better suited to an M&O operation than to an ERMC operation.

FERMCO inherited a training program with several significant deficiencies, including staff not trained completely, decentralized training coordination and recordkeeping, and inadequate training facilities. Although FERMCO has made substantial progress in overhauling the training program, training resources are strained and may not be sufficient to accomplish training objectives in a timely manner. The achievement of compliance training for all staff has been hindered by factors including a substantial training backlog, inadequate funding, and literacy issues for some staff.

Professional development training programs at FERMCO are under development. A professional development plan outlines the general philosophy, approach, and programs, as well as timetables for completion of certain tasks. Specific programs include a Supervisor/Manager training program to educate managers about the mission, philosophy, structure, and procedures at FERMCO, teambuilding initiatives, and a "train the trainer" program. Initiatives are also underway to identify critical skill needs in private industry. This initiative will be used as the basis for career and professional development counseling and assistance through FERMCO's tuition assistance program (I-B-33). Such initiatives are important, as staff may be more committed to the restoration mission of the site if they are adequately prepared and trained for careers outside of FEMP.

Although initiatives are underway, FERMCO has not developed a performance appraisal system that explicitly includes environmental issues as performance criteria. Interim procedures for performance appraisal have not been adequately communicated to staff. Although many job descriptions have been rewritten, job descriptions for wage positions do not adequately reflect environmental responsibilities. The explicit inclusion of environmental responsibilities in performance appraisals and job descriptions is an

important mechanism for imparting a sense of environmental responsibility and commitment to staff.

There were four findings identified in the Staff Resources, Training, and Development portion of the Assessment: Staffing levels are insufficient in certain key environmental areas at FEMP (SR/F-1); FERMCO lacks a strategic environmental staffing plan (SR/F-2); FERMCO lacks adequate resources for development of a comprehensive training program during transition (SR/F-3); and environmental responsibilities are not explicitly represented in FERMCO performance appraisals and job descriptions (SR/F-4).

3.6.2 Findings

SR/F-1: Environmental Staffing Levels

Performance Objective: Best management practices suggest that an organization charged to perform environmental restoration have adequate staff resources to accomplish its mission.

Finding: FN and FERMCO staffing levels are inadequate in certain key environmental positions that are critical to the site mission.

Discussion: The recent transition from a management and operations (M&O) organization engaged in uranium metal production to an ERMCO organization engaged in environmental restoration has complicated the staff resources issues at the site. The environmental restoration mission of FEMP requires environmental skills, many in specialty disciplines, that were not required for production.

FN is currently staffed with approximately 70 full-time equivalents (FTEs), with an allocation maximum of 80. While this is a significant increase from the 18 FTEs onsite in 1992, it is far less than the 213 FTEs originally planned for this field office (I-B-4). As a result, staffing levels for personnel with certain critical skills at FN are inadequate to accomplish basic oversight duties. FN is developing a proposal for an FTE allocation of 114. With a staff of 70 to 80, FN is still dependent on OR for support in technical, contractual, and administrative areas.

A February 26, 1992, Memorandum of Agreement (MOA) currently exists with OR for assistance in critical skill areas (D-B-1). OR resources are currently being strained by FN needs, and this strain is expected to intensify in the next year due to planned staffing reductions at OR (I-B-29). Even with this heavy reliance on OR, FN still lacks certain skilled staff critical to its oversight role. These include environmental engineers, waste management experts, and contracting and procurement personnel (I-B-4 and I-B-29).

Inadequate staffing levels have impeded FN's oversight of FERMCO in areas such as technical and scientific review and training (I-B-4). An additional factor which further strains staff resources is that many FN employees are new, and some new employees have only limited DOE experience. The significant backlog in DOE's supervisory training programs has slowed the assimilation process for some FN supervisors (I-B-4, I-B-5, and I-B-6).

Staffing of FERMCO, currently at approximately 2,200, has been achieved through (1) reorganization of existing WEMCO staff, (2) hiring of existing subcontractors, (3) obtaining key professional and management staff from the four teaming partner organizations, and (4) directly hiring new staff. Although a formal staffing plan and complete skills/needs assessment has not been performed, FERMCO management interviewed every WEMCO employee and many subcontractors during transition to gain an understanding of their responsibilities, interests, and skills (D-B-2). Based on these extensive interviews, FERMCO management was able to reorganize its staff and identify additional staffing needs.

Despite this extensive reorganization and the additional staffing initiatives undertaken by FERMCO, staffing levels of some environmental positions are insufficient. Environmental managers indicated that staff shortages exist in many areas critical to the environmental mission of FERMCO. These include fate and transport modeling, remedial investigation/feasibility study (RI/FS) engineering and report writing, hydrogeology, waste management, and treatability studies (I-B-27, I-B-28, and I-B-32). Of these, the risk assessment skills are in particularly high demand (I-B-14). While staff with these environmental skills have been hired or obtained from teaming partner organizations or subcontractors (I-B-15 and I-B-19), many positions remain open. Currently, approximately 300 staff requisitions are outstanding, of which approximately 50 are for personnel with these environmental skills (D-B-3; I-B-38).

Mechanisms inherent to FERMCO's matrix structure may favor substantial reliance on subcontractors in the future. The matrix structure is designed to supply resources from support organizations within FERMCO (i.e., Environmental, Engineering, Construction, Remediation Support Operation) to the CERCLA/RCRA Units (CRUs). When support staff are not matrixed to a CRU or involved in a special project, they may be a cost burden. Therefore, there is incentive to maintain only limited staffing levels in the support organizations. As a result, support organizations may not have sufficient staff to matrix to the CRUs, especially when staff are needed on relatively short notice. For example, the unexpected rejection by EPA of CRU2's RI report resulted in increased need for environmental sampling staff, beyond that planned by the CRU. Because the support organizations and subcontractors did not have the staff necessary for the project, CRU2 was forced to obtain staff from the teaming partner companies (I-B-12). Such reliance on non-FERMCO personnel could lead to issues with worker commitment to the site mission, staffing consistency from project to project, and staffing familiarity with FERMCO-specific procedures. This reinforces the need for formal, auditable procedures for training and oversight of subcontractors to ensure familiarity with, and commitment to, the mission and procedures.

Efficient operation within a matrix structure depends heavily on clear communication and advanced planning. Such operation is enhanced by having a system in place that accurately allows managers to match project needs with staff skills, time commitments, and training requirements. Until FERMCO assembles such a skills/needs system, including procedures to keep the system current, operation of the matrix system may not be optimized.

The probable causal factors for this finding are change, in that change in site mission has resulted in insufficient staffing levels or skills in certain critical environmental areas at FN and FERMCO; and barriers and controls, in that the uncertainties in environmental project planning can act as a barrier to timely staffing.

SR/F-2: Strategic Environmental Staffing Plan

Performance Objective: Best management practices suggest that a formal strategic environmental staffing plan be developed to facilitate staffing within an organization and to ensure that levels of staff with environmental skills are appropriate for the site mission.

Finding: FERMCO has not developed a formal sitewide strategic environmental staffing plan.

Discussion: FERMCO performed an internal assessment of staffing levels during transition and identified certain skill areas which required additional staff. These assessments were based on interviews conducted by transition team managers of all WEMCO employees and many subcontractors (I-B-22, I-B-34, and I-B-15). Individual FERMCO department managers, based on their own expertise regarding staffing needs and on staffing information developed for the proposal, reorganized WEMCO staff into their departments based on the interviews (I-B-34). However, no sitewide procedures were identified that guided this process.

In addition to this initial reorganization, plans and strategies have been prepared by department and CRU managers to guide and coordinate future environmental staffing needs (I-B-15 and I-B-37). While staffing plans for individual departments exist (I-B-15 and I-B-37), formal guidelines were not found for plan development, for critique of these plans to determine accuracy, or for coordination of these plans to ensure a consistent sitewide strategy. Written guidelines on staffing do not exist (I-B-3, I-B-13, and I-B-15).

The lack of a formal strategic environmental staffing plan at FERMCO raises concern regarding the following potential issues:

- Whether strategic staffing assessments have been performed within all environmental areas of the organization;
- Whether the staffing assessments performed to date are accurate;
- Whether future staffing assessments are planned; and
- Whether the overall staffing strategy of the organization is sufficient for it to meet its environmental restoration mission.

Given the substantial change in the mission of the site from production to environmental restoration, it is particularly important that staff with environmental skills be thoroughly and formally assessed according to an overall guiding strategy that ensures the timely completion of the site's environmental mission.

The probable causal factors for this finding are policy, in that there is no FERMCO policy dictating the development of formal environmental staffing plans; and procedures, in that no procedures were found for conducting staffing assessments and developing strategic staffing plans.

SR/F-3: Environmental Training Resources

Performance Objective: DOE 5400.1, "General Environmental Protection Program," establishes environmental protection program requirements for DOE operations to ensure compliance with Federal, state, and local protection laws and regulations, Executive Orders, and internal DOE policies. These laws and regulations require that effective training programs be implemented in many environmental, health, and safety areas, including a documented program for employee environmental awareness training. Best management practices suggest that adequate resources be applied within an organization to achieve both training requirements and certain training programs not specifically required (e.g., professional development training).

Finding: FERMCO lacks adequate resources to implement a comprehensive environmental training program for all employees during transition.

Discussion: Since 1990, FEMP has undergone a change in site mission from uranium metal production to environmental restoration. This change has created a shortage of staff with specific environmental skills and training. Given this shortage, the need for staff training programs has become particularly important. Recognizing this need, FERMCO conducted a baseline needs assessment during the transition which was used to guide initial training program development (D-B-12). This assessment uncovered weaknesses in the previous WEMCO training program, including (D-B-12):

- The lack of, or deficiencies in, structured training programs required by DOE Orders and Federal regulations;
- A shortage of training facilities;
- The lack of compliance training for hundreds of employees, as required by Occupational Safety and Health Act (OSHA), CERCLA, RCRA, and DOE Orders;
- The lack of centralized coordination of training activities and recordkeeping;
- Poor attendance (60 percent) for many training programs (I-B-1); and
- The lack of professional development training programs (I-B-33).

FERMCO has centralized almost all of its training programs within the Training Department, which comprises 65 to 70 employees. This Department has made significant progress in training program development, implementation, and recordkeeping. Most training functions are now coordinated within this department, compliance training programs and materials have been enhanced, recordkeeping systems have been centralized and improved, new training programs (e.g., for technical training) are under development, and professional development training initiatives are underway (D-B-12; I-B-1, I-B-7, and I-B-35).

FERMCO's training initiatives to date have focused primarily on the necessary development and implementation of required programs (i.e., compliance). The substantial level of effort required by this initiative appears to be straining the resources of the Training Department

and may be delaying the development of other training initiatives. Hundreds of employees still have not participated in at least one of the training programs required for their positions. These may include one or more of the following programs: General Employee; Site Worker; 24- and 40-Hour OSHA; 8-Hour OSHA Refresher; and RAD Worker training. For example, a new site-specific 40-Hour OSHA training course curriculum was only completed in mid-March 1993 (I-B-1). Other factors have contributed to these delays, including:

- A substantial shortage of training facilities. Training is conducted both onsite and offsite in several different facilities, none of which are dedicated for training use. This limits course scheduling and places administrative burdens (i.e., coordination and scheduling) on the Training Department (I-B-1 and I-B-7).
- A substantial backlog in "profiling" employees. The profiling process determines, through a questionnaire completed by employees and their supervisors, the specific compliance training needed by the employee (D-B-9). There are currently 500 to 600 employees not yet profiled, many of whom are subcontractors (I-B-8).
- High initial training failure rates. There were high (30 to 40 percent) failure rates for many initial training courses conducted under FERMCO. These failures can be attributed to the more rigorous training standards (e.g., closed-book, written exams) used by FERMCO. FERMCO has reduced the failure rate to 10 to 15 percent by demanding that staff adhere to the more rigorous training standards, providing remedial training, and allowing oral exams for some staff (I-B-1).
- Potentially inadequate funding. Financial resources for training may be inadequate. The most recent budget plan for FERMCO, for example, showed a \$1.3 million dollar shortfall from the required funding level estimated by the Training Department (I-B-35).

As a result of strain on Department resources in implementing compliance training, several important training initiatives have been delayed:

- A formal training plan has not been developed. The lack of a formal plan for development and implementation of training programs raises concern regarding overall coordination of training efforts and timetables for completion. Although staff indicated that compliance training should be achieved by mid-1993, it was acknowledged that this timetable may be revised (I-B-1). Milestones and timetables to achieve compliance training and to implement technical training programs have not been formally delineated. The need for a formal training plan, acknowledged by FERMCO during transition (D-B-11), is particularly important given the significance of training and staff development issues at this site.
- Training procedures have not been rewritten since transition. Many training procedures written under WEMCO are no longer totally applicable to new FERMCO initiatives. These procedures include the Site Standard Operating

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Procedures created by WEMCO, as well as other procedures related to training. For example, there are no formal procedures for reviewing training qualifications for all CRU project staff.

- Technical training programs are in initial stages of development. Job-specific training programs, required by DOE 5480.20, "Personnel Section, Qualification, Training, and Staff Requirements at DOE Reactor and Non-Reactor Nuclear Facilities," are developed through job analysis, training needs assessment, and structured training program development. Presently, job analyses (through interviews and field observations) are underway only for fissionable material handlers and radiation protection technicians (I-B-35). Uniformity of technical training is required by DOE 5480.19, Chapter V, "Control of On-Shift Training," which states that technical training be conducted in a consistent and uniform manner to prevent unqualified personnel from performing tasks. Such training is especially important within a matrix structure since personnel may be selected from support organizations by job title primarily. The technical assessment team identified several situations where potential weaknesses in either technical training programs, implementation, or post-training oversight may adversely affect the quality of environmental sampling and monitoring data.

FERMCO has a computerized recordkeeping system for tracking training requirements and scheduling. The computer system, developed partially under WEMCO, serves as the repository of the most current training information, and there are adequate procedures in place to ensure timely updating. Paper records are maintained as backups. The 50 Training Coordinators (TCs) within FERMCO are responsible for using the system to track training requirements for staff assigned to them (D-B-10; I-B-8). Because the computer system does not automatically identify personnel with upcoming training needs, it is essential for TCs to identify training deadlines in advance of noncompliance (I-B-2 and I-B-8).

TC resources are strained because most TCs have other support or professional responsibilities in addition to their TC duties. Some staff view their TC responsibilities as an added burden, and there is frequent turnover of TCs (I-B-8). The apparent strain on TC resources raises concern for maintaining future compliance.

The strain on Training Department resources may be reduced when the compliance training program is fully implemented and when adequate training facilities are provided. However, strains on the department could increase in the future due to:

- Increases in the need for technical training that could be required by the implementation of new technology (e.g., a vitrification unit) onsite (I-B-1).
- Implementation of automatic site access restrictions. Through integration of computerized training records with the site's computer/badge security system, FERMCO plans to automatically prevent site access to individuals whose computer records indicate compliance training deficiencies (I-B-1). While this "lockout," planned for mid-1993, will help ensure sitewide emphasis on compliance training, it may result in additional training workload burdens on TCs.

Given the importance of training initiatives to the overall environmental mission of the site, the apparent lack of adequate training resources raises concern for the timely implementation of training programs.

The probable causal factors for this finding are change, in that change from WEMCO to FERMCO required a substantial overhaul of the training organization and programs; and barriers and controls, in that (1) lack of resources, such as dedicated training facilities, is hindering training implementation, and (2) many staff were out of compliance with training requirements at the time of transition.

SR/F-4: Environmental Responsibilities in Performance Evaluations and Position Descriptions

Performance Objective: Best management practices suggest that a formal procedure be in place for conducting staff performance evaluations and that formal criteria for such evaluations explicitly include environmental performance issues.

Finding: FERMCO procedures for performance appraisal have not been formally developed or communicated to site personnel. Procedures on which the FERMCO system is likely to be based do not explicitly incorporate environmental performance criteria.

Discussion: The establishment of a performance appraisal system, with appropriate supporting procedures, is necessary to ensure consistency in staff professional development across the organization. To ensure awareness of and accountability for the environmental protection requirements of the site, such an appraisal system should explicitly include environmental responsibilities. Similarly, site staff position descriptions should include direct or indirect environmental responsibilities.

FERMCO has not developed a formal system for performance appraisal. FERMCO plans to use the WEMCO system with modifications until its own performance appraisal system is formalized (I-B-23). This interim procedure has not been communicated to all FERMCO personnel. Many staff are unsure of how performance is to be assessed within the FERMCO organization (I-B-3); some FERMCO managers indicated that they intend to use the WEMCO system by default; and others, especially teaming partners, indicated that they will use the performance appraisal procedures of their home offices. FERMCO plans to provide performance appraisal training for employees in July and August of 1993. For teaming partners, there is additional uncertainty regarding the interaction of their home offices with FERMCO for compensation determinations (I-B-10, I-B-15, and I-B-19).

FERMCO indicated that the performance appraisal system will be based on the WEMCO model, the models from one or more of the teaming partner companies, or other industry models (I-B-7 and I-B-33). However, neither of the two systems on which the FERMCO system may be based (i.e., those of WEMCO and Fluor Daniel), formally and explicitly include environmental performance criteria as part of the evaluation (D-B-4 and D-B-5). In the current WEMCO and Fluor Daniel systems, environmental performance criteria are included only at the discretion of the employee or manager. In addition, no formal guidelines or policies are identified to direct staff to include such criteria in the evaluations.

A review of five WEMCO performance appraisals (conducted under WEMCO) for staff with direct environmental responsibilities revealed that, under the WEMCO system, environmental performance and compliance criteria were not explicitly addressed. On one of the appraisal forms, compliance with environmental regulations was listed in general terms as a job objective. Although the employee's performance of this objective was ranked on a scale of one to four by the employee's supervisor, there was neither explicit discussion of the environmental compliance results nor any indication of how that performance affected the overall appraisal of the employee.

FERMCO is developing a recognition and reward program to formally acknowledge timely project completion, quality improvement, cost savings, cycle time reduction, and other factors (D-B-13). Although the award criteria for this program include safety

improvements, environmental accomplishments are not explicitly addressed in the recognition and award program (D-B-13). The inclusion of such criteria could be used to formally reinforce the site's environmental mission. For example, the removal of the copper pile ahead of schedule showed a high level of staff commitment and enthusiasm (I-B-19). While this accomplishment may have received recognition based on criteria of the new program, the environmental significance of the accomplishment may not have been formally recognized.

Position descriptions for FERMCO employees, other than environmental specialists, do not consistently emphasize the importance of environmental responsibilities. In a 1991 renegotiation of the union contract, wage positions were grouped into the following three environmental classifications: hazardous waste technician (including chemical operator, decontaminator, packer), regulatory technician (including electrician, millwright, pipefitter), and hazardous materials transportation and support specialist (including heavy equipment operator, utility worker, laborer) (I-B-37). While these classifications reflect an acknowledgement of the site's change to an environmental restoration mission, the job descriptions within these classifications were not altered (I-B-36 and I-B-37). For example, personnel who work as decontaminators, chemical operators, and bulldozer operators have the potential to impact the environment as a result of their daily duties. However, the position descriptions for these jobs do not mention environmental responsibilities or duties (D-B-6).

Job descriptions for environmental staff have been modified by FERMCO. Drafts of these descriptions were reviewed for staff in the areas of waste management, environmental protection, engineering, radiological control, and industrial hygiene (D-B-7). These job descriptions adequately reflect the environmental responsibilities of these positions.

The probable causal factors for this finding are policy, in that FERMCO has not formally set its policy regarding when and how environmental performance criteria will be included in its performance appraisal system and in its position descriptions; and procedures, in that the interim procedures for performance appraisal have not been developed and formally communicated.

3.7 PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION

3.7.1 Overview

The Program Evaluation, Reporting, and Corrective Action portion of the Environmental Management Assessment focused on the FN and FERMCO Self-Assessment Programs and the FERMCO Environmental Safety and Health Division's Environmental Safety and Health Assurance Program. The review consisted of an assessment of the design and development of the programs as they relate to Secretarial and Office of Environmental Restoration and Waste Management (EM) guidance on self-assessments, DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," and best management practices.

The general approach used in this assessment was to review documents provided to the Assessment Team by EM, FN, and FERMCO before and during onsite activities, and to interview relevant EM, FN, and FERMCO personnel in order to gain an understanding of the design and implementation of the self-assessment and assurance programs. Documents reviewed included the Office of Environmental Restoration and Waste Management Self-Assessment Management Plan, FN Self-Assessment Program Implementation Plan, FERMCO Self-Assessment Program Implementation Plan, Draft ES&H Self-Assessment Program Implementation Plan, Work Plan for the Consolidation of ESH&QA Assessment Results and Development of an Integrated Corrective Action Plan, procedures, schedules, and reports. Personnel interviewed included EM, FN, and FERMCO senior managers, project managers, environmental staff, and other staff involved in self-assessment and appraisal activities.

FERMCO is currently in the process of compiling all the open findings from previous audits and appraisals conducted at FEMP since 1989. The Program Assessment and Reporting organization at FEMP is creating a master data base to consolidate all open findings. The data base will include results of FERMCO self-assessment activities and external assessments and appraisals. This organization is also developing an integrated corrective action plan to address these findings. This will emphasize the correction of root causes and have provisions for verification and validation of closure. The corrective action plan will be used as the basis for tracking responsiveness to past assessment results. FERMCO's schedule for completing the data base and drafting the master corrective action plan is the end of July 1993.

At this time, both FN and FERMCO are undergoing transition. FN is establishing itself as a Field Office and FERMCO assumed site responsibility as the new Environmental Restoration Management Contractor (ERMC) in December 1992. As a result of this, each of their programs are in the process of development or formalization. In January 1993, EM issued its final Self-Assessment Management Plan which outlines self-assessment guidance for the Field Offices and operating contractors. This guidance establishes deadlines for FERMCO and FN to prepare and submit their Self-Assessment Program Implementation Plans to the appropriate approving authority. FERMCO submitted its Program Implementation Plan to FN in advance of the March 26, 1993 deadline. FN must submit its Program Implementation Plan to Office of Oversight and Self-Assessment (EM-20) by April 26, 1993. FN's draft program contains the elements highlighted by Secretarial and EM guidance on self-assessment, and appears to be on schedule for the April deadline.

Given the efforts to develop self-assessment programs on a schedule that meets the guidance of EM, there are no findings in this portion of the assessment.

3.8 ENVIRONMENTAL PLANNING AND RISK MANAGEMENT

3.8.1 Overview

The Environmental Planning and Risk Management portion of the Environmental Management Assessment addressed the extent to which the consideration of environmental issues, such as regulatory requirements and potential environmental impacts, is conducted and integrated into FEMP planning processes. In addition, this portion of the assessment addressed the adequacy of the risk identification and management programs to identify, evaluate, and mitigate environmental risks. Because FEMP is an environmental restoration project and environmental considerations are critical to its overall strategic plan, the assessment focused on the integration of environmental risk identification and planning activities at the Divisional and CERCLA/RCRA Unit (CRU) level. The assessment included reviewing planning documents and risk management programs to assess their effectiveness in addressing and limiting FEMP's liability concerning environmental hazards. Specific areas reviewed included the Environmental Strategic Planning process, Project Control Integration, and the Risk Assessment and Management System.

The general approach used in this assessment was to review documents provided to the Assessment Team by FN and FERMCO before and during onsite activities, and to interview relevant personnel from both organizations. Personnel interviewed onsite included senior managers, project managers, environmental staff, and other staff involved in environmental planning and risk management activities from FN and FERMCO.

Sitewide environmental planning activities at the FEMP were centralized in January 1993 within the newly-formed Environmental Strategic Planning Section. Previously, environmental planning activities were conducted by the individual CRUs. The Environmental Strategic Planning Section is responsible for developing policy, performing long-range environmental planning, and preparing associated planning documents. Among the issues to be evaluated are the future use of the site, disposal alternatives, and cleanup criteria. In addition, this section has the responsibility for identifying new strategic environmental issues which may impact the FEMP restoration.

FERMCO is in the process of building in-house risk assessment capability through the Environmental Risk Assessment Section. The purpose of this section is to provide the CRUs with CERCLA-specific risk assessment guidance with respect to cross-cutting issues, as well as to conduct sitewide risk assessments. At this time, this section has not been fully staffed and does not have a written charter or operating procedures.

Environmental risk management is the goal of any environmental restoration program such as FEMP. FEMP identifies, evaluates, and controls risks through the Risk Assessment and Management (RAM) System and the Readiness Review Process. The FEMP RAM System provides a graded approach to address possible health, environmental, and mission risks. This risk assessment is applied to new and modified facilities, remediation/restoration activities, process systems, and components at least three times during the design, operation, and decommissioning stages. At this time, the RAM System still follows WEMCO procedures. FERMCO has plans to update and revise the RAM procedures.

Once the RAM System process has been completed for a project, the Readiness Review Process establishes and verifies the status and degree of readiness of an activity to start up or to proceed to the next phase of work. The Readiness Review Process provides an independent and systematic approach for validating planned actions. This procedure is applicable to all FEMP activities relating to facilities, operations, processes, systems, construction/demolition efforts, and projects. The review process is conducted by senior representatives from the FERMCO organization. The Readiness Review is chaired by the Manager of Program Assessment and Reporting.

While the RAM System and the Readiness Review effectively identifies and addresses health and safety risks associated with projects, it has not consistently addressed environmental risks.

Given the nature of the FEMP mission, environmental protection and compliance issues are integral to the success of the project. However, not all environmental issues and requirements are identified and planned in the CRU work planning process. Although most CRU activities are reviewed for environmental requirements, the current process is informal. Given the reorganization of functions at the site and the level of new hires, the potential exists for projects to be developed and implemented without identifying and planning for environmental issues.

There are two findings in this portion of the assessment relating to the lack of formal systems for including environmental considerations in the CRU planning process and for identifying, evaluating, and managing environmental risks.

3.8.1 Findings

RM/F-1: Environmental Planning

Performance Objective: Best management practices suggest that environmental protection considerations be adequately and formally addressed and integrated in project planning. In addition, best management practices suggest that there be a formal system to ensure that all proposed projects are reviewed to identify and address any potential environmental issues and requirements.

Finding: FERMCO does not have a formal system to ensure that environmental protection considerations are included during CERCLA/RCRA Unit (CRU) planning, or to ensure environmental review of site modifications, new technologies, projects, and requisitions for new equipment.

Discussion: As an environmental restoration project, activities at the FEMP are driven by the requirements of both CERCLA and RCRA. Each CRU is responsible for developing work plans and reports to meet Amended Consent Agreement, Consent Decree, and contractual deadlines. In addition to planning for these requirements individually, cross-CRU issues and other environmental requirements must be addressed. As a result, each project must be evaluated both individually and in conjunction with project plans and schedules for other concurrent projects or projects which may provide or require similar informational needs. The Assessment Team noted the following deficiencies that are indicative of a lack of a formal system to ensure that environmental protection activities are included in CRU planning:

- Waste minimization has not been incorporated into the planning for future projects that will generate waste. The five CRUs are the primary waste generators at the site. However, only one CRU participates in waste minimization policy discussions (see Finding RAD/F-3).
- Offsite radiological impact has not been consistently addressed in CRU Work Plans and remediation decision documents. Even when this risk has been addressed, appropriate monitoring has not been consistently recommended to ensure that control measures are effective and that offsite dose limit compliance is documented (see Finding RAD/F-4).
- Environmental ALARA issues are not consistently considered by FERMCO when assessing alternatives during the development of work plans for short-term removal and long-term remediation activities (see Finding RAD/F-5).
- The CRUs are individually responsible for providing the Environmental Safety and Health (ESH) and Regulatory Programs (RP) Divisions with copies of their work plans for environmental review. The CRUs are also responsible for reporting to ESH and RP, through their respective construction and safety representatives, any activity that will result in emissions to air or water or the generation of wastes. These reports have not been provided on a consistent basis (I-I-4 and I-I-8).

While some organizations, such as the Waste Management Program Section and CRU1, are developing their own procedures to formalize the environmental review of projects and plans, there is the need for a sitewide system which would standardize the process and ensure integration (I-A-35, I-A-36, and I-A-40). With the transition to a new contractor, as well as the development of new departments with new personnel, projects may be developed and implemented without identifying and planning for environmental issues.

The probable causal factors for this finding are procedures, in that sitewide integration of environmental protection considerations are not included in the planning process; and risk, in that there is a lack of a sitewide appreciation of the risks associated with incomplete or inconsistent environmental review of projects.

RM/F-2: Risk Identification and Management System

Performance Objective: Best management practices suggest that an organized and integrated approach to identify, evaluate, and manage environmental risks be consistently implemented across an organization.

Finding: FERMCO has not consistently implemented a formal and integrated system to identify, evaluate, and manage environmental risks.

Discussion: Effectively addressing risks is critical to the timely and successful completion of a complex environmental restoration project, such as FEMP. Risks that are not identified, evaluated, and appropriately managed have the potential to impact FEMP's cleanup schedule, community relations, and mission. While FEMP's Risk Assessment and Management (RAM) System has been effective in identifying and addressing worker health and safety risks, the environmental component has not been consistently implemented (I-A-13, I-A-18, and I-A-42). The Assessment Team noted the following deficiencies in risk management:

- FERMCO has not prepared a Waste Management Plan for mixed and low-level waste. The lack of a Waste Management Plan has limited the use of proactive planning for waste minimization, recycling, treatment, storage, and/or disposal; and has resulted in delays in waste minimization program implementation (see Finding RAD/F-3).
- Environmental ALARA has not been consistently incorporated in the FEMP's restoration activities. Environmental ALARA issues would include evaluating the potential, and control measures necessary, for airborne and surface water releases during the assessment of various remediation techniques. For example, environmental ALARA has not been adequately addressed in the removal action at the sewage treatment and incineration plant (see Finding RAD/F-5).
- Currently, each CRU is responsible for performing a Remedial Investigation (RI) in accordance with EPA guidance. CRU2's RI was the first to be submitted under the Amended Consent Agreement. The RI was not approved by the regulators, and a significant number of the regulator comments indicated that there was an inadequate number of samples, a lack of sufficient data validation, and the RI did not adequately characterize the site (D-L-1 and D-L-2). The disapproval of this document has forced CRU2's schedule to slip and the risk exists that they may miss Amended Consent Agreement deadlines.

The RI for CRU1 is being prepared by the same subcontractor and is scheduled to be submitted to the regulators in May 1993. This RI was conducted in the same manner as that of CRU2. It is possible that the regulators will not approve CRU2 leading to a schedule delay for CRU1. This slippage in schedules may negatively impact the FEMP's ability to meet its deadlines and its overall mission (I-A-13) (see Finding QA/F-1).

The newly-created Environmental Risk Assessment Section will address the issues related to the Remedial Investigation/Feasibility Study process. However, environmental risks that fall outside the CERCLA/RCRA arena, which have not been identified as the responsibility of the Environmental Risk Assessment Section, must also be identified, evaluated, and appropriately managed.

The probable causal factor for this finding is policy implementation, in that FEMP's environmental risk management policy has not been effectively disseminated and implemented across the site.

APPENDIX A

BIOGRAPHICAL SKETCHES OF ASSESSMENT TEAM

APPENDIX A:

BIOGRAPHICAL SKETCHES OF THE ASSESSMENT TEAM

NAME: Robert A. Crowley, P.E., P.L.S.

AREA OF RESP: Team Leader

ASSOCIATION: U.S. Department of Energy

EXPERIENCE: 18 Years

- U.S. Department of Energy, Office of Environmental Audit
 - Environmental Engineer. Provides guidance, direction, and assistance to a multidisciplinary group of professionals performing environmental surveys, Tiger Team Assessments, and Environmental Audits of DOE facilities.
 - Served as Special Assistant for the Paducah Tiger Team Assessment; Team Leader for the Component Development and Integration Facility and the Coal-Fired Flow Facility Environmental Audits; Environmental Subteam Leader for the National Institute for Petroleum and Energy Research Tiger Team Assessment; Deputy Environmental Subteam Leader for the Brookhaven National Laboratory, Princeton Plasma Physics Laboratory, Solar Energy Research Institute, and Morgantown Energy Technology Center Tiger Team Assessments; and Deputy Team Leader for the Bonneville and Western Power Administration Environmental Audits.
- Federal Energy Regulatory Commission, Office of Hydropower Licensing
 - Civil Engineer. Directed safety and design assessments of energy projects and ensured operational and design compliance with environmental requirements.
- Anne Arundel County Department of Public Works
 - Civil Engineer. Managed projects associated with water quality planning and surface and groundwater hydrology.

EDUCATION: Graduate Studies in Civil Engineering, University of Maryland
B.S., Agricultural Engineering, University of Maryland

NAME: Matthew J. Allen

AREA OF RESP: Group Coordinator

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 14 Years

- Arthur D. Little, Inc.
 - Participated in the Fermi National Accelerator Laboratory, Oak Ridge K-25 Gaseous Diffusion Plant, and the Pittsburgh Energy Technology Center Tiger Team Assessments as Group Coordinator for the Environmental Subteam. Participated in the Line Program Environmental Audit of the Formerly Utilized Sites Remedial Action Program as an Environmental Management Specialist.
 - Coordinated environmental, health, and safety audit teams for commercial and government organizations and operations.
- Avery Dennison, Inc.
 - Served as Corporate Manager, Plant and Environmental Safety, responsible for over 100 manufacturing locations.
 - Developed and implemented a company-wide environmental health and safety auditing and assessment program.
 - Wrote, produced, and distributed a series of health and safety training videos, with training manuals, for worldwide distribution to operating units.
 - Coordinated outside consultant services in the areas of safety and industrial hygiene, fire protection, and asbestos removal.
 - Planned and implemented an annual worldwide environmental, health, and safety management conference.
- Liberty Mutual Insurance Company
 - Coordinated environmental, health, and safety services to Fortune 500 companies throughout North America.
 - Served as a Safety and Industrial Hygiene Specialist on environmental, health, and safety assessments of a number of organizations and operations.
 - Developed and participated in numerous safety and health training programs for clients worldwide.

EDUCATION: M.B.A., Operations Management, Babson College (in progress)
B.S., Resource and Environmental Economics, University of
Massachusetts

OTHER: Certified Safety Professional #7910

NAME: Raeann Reid

AREA OF RESP: Group Coordinator

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 20 Years

- Arthur D. Little, Inc.
 - Team Coordinator for the Tiger Team Assessments of Energy Technology Engineering Center, Naval Petroleum Reserves in California, Strategic Petroleum Reserves, and Naval Petroleum and Oil Shale Reserves in Colorado, Utah, and Wyoming, and Deputy Team Coordinator for Idaho National Engineering Laboratory.
 - Led and participated in audits and risk assessments for several Arthur D. Little clients, primarily in the petrochemical and refining industries including oil refineries, oil terminals, and production facilities.
- Other Industry Experience
 - Twenty years experience including environmental operations; environmental regulatory affairs; industrial and commercial hazardous waste management, site evaluation, remediation, and offsite disposal; and industrial and commercial laboratory management.
 - While working for a major petrochemical manufacturer, audited toll manufacturers, bulk terminals, repackaging plants, recyclers, and commercial disposal facilities.

EDUCATION: B.S., Mathematics, Minor Chemistry, Texas Technological University

NAME: Mark Bell

AREA OF RESP: Environmental Commitment
Environmental Protection Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Participated in the Environmental Audit of Fossil Energy Sites in Wyoming as the Waste Management and Environmental Management Specialist.
 - Participated in the Morgantown Energy Technology Center Tiger Team Assessment as the Surface Water Specialist for the Environmental Subteam.
 - Participated in over 75 audits (20 audits as a Team Leader) of petrochemical, chemical, aerospace, and manufacturing facilities to determine compliance with Resource Conservation and Recovery Act, Clean Water Act, Clean Air Act, Toxic Substances Control Act (for PCBs), and Department of Transportation regulations.
 - Conducted audits of U.S. Air Force Bases to determine compliance with applicable Federal, state, and Air Force regulations concerning solid hazardous waste management, industrial wastewater management, and drinking water management
- Reidel Environmental Technologies, Inc., Houston, TX
 - Served as a Chemical Engineer for Comprehensive Environmental Response, Compensation, and Liability Act removal projects. Responsible for managing and supervising the treatment of over 2 million gallons of water contaminated with pentachlorophenol, arsenic, chromium, and copper utilizing flocculation, coagulation, and carbon adsorption; site safety; evaluation and selection of disposal alternatives; project accounting; and site's compliance with applicable U.S. Environmental Protection Agency, Occupational Safety and Health Administration, and Department of Transportation regulations.

EDUCATION: M.S., Management, Georgia Institute of Technology
B.S., Chemical Engineering, University of Alabama

NAME: Paul E. Feuerbach

AREA OF RESP: Formality of Environmental Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 7 Years

- Arthur D. Little, Inc.
 - Participated in environmental audits and Tiger Team Assessments of several Department of Energy facilities to evaluate environmental management systems, environmental corrective action programs, and compliance with applicable regulations. The DOE sites include: West Valley Demonstration Project, Los Alamos National Laboratory, Strategic Petroleum Reserve, Fermi National Accelerator Laboratory, and Southwestern Power Administration.
 - Participated in environmental audits of petrochemical, manufacturing, and defense contractor facilities to determine compliance with the Comprehensive Environmental Response, Compensation, and Liability Act, Resource Conservation and Recovery Act, Clean Water Act, and Clean Air Act.
 - Participated in environmental audits and management assessments for major petroleum companies to assess environmental compliance of refining operations and distribution facilities, including a review of waste minimization programs and corporate regulatory strategies.
 - Led due diligence and pre-acquisition/pre-divestiture assessments of petroleum and manufacturing facilities to determine environmental risks and liabilities associated with groundwater contamination, improper waste disposal activities, and current and past operation and land use.
 - Developed environmental compliance strategies and corrective action alternatives for two Fortune 50 petroleum companies to manage hazardous waste disposal sites.
 - Advised companies on their completeness in performing environmental audits, environmental assessments, and feasibility studies, and their potential liabilities with managing inactive waste sites.

EDUCATION: M.B.A., Boston University
B.S., Geology and Hydrology, University of New Hampshire

NAME: Joanne P. Fichera

AREA OF RESP: Program Evaluation, Reporting, and Corrective Action
Environmental Planning and Risk Management

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Participated in Environmental Audits and Tiger Team Assessments of several Department of Energy facilities to evaluate environmental regulatory compliance, environmental problem identification, and program and procedures adequacy evaluation. Served as a member of the Environmental Management Teams at Western Area Power Administration and Southwestern Area Power Administration. Participated in the Solar Energy Research Institute and Los Alamos National Laboratory Tiger Team Assessments as a Technical Specialist on the Environmental Subteam.
- SAIC
 - As Deputy Program Manager, provided National Environmental Policy Act-related support, including environmental impact statements; environmental assessments, surveys, and sensitivity analyses; and socioeconomic assessments for a variety of U.S. Department of Defense clients. Also was principal investigator for socioeconomic, land use, and visual analyses.
 - For the U.S. Department of Energy, researched, compiled, and analyzed data for the environmental and socioeconomic impact analysis of the Special Nevada Report.
 - For the Strategic Defense Initiative Organization's National Test Bed Joint Program Office, analyzed and integrated construction and system implementation schedules and performed sensitivity analyses on schedule deviations.

EDUCATION: M.A. (in progress), Environmental Policy, Tufts University
M.A., Economics, Tufts University
B.A., Economics and Spanish, Tufts University

NAME: Larry Krupp

AREA OF RESP: Staff Resources, Training, and Development

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Assessed hazardous waste treatment facilities as part of Arthur D. Little's SiteWATCH program. These assessments covered the following factors: management systems; facility design; capabilities; laboratory capabilities, equipment, and procedures; regulatory compliance history; and waste tracking and acceptance procedures.
 - Performed a feasibility study and technology assessment for a Superfund site contaminated with volatile and semivolatile organics, metals, polychlorinated biphenyls, and pesticides in soil and groundwater.
 - Performed retroactive analysis of chemical wastes disposed of at a Superfund site and design and cost analysis of a treatment facility to treat the wastes.
 - Analyzed the environmental fate of a chemical proposed as a substitute compound in a commercial product formulation.
 - Analyzed existing techniques for forming biodegradable polymers and plastics, examined existing scientific biodegradability data for such materials, and estimated theoretical biodegradability based on product composition.
 - Designed and programmed computer data base systems for managing and analyzing environmental data, including product lifecycle data in the paper industry, hazardous contamination at a Superfund site, and data pertaining to responsibility for past site contamination.
- Jellinek, Schwartz, Connolly, and Freshman Inc.
 - Performed an assessment of the degree of water pollution resulting from the use of a pesticide in the pulp and paper industries.
 - Completed a comparison of the effectiveness of a variety of carbamate and organophosphate insecticides. This analysis included an evaluation of the compounds' agricultural yield, economic costs, and environmental impact.
 - Developed a regulatory compliance manual for a foreign company exporting chemicals to the U.S.

EDUCATION: M.S., Environmental Engineering, Cornell University
B.S., Biology, Yale University

NAME: Mark Pine

AREA OF RESP: Organizational Structure
Internal and External Communication

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 9 Years

- Arthur D. Little, Inc.
 - Served as Environmental Management Specialist for the Line Management Environmental Audits of the Bonneville Power Administration, covering the areas of Staffing/Resources and Staff Development/Training; and the Southwestern Power Administration, covering the areas of Formality of Programs and Internal and External Communications.
 - Evaluated the reasons and methods available to the Commonwealth of Massachusetts to restrict imports of solid waste. Also assisted the client in the organization of a conference on the subject.
 - Developed a model to estimate the effects of nations' environmental regulations on global site selection by multinational chemical companies.
 - Working for a potential market entrant, analyzed the regulations driving the market for hazardous waste treatment, storage and disposal, the bases for competition, the critical success factors for market participants, the barriers to market entry, and the economic implications of each of these issues.
 - Prior to joining Arthur D. Little, Inc., directed an information service related to environmental regulations, technologies, and markets.
 - Supervised production of monthly reports analyzing the impacts of environmental legislation and regulation on manufacturing industry and the waste management industry.

EDUCATION: M.P.A., Environmental Economics and Policy, Harvard University
B.A., English, Williams College

NAME: David J. Allard

AREA OF RESP: Radiation Technical Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 15 Years

- Arthur D. Little, Inc.
 - Senior Consultant and Certified Health Physicist providing technical support for DOE Environmental Assessments/Audits and various commercial client cases dealing with radiation protection issues, such as: environmental monitoring and surveillance, waste management, emergency planning, dose assessment, training, applied technical and management services.
 - Participated in the Morgantown Energy Technology Center, Idaho National Engineering Laboratory, and Los Alamos National Laboratory Tiger Team Assessments; the Environmental Audit of the Fossil Energy Sites in Wyoming; and the Environmental Management Assessment of the Continuous Electron Beam Facility.
- TGM Detectors, Inc.
 - Vice President with responsibilities for radiation protection and gas-filled detector design, testing, engineering, and business management.
- Nuclear Metals, Inc.
 - Supervisor of Health Physics with responsibilities in the areas of environmental monitoring, external and internal dosimetry, shielding, radiation surveys, waste disposal, and regulatory affairs regarding various uranium and thorium manufacturing operations.
- Albany Medical Center
 - Medical/Health Physicist with responsibilities involving external and internal dosimetry, laboratory radiation protection, x-ray equipment quality assurance, shielding, surveys, and waste disposal.

EDUCATION: M.S., Radiological Sciences and Protection, University of Lowell
B.S., Environmental Sciences (Cum Laude), State University of
New York at Albany
A.A.S., Environmental Health Technology, Hudson Valley Community
College

NAME: Lynne Day

AREA OF RESP: Administration

ASSOCIATION: META, Inc.

EXPERIENCE: 16 Years

- META, Inc.
 - Information Management Specialist. Provides administrative support for Environmental Audits; Environmental Management Assessments; Environment, Safety and Health (ES&H) Progress Assessments; and the Environmental Subteam on Tiger Team Assessments at DOE sites.
 - Participant in the Component Development and Integration Facility, Environmental Measurements Laboratory, Alaska Power Administration, and Coal-Fired Flow Facility Environmental Audits; the Uranium Mill Tailings Remedial Action Project Environmental Management Audit; the Continuous Electron Beam Accelerator Facility Environmental Management Assessment; the Fernald Environmental Management Project, Hanford Site, and Brookhaven National Laboratories ES&H Progress Assessments; and the Solar Energy and Research Institute, Los Alamos National Laboratories, Strategic Petroleum Reserves, and Naval Petroleum Oil Shale Reserves Tiger Team Assessments.
 - Provided administrative support for production of the ES&H Progress Assessment Manual and attended Progress Assessment Training Program.
 - Assisted in production of the draft Administrative Support Procedures and Guidance for the Office of Environmental Audit.
- INNOVA Communications, Inc.
 - Office Administrator. Provided system, office automation, project management, data base management, graphic, and documentation support for a local and wide area network integration firm.
- Sandler & Greenblum
 - Word Processing Departmental Manager. Developed and coordinated activities related to the word processing department for law firm specializing in patent/trademark law. Responsible for supervision and staffing of word processing department and hardware and software procurement and installations.

EDUCATION: A.A., Computer Science, Strayer College

NAME: J. Ivor John, PhD.

AREA OF RESP: Air Support Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 19 Years

- Arthur D. Little, Inc.
 - Served as Air Specialist on the Environmental Subteam for Tiger Team Assessments of the Morgantown Energy Technology Center, Solar Energy Research Institute, Stanford Linear Accelerator Center, the Naval Petroleum Reserves, and Fermi National Accelerator Laboratory.
 - Senior consultant responsible for air quality investigations, air quality impact analyses, auditing of air programs, and health risk assessments associated with air toxics and accidental releases of acutely hazardous materials.
- Santa Barbara County Air Pollution Control District
 - Engineering responsibilities including air quality impact modeling for permit applications.
 - Initiated and developed a county air pollution control district (APCD) emergency response program; selected and trained team members; prepared emergency response procedures manual; coordinated APCD activities with other county and city agencies.
 - Reviewed risk management and prevention programs submitted to the county by businesses and industry.
- Oceanroutes Ltd., United Kingdom
 - Provided meteorological services to offshore oil and gas industry.

EDUCATION: PhD., Atmospheric Physics, University of Wales, Aberystwyth
B.S., Physics with Meteorology, University of Reading

NAME: Christopher B. Martel
AREA OF RESP: Radiation Technical Specialist
ASSOCIATION: Arthur D. Little, Inc.
EXPERIENCE: 10 Years

- Arthur D. Little, Inc.
 - Senior Consultant and Certified Health Physicist. Participated in Tiger Team Assessments of the Energy Technology Engineering Center, the Stanford Linear Accelerator, the National Institute for Petroleum and Energy Research, the Idaho National Engineering Laboratory, the K-25 Site at Oak Ridge National Laboratory, and the Ames Laboratory. Participated in the Progress Assessment of the Savannah River Site.
 - Chairman of the Corporate Radiation Safety Committee for Arthur D. Little, Inc., providing guidance to the company's Radiation Safety Officer regarding all aspects of the Type A Broad Scope License issued by the Nuclear Regulatory Commission.
 - Project manager for radiological hazard assessments conducted for clients in the mining and biotechnology industries, and research and development laboratories. Assessments included conducting extensive surveys, material sampling, air sampling, estimating worker internal and external doses, and provided detailed guidance on administrative and engineering controls in the workplace.
 - Performed several quantitative risk assessments for the transport of low-level and high level radioactive waste shipments, and large quantity shipments of radioactive materials.
 - Performed remedial investigations to quantify environmental levels of a variety of radionuclides on several sites that included research reactors, accelerators, depleted uranium working facilities, and research laboratories.
 - Conducted radiological health and safety audits at oil and gas operations, hospitals, biotechnology laboratories, chemical plants, research and development laboratories, and government institutions.

EDUCATION: M.S., Health Physics, University of Lowell
B.S., Environmental Sciences, University of Lowell

OTHER: Certified in the Comprehensive Practice of Health Physics by the American Board of Health Physics
Certified Hazardous Waste Site Supervisor
Member of the National and New England Chapter of the Health Physics Society.

NAME: James W. Melloni, Jr.

AREA OF RESP: Quality Assurance Technical Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 14 Years

- Arthur D. Little, Inc.
 - Served as Quality Assurance Specialist for the Tiger Team Assessments of the Strategic Petroleum Reserves, Los Alamos National Laboratory, Sandia National Laboratory, Albuquerque, and Fermi National Accelerator Laboratory. Also, served as the Quality Assurance Specialist for the Environmental Audit of the West Valley Demonstration Project.
 - Served as Quality Assurance Manager for a U.S. Department of Energy program through Westinghouse Savannah River Company. Responsible for implementing a manufacturing/quality program that received certification from the American Society of Mechanical Engineers.
 - Served as Quality Assurance Manager for a major project for the U.S. Army which involved oversight of the design, fabrication, test, and delivery of several prototype air-monitoring laboratories and shelters. This project required the generation of the Quality Assurance Program Plan covering all phases of the project. The program encompassed both test and inspection.
 - Served the U.S. Air Force Prototype Flight Cryocooler (PFC) program office as Quality Assurance Manager; revised the quality assurance manual to update and improve Arthur D. Little, Inc. quality practices, primarily in the area of quality systems; implemented a failure analysis and corrective action system and initiated audits and reviews of all the quality and manufacturing operations.

EDUCATION: M.B.A., Business Administration, New Hampshire College
B.S., Biology, Boston College

NAME: Donald Neal

AREA OF RESP: Waste Management Support Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 10 Years

- Arthur D. Little, Inc.
 - Senior Consultant. Waste Management Specialist for the DOE Progress Assessments of the Savannah River Site and Lawrence Livermore National Laboratory, and the Tiger Team Assessments of the Oak Ridge K-25 Site, Ames Laboratory, the Naval Petroleum and Oil Shale Reserve, and the National Institute for Petroleum and Energy Research.
 - Provides technical guidance to commercial clients on hazardous waste recycling, treatment, and disposal.
- CSI Resource Systems Inc.
 - Senior Associate. Managed environmental permitting of waste management facilities including environmental impact assessments; air, water, and solid waste permits.
 - Prepared solid and hazardous waste management plans for industry and municipalities and evaluated waste management facility compliance with environmental permits and regulations.
 - Investigated methods for air pollution monitoring, air emissions control, and source testing, for independent engineering evaluations and other interested parties.
- ENSR Consulting and Engineering
 - Project Manager. Managed environmental assessments and permitting of industrial facilities including solid and hazardous waste, power generation, cogeneration, pulp and paper, and natural gas storage and transmission.
- GCA Technology Division
 - Project manager for quality assurance for 1985 National Acid Precipitation Assessment Program (NAPAP) emissions inventory.
 - Designed and implemented Continuous Emissions Monitoring System for air emission sources.

EDUCATION: M.S., Biology, University of Massachusetts
B.S., Biology, University of Massachusetts

OTHER: Member of the Solid Waste Management Association, Ecological Society of America, Society of Wetland Scientists, and the Milton Conservation Commission

NAME: James J. Rea

AREA OF RESP: Groundwater Support Specialist
Soil, Sediment, and Biota Support Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 9 Years

- Arthur D. Little, Inc.
 - Participated in the Tiger Team Assessments of the Naval Petroleum and Oil Shale Reserves, Oak Ridge K-25 Gaseous Diffusion Plant, Los Alamos National Laboratory, and Solar Energy Research Institute as the lead Groundwater/Soil, Sediment, and Biota Specialist on the Environmental Subteam. Additionally, participated in the Tiger Team Assessment of the Strategic Petroleum Reserve as a Surface Water/Drinking Water Specialist and for the SERI Tiger Team Assessment as the Inactive Waste Sites Specialist.
- Briggs Associates, Inc.
 - Environmental Scientist with responsibilities of Project Manager. Conducted land transfer site assessments; emergency response spill/site assessments; remedial investigation/remedial design; regulatory agency interfacing, compliance management of RCRA, CERCLA, SARA, TSCA, and NPDES permitting; underground storage tank program management; surface and subsurface contaminant investigations; hydraulic contaminant flow modeling conditions; surveying and field mapping.
- Chem-Nuclear Systems, Inc.
 - Lead Health Physics Technician to support the U.S. Department of Energy's UMTRA Projects. Responsible for radiological engineering assessments; personnel and environmental dosimetry; decontamination and decommission health physics support; site and vicinity property excavation control support; and conducted various radionuclide laboratory analyses (e.g., operated opposed crystal system gamma spectroscopy equipment and analyzed radon gas monitoring reports).
- Benson, Motin and Greer Drilling Company
 - Drilling Fluid Engineer. Responsibilities included the design and maintenance of the drilling fluid programs for secondary recovery oil wells and natural gas injection wells.

EDUCATION: Graduate Studies, Hydrogeology and Environmental Studies
University of Montana
B.S., Conservation Science, Fort Lewis College

OTHER: Member of the American Chemical Society and Plenary Membership
in the Health Physics Society

NAME: Patricia Rodden

AREA OF RESP: Inactive Waste Sites Support Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Served as an Inactive Waste Sites Specialist for the Oak Ridge K-25 Gaseous Diffusion Plant Tiger Team Assessment; and Inactive Waste Sites/Groundwater/Soils, Sediment, and Biota Specialist for the Ames Laboratory Tiger Team Assessment.
 - Performed environmental, health, and safety audit for commercial and government organizations and operations.
 - Developed environmental assessment plans in accordance with state and Federal regulations for government clients.
 - Managed the close-out of two operable units at a Region X Superfund site in accordance with Comprehensive Environmental Response, Compensation, and Liability Act requirements.
- Massachusetts Department of Environmental Protection
 - Developed policies and guidance on conducting environmental assessments at solid waste landfills. This guidance described the assessment process from file review and facility inspection, to designing the environmental monitoring program, interpreting the results, and determining the need for corrective action.
 - Designed and managed the assessment and remediation of hazardous waste and solid waste sites. Responsible for designing the sampling and analysis plan, evaluating quality of field work, interpreting the data gathered, and determining the human health and environmental risk associated with the site.
 - Conducted inspections of facilities to determine their compliance with federal regulations. Inspections focused on environmental issues, and included: file review, evaluation of the environmental monitoring system, and groundwater, surface water, and soil sample collection. Analytical results of the samples collected were compared with the facility's monitoring results to check the accuracy of their analytical laboratory.

EDUCATION: B.S., Geology, Boston College

NAME: Clifford H. Summers

AREA OF RESP: Surface Water/Drinking Water Support Specialist

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 32 Years

- Arthur D. Little, Inc.
 - Served as Surface Water and Drinking Water Specialist for the Environmental Assessment of West Valley Demonstration Project; the Tiger Team Assessments of Ames Laboratory, the National Petroleum and Oil Shale Reserves, and the National Institute for Petroleum and Energy Research; and Waste Management Specialist for the Los Alamos National Laboratory Environmental Subteam Tiger Team Assessment.
 - Served as Resident Environmental Coordinator on Johnston Island from September 1989 to June 1991 for Office of Program Manager for Chemical Demilitarization. Resident Environmental Engineer on Johnston Island from October 1989 to July 1990 for U.S. Army Chemical Activity, Western Command. Oversaw environmental compliance activity of GOCO's five environmental engineers and five plant operations staff. Conducted inspections and audits for environmental compliance. Served on QA teams evaluating Operational Readiness and Preoperational Surveys.
 - Performed environmental audits of USAF bases as part of the ECAMP program.
 - Performed environmental audits of petroleum refineries, petrochemical plants, manufacturing plants, and aerospace manufacturing facilities to determine compliance with regard to CWA.
 - Trained client auditors in compliance auditing; led trainees through audits of client facilities.

EDUCATION: Graduate Studies at Louisiana State University and
Northeastern University
A.B., Chemistry, Florida State University

NAME: Helen C. Walters

AREA OF RESP: Administration

ASSOCIATION: META, Inc.

EXPERIENCE: 25 Years

- META, Inc.
 - Information Processing Specialist. Provides administrative support to the Environmental Subteam on DOE Tiger Team Assessments and overall support to DOE's Office of Special Projects. Participated in Tiger Team Assessments of the Sandia National Laboratory, Albuquerque, Morgantown Energy Technology Center, Idaho National Engineering Laboratory, Pittsburgh Energy Technology Center, Los Alamos National Laboratory, the Naval Petroleum Reserves in California, the Strategic Petroleum Reserves, the National Institute for Petroleum and Energy Research, and the Fermi Laboratory. Participated in the Environmental Audits of the Uranium Mill Tailings Remedial Action Project and the Component Development and Integration Facility. Participated in the Environmental Management Assessment of the Uranium Mill Tailing Remedial Action Project. Provides administrative support for final Tiger Team and environmental audit reports. Provided support for production of the Self-Assessment Training course for the Office of Special Projects (EH-5).
 - Assisted in production of the draft Administrative Support Procedures and Guidance for the Office of Environmental Audit.
- Cate & Associates, Chartered
 - Administrator. Served as Executive Assistant with administrative responsibilities for filing estate accounting in excess of \$125,000 to the Commissioner of Accounts; liaison with attorneys and the courts with regards to these accounts; and handled accounts receivable and payable.
- National Council of Farmer Cooperatives
 - Administrator. Responsible for administration of financial and human resources for a staff of 13 professional and 13 support staff. Duties in the area of finance included the preparation and oversight of an annual operating budget of \$2.5 million with reporting responsibility to a committee composed of board members. Duties in the area of human resources included hiring and training of all support staff, and developing and coordinating employee benefits packages. Responsible for accommodating 65 employees in newly constructed, 17,000-square-foot office space.

EDUCATION: B.S., Business, Kent State University

APPENDIX B

ASSESSMENT PLAN

**Plan for the
DOE Environmental Management Assessment
of the
Fernald Environmental Management Assessment
(FEMP)**

Cincinnati, Ohio

U.S. Department of Energy
Office of Environmental Audit

March 15 - 30, 1993

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PLAN FOR THE DOE ENVIRONMENTAL MANAGEMENT ASSESSMENT OF THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

1.0 INTRODUCTION

The DOE Environmental Audit Program is carried out by the Office of Environmental Audit (EH-24) within the Office of Environment, Safety and Health (EH). The program was created in 1985 with a goal to provide a continuing program of internal, independent oversight of line management's environmental performance, in support of DOE's broader goal of achieving full compliance and excellence in the environmental area. The objectives of the program in achieving this goal include:

- Conducting comprehensive, baseline environmental audits of facilities that were not addressed in the Environmental Survey and are not expected to receive Tiger Team Assessments;
- Conducting assessments of environmental management within line programs, including adequacy of self-assessment programs;
- Conducting a continuing program of field/technical re-audits of major, and other DOE facilities;
- Conducting focused, special issue audits to assess high priority issues or issues which cut across site and program lines; and
- Supporting line management self-assessment programs through continuing updates and automation of audit protocols, training, and other mechanisms of transferring the special auditing expertise of EH-24 to the field.

The evaluation of the Fernald Environmental Management Project (FEMP) during the period of March 15 through March 30, 1993 will be an Environmental Management Assessment with a Technical Assessment done in the Quality Assurance and Environmental Radiation program areas. It will evaluate the effectiveness of environmental management programs established by DOE line organizations and their support contractors. The assessments are conducted in accordance with the DOE Environmental Assessment Program Guidance (January 1992) and draft protocols developed for conducting Environmental Management Assessments (January 1993).

From an organizational perspective, the scope of the assessment will include environmental management issues at the Office of Environmental Restoration and Waste Management (EM), the Fernald (FN) and Oak Ridge (OR) Field Offices, and Fernald Environmental Restoration Management Corporation (FERMCO). The assessment team will focus on line management's performance in developing and implementing environmental management systems and programs, consistent with DOE expectations for environmental excellence.

From a functional perspective, the scope of the Environmental Management Assessment is comprehensive in that it covers a full range of relevant management systems. This includes:

- Organizational Structure;
- Culture and Attitude;
- Environmental Protection Programs;
- Formality of Environmental Programs;
- Internal and External Communication;
- Staff Resources, Training, and Development;
- Program Evaluation, Reporting, and Corrective Action; and
- Environmental Planning and Risk Management.

Issues such as the design and effectiveness of environmental self-assessment programs, implementation of policy and procedures, occurrence reporting, and use of performance indicators will receive special attention.

The Environmental Management Assessment will not address National Environmental Policy act (NEPA) requirements, although some NEPA documents will be reviewed to obtain an overview of FEMP's environmental programs and activities.

With the concurrence of EM and FN, the Technical Assessment will focus on two disciplines: Environmental Radiation and Quality Assurance for environmental protection activities. Specialists in assessing the areas of air, inactive waste sites, waste management, surface waste, groundwater, and soils/sediment and biota, will provide support for both Technical Assessment disciplines. The results of the Environmental Radiation and Quality Assurance Technical Assessment will be included in the Environmental Protection Programs portion of the Environmental Management Assessment.

The information in this Environmental Management Assessment plan is based on the information received by the assessment team as of the end of the day on February 17, 1993.

2.0

ENVIRONMENTAL MANAGEMENT ASSESSMENT IMPLEMENTATION

The FEMP Environmental Management Assessment will be conducted by a team consisting of a Team Leader from the Office of Environmental Audit (EH-24) and a Group Coordinator and management systems and technical/support specialists from Arthur D. Little, Inc. (ADL). The administrative support will be provided by Maria Elena Toraño Associates, Inc. (META). The names and assignments are listed below:

Bob Crowley	DOE	Team Leader
Matthew Allen	ADL	Group Coordinator
Raeann Reid	ADL	Group Coordinator
Joanne Fichera	ADL	Program Evaluation, Reporting, and Corrective Action
		Environmental Planning and Risk Management
Larry Krupp	ADL	Staff Resources, Training, and Development
Mark Pine	ADL	Organizational Structure
		Internal and External Communication
Mark Bell	ADL	Environmental Commitment
		Environmental Protection Programs
Paul Feuerback	ADL	Formality of Environmental Programs
Christopher Martel	ADL	Radiation Technical Specialist
David Allard	ADL	Radiation Technical Specialist
James Melloni	ADL	Quality Assurance Technical Specialist
J. Ivor John	ADL	Air Support Specialist
Clifford Summers	ADL	Surface Water/Drinking Water Support Specialist
Donald Neal	ADL	Waste Management Support Specialist
Patricia Rodden	ADL	Inactive Waste Sites Support Specialist
James Rea	ADL	Groundwater Support Specialist
		Soil, Sediment, and Biota Support Specialist
Lynne Day	META	Technical Editor
Helen Walters	META	Administrative Support

2.1

PRE-ASSESSMENT ACTIVITIES

Pre-assessment activities for the FEMP Environmental Management Assessment included the issuance of an introduction and information request memorandum, a site visit, and initial review of documentation which was sent to the assessment team by FEMP as a result of the information request memorandum.

The pre-assessment site visit was conducted on January 19 and January 20, 1993 by the DOE Team Leader and the Group Coordinators from Arthur D. Little. The purpose of the pre-assessment visit was to brief site personnel on the purpose and scope of the Environmental Management Assessment, to become familiar with FEMP and its operations and environmental protection programs, to review information being supplied by FEMP, to request additional information, and to coordinate activities for the upcoming assessment. The visit also included presentations by FN and selected managers from the primary FEMP contractor, FERMCO.

Interviews with EM managers, with responsibility for FEMP, will be conducted the week of March 8, 1993. The purpose of these interviews is to facilitate an understanding of EM's activity with respect to effective environmental management of FEMP.

2.2 ONSITE ACTIVITIES AND REPORTS

The onsite activities for the Environmental Management Assessment will begin March 15 and continue through March 30, 1993. Onsite activities will include file/record reviews and interviews with FEMP management and staff (including both DOE and FERMCO personnel), field inspections, review of selected facilities, site operations, and various media sampling events.

The agenda for the assessment (including a preliminary interview schedule) is shown in Attachment C. The interview schedule reflects the assessment team's best attempt to identify relevant personnel to be interviewed. Based on past experience, these schedules will change as additional information is gathered by the assessment team members and based on availability of site personnel. Modifications to the interview schedule, or other elements of the agenda, will be coordinated with the designated FERMCO contacts.

During the assessment, the team will conduct daily debriefing sessions with FERMCO/DOE management to review progress and concerns to date. A factual accuracy review of all findings will begin during the second week of the assessment. On or about March 30, 1993, a closeout briefing will be conducted at the conclusion of the onsite portion of the assessment. A summary of the results of the assessment, including key findings, will be presented by the assessment Team Leader at that time. Also at the closeout, a draft assessment report will be provided to EM, FN, OR, and FERMCO for review and comment.

2.3 POST-SITE ACTIVITIES

Following the onsite activities, EM, FN, OR, and FERMCO will have the opportunity to submit final comments on the draft assessment report. After reviewing these comments, EH-24 will issue a final report.

3.0 ORGANIZATIONAL STRUCTURE

3.1 ISSUE IDENTIFICATION

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.1, "Organizational Structure," will review and analyze whether FEMP's environmental management organization is consistent with the overall organization structure and has clear lines of authority, well defined roles and responsibilities, and sufficient organizational stature. In particular, the assessment will be designed to consider the following issues:

- Clarity in lines of authority and responsibility;
- Consistency with goals of larger organizational structure;
- Level of authority of environmental management responsibilities;
- Span of control;
- Definitions/understanding of roles, responsibilities, and accountabilities;
- Functional reporting relationships;
- Management reporting relationships; and
- Line responsibility.

The general approach to the assessment will include a review of documentation regarding organizational structure, and interviews with EM, FN and FEMP management and staff. Areas of particular interest will include:

- Clarity of lines of authority among DOE Office of Environmental Restoration and Waste Management, DOE Oak Ridge Field Office, and FEMP, and the impact of this structure on environmental management performance;
- Clarity of responsibilities among various FEMP contractor organizations, and impact of this structure on environmental management performance;
- The correspondence between the functional reporting arrangements for environmental management and those that are shown on the organization charts and described in the Fernald (Draft) Environmental Management Plan;
- The degree to which authority to make decisions related to environmental protection is assigned to the organizational levels that can provide the most timely and appropriate response;
- The definition and understanding of functional relationships between environmental support groups and line units.

- The degree of separation between responsibilities for the implementation and oversight of environmental policies/programs; and
- The existence of management systems and procedures to promote environmental responsibility and maintain accountability.

3.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following records will be examined at FEMP:

- Formal documents that define organizational responsibility, authority, and accountability for environmental protection programs;
- Formal job descriptions for field office and facility-level environmental staff, as well as other key line management and operating personnel;
- Formal measures of job performance;
- Descriptions of any environmental recognition, award, or incentive programs; and
- Environmental planning documents.

4.0 ENVIRONMENTAL COMMITMENT

4.1 ISSUE IDENTIFICATION

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.2, "Environmental Commitment," will review and evaluate the organization's commitment to achieving environmental excellence. The assessment team will evaluate whether FEMP demonstrates a positive attitude and proactive approach to environmental management. Some key indications of environmental commitment to be evaluated include the following:

- Top management support and commitment;
- Awareness/motivation related to environmental management;
- Acceptance of environmental compliance/performance responsibility;
- Formal environmental policies that address specific environmental concerns; and
- Formal/informal support systems.

The general approach to the assessment will include a review of documentation related to environmental management and interviews with management and line operation staff. Areas of particular interest will include:

- Existence and organizational understanding of formal policy statement on the environment, safety, and health mission, which also delineates FEMP's environmental goals and how they are to be met;
- Distribution of this policy statement;
- Top management statements of commitment to environmental excellence by managers at all levels;
- Formal statements of commitment to environmental excellence by managers at all levels;
- Evidence in interviews of a general understanding and acceptance of the importance of environmental protection, and a sense of "ownership" of environmental protection;
- Top management encouragement and acceptance of input from employees concerning environmental issues; and
- Inclusion of environmental issues in routine senior management meetings.

4.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following records will be examined at FEMP:

- Formal statement of environmental management policy;
- Additional, issue-specific policies addressing more focused environmental concerns;
- Senior management statements of support for environmental management effort that are included in an annual report, speeches, internal newsletters, and other documents;
- Descriptions of environmental programs/projects;
- Accounts of employee or organization involvement in, or work with, environmental task forces, environmental professional associations, or local community organizations;
- Examples of environmental reports requested of environmental support staff by senior management and line management; and
- Formal statements of commitment to environmental excellence by managers at any level.

5.0

ENVIRONMENTAL PROTECTION PROGRAMS

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.3, "Environmental Protection Programs," will evaluate whether FEMP has the environmental programs in place to ensure compliance with Federal, state, and local environmental laws and regulations. Further, the assessment will determine if the site provides for timely and correct implementation of those DOE Orders and Secretary of Energy Notices (SENs) designed to protect the environment and public health. The emphasis of the review will be on determining whether effective and comprehensive programs are in place and whether there is sufficient planning, oversight, and staff training regarding these programs. This review will evaluate the extent to which FEMP has developed and implemented specific environmental protection programs and plans which, if properly managed, would help maintain compliance and reduce FEMP's potential future legal and financial liabilities.

Based on a review of pre-assessment information provided to the Assessment Team, the key issues that will be addressed are the requirements of the following:

- Long-range environmental protection plan;
- Hazardous waste and PCB management programs;
- Waste minimization and pollution prevention awareness programs;
- Environmental monitoring programs;
- Groundwater protection management program;
- Hazardous substance release reporting and spill response program;
- Emergency response plans (i.e., Spill Prevention, Control, and Countermeasure Plan);
- Environmental radiation protection programs;
- Quality assurance programs; and
- Contractor oversight.

A Technical Assessment of environmental protection programs will be conducted with the Management Assessment. Air, surface water, drinking water, waste management, groundwater, inactive waste sites, and soil, sediment, and biota specialists will support the general assessment of environmental protection programs. However, the primary responsibility of these specialists will be to support the technical assessment of the FEMP quality assurance and environmental radiation protection programs as they relate to the technical areas.

The quality assurance (QA) portion of the Environmental Protection Program Assessment will evaluate the site's adherence to environmental quality assurance requirements and accepted industry practices and standards of performance. This evaluation will be

performed by assessing FEMP quality assurance operations in both management and specific environmental protection technical areas. The review will include an assessment of the quality assurance organization and structure development by FERMCO and FN that allow the requirements of Federal and state regulations, requirements, and guidelines; Executive Orders; and DOE policies and procedures to be achieved. quality assurance activities will be specifically evaluated in accordance with DOE 5400.1, and DOE 5700.6C, "Quality Assurance," as well as accepted industry practices and standards of performance.

This evaluation will focus on the programmatic application of quality requirements and will include a detailed review of the organizational structure, document and record control procedures, audit and assessment review activities, as well as the findings, tracking, and corrective action system. Qualification and control of subcontracted environmental sampling and analysis services will be a key area of the assessment.

During the assessment, the quality assurance specialist will utilize the inputs from all specialists to ensure that potential quality assurance problems, related to environmental programs, are identified. Primary contacts are expected to be the quality assurance representatives and personnel responsible for environmental monitoring activities.

The environmental radiation portion of the Environmental Protection Program Assessment will include review of all activities, buildings, and facilities, that involve or potentially involve radiation or radioactive material. The environmental radiation protection programs at FEMP will be assessed to determine compliance with the Federal and state regulations, requirements, and guidelines; DOE Orders; and other DOE guidance documents regarding environmental radiation protection. Radiation issues will be specifically evaluated against DOE 5400.1, 5400.3, 5400.5, N5400.9, 6580.1B, 5480.4, 5480.11, 5484.1, 5700.6C, 5820.2A, 6430.1A, and EH-0173T, as well as accepted industry practices and standards of performance. In addition to an assessment of environmental radiation compliance issues, the team will evaluate how well the requirement programs are being integrated into the site restoration activities. Specifically, the interest is in how well environmental radiation protection issues are addressed in the D&D and remediation activities of each operable unit (i.e., CRU1 through 5), in order to maintain offsite releases and doses ALARA.

5.1 ISSUE IDENTIFICATION

The general approach used in conducting the assessment of environmental protection programs will consist of interviews with DOE personnel, FERMCO employees, and subcontract personnel responsible for environmental program development and implementation and review of documentation supporting those programs. Areas of particular interest will include:

- Understanding applicable regulatory requirements;
- Responsibilities for program development and implementation;
- Identification and regular monitoring of emission sources;
- Documentation of an environmental surveillance screening program;

- Prevention and minimization of environmental releases;
- Emergency response provisions;
- Recordkeeping and reporting;
- Training and requirements; and
- Oversight and review of programs.

In addition to interviews and document review, the specialists supporting the assessment of environmental protection programs will also conduct inspections and reviews of selected FEMP facilities. These inspections and reviews will include observations of various site operations and field sampling activities.

5.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following records will be examined at FEMP:

- Environmental protection program plans required by DOE 5400.1;
- Environmental monitoring and surveillance plans and reports;
- Source and emission inventories for air and water pollution control;
- NESHAPs agreement;
- PCB management plans and reports;
- Toxic and chemical materials management plan;
- Emergency response and remedial action plans;
- Environmental incident reporting procedures;
- Preventive maintenance and inspection procedures;
- Reports to management or regulatory agencies; and
- Other records as determined onsite

Additional records will be reviewed as part of this Technical Assessment. This will include documents not yet reviewed or received (e.g., classified documents, individual files). Specific documents and files to be reviewed as part of the technical assessment are listed below in Sections 5.3.2 and 5.4.2.

5.3 QUALITY ASSURANCE

5.3.1 ISSUE IDENTIFICATION

Aspects of the laboratory quality assurance program at FEMP to be reviewed include operator training; equipment calibration and maintenance; precision and accuracy evaluation; blank, split, and spike sample analyses; sample handling and chain-of-custody procedures; data reduction and validation; reports; and documentation. Technical operations in the field will be observed to verify sample acquisition and transfer practices. Standard operating procedures for sampling and analysis will be reviewed to ensure proper implementation and conformance with accepted practices. Elements of the environmental quality assurance/quality control program to be reviewed include records management and the control of subcontractors. Internal quality assurance auditing and assessment practices will be examined. Quality assurance programs and procedures of offsite laboratories subcontracted by FEMP will be included in the assessment. The following issues will be specifically reviewed:

- Implementation of documented quality assurance practices;
- Design of the quality assurance organization;
- Implementation of quality assurance into non-operational areas, such as:
 - Procurement (e.g., analytical laboratory services, environmental support services, monitoring equipment);
 - Training program management (e.g., selection criteria, training records);
 - Design (e.g., meteorological monitoring system, groundwater monitoring system design, waste water treatment);
 - Construction (e.g., liner installation); and
 - Material handling and storage (e.g., waste segregation, remote handling, and rotating of stock).
- Quality assurance qualification and oversight of offsite analytical laboratories;
- Environmental monitoring programs (e.g., liquid and air effluents, surveillance, and meteorological monitoring);
- Document and record control procedures;
- Data validation;
- Audit, assessment, and review activities, as well as the findings tracking system and corrective action system.

5.3.2 Records Required

- Quality assurance/quality control manuals and implementing procedures of the environmental monitoring and surveillance programs;
- Environmental documents or contractual agreements for offsite analytical and laboratory and environmental services;
- Quality assurance/quality control audits of environmental sampling and analysis at FEMP;
- Quality assurance/quality control audits of offsite analytical laboratories under contract to FEMP;
- Results of internal precision and accuracy studies of environmental analysis;
- Training records management (e.g., for sampling technicians, laboratory staff, and the various environmental programs);
- Environmental sample integrity at FEMP;
- Standard operating procedures for environmental activities;
- Records management procedures at FEMP; and
- Environmental monitoring compliance at the FEMP.

Additional documentation supporting the above programs will also be reviewed.

5.5 ENVIRONMENTAL RADIATION

5.5.1 ISSUES IDENTIFICATION

The assessment of the sitewide environmental radiation protection program will focus on the interrelation of this program with the air, surface water, drinking water, waste management, inactive waste sites, groundwater, and soil, sediment, and biota programs. The following specific issues will be reviewed:

- Facility design, safety analysis, engineered safety features, and monitoring and control devices as they pertain to the environmental release of radioactive materials.

Environmental Surveillance Program

- Pathways monitored, associated sampling locations and bases for selection, monitoring equipment and the associated maintenance and calibration (analytical requirements);
- Sample collection methods and sampling frequency for air, surface water, groundwater, storm water, sanitary sewerage, soil, sediment, sludge, vegetation, milk, foodstuffs, wildlife samples, and direct radiation;
- Offsite does assessment methodologies; and
- Methods of data compilation and summation of the radiological portion of the Annual Site Environmental Reports and Radiological Effluent and Onsite Discharge Data Reports.

Radioactive Effluent Monitoring Program

- For airborne effluents, release points monitored and bases for selection, effluent monitor design, design basis, calibration and maintenance, abatement techniques, and fugitive dust management from site remediation activities.
- For liquid effluent, continuous and batch release monitoring, continuous monitoring design, design basis, maintenance and calibration; positive control of batch releases; and abatement techniques; analytical requirements for each release point sampled; the ability to identify, control, mitigate, evaluate, and quantify unmonitored or unplanned effluent releases.

Radioactive Waste Management Program

- Effectiveness of waste minimization programs to achieve reduction in the amount of radioactive waste requiring offsite disposal;
- Evaluation of the management structure for waste management planning, especially the process by which onsite storage capacity is integrated with ongoing D&D activities;

- Assessment operations of waste storage facilities in limiting exposure to radiation (ALARA);
- Waste generation and subsequent transportation to storage, processing or disposal facilities onsite and offsite;
- Equipment decontamination and waste processing, incineration, solidification, compaction, and drumming operations;
- Radiological characterization, packaging, labeling, and storage;
- Shipment of low-level radioactive waste and mixed waste; and
- Compliance with Nevada Test Site and Oak Ridge K-1435 incinerator acceptance criteria and other waste acceptance criteria.

Decommissioning and Decontamination (D&D)

- The program for site cleanup and restoration;
- Release criteria for unrestricted use;
- Plans for documentation and maintenance of facilities awaiting D&D; and
- Waste management planning with respect to onsite storage capacity and ongoing D&D activities.

Inactive Waste Sites and Radioactively Contaminated Areas

- Radiological monitoring of these sites;
- Potential migration of radioactivity offsite and potential offsite dose impact;
- Plant 9 perched groundwater contamination;
- Soil washing operations; and
- South plume characterization.

Analytical Laboratories and Data Management

- Laboratory procedure requirements;
- Handling samples;
- Analysis methods and capabilities;
- Alpha, beta, and gamma measurements;
- Radiochemical separation procedures;

- Counter calibrations and background;
- Reporting of results and statistics;
- Intercomparisons; and
- Quality control/assurance.

5.5.2 Records Required

- Site Closure Plans;
- Decontamination and Decommissioning Plans;
- Building Plot Plans noting radiological controlled areas;
- Five year plan;
- Independent data verification program for environmental monitoring program;
- Annual Site Environmental Reports;
- Reported dose contributions to public that exceed 10 mrem/yr;
- Radiological Effluent and Onsite Discharge Data (ODIS) Reports;
- Annual Radioactive Waste Management Plan;
- Environmental Protection Implementation Plan;
- Release Criteria Plans and Protocols;
- Inventory of Radiological Release Points;
- Unplanned Radiological Release Reports;
- Long Range Environmental Protection Plan;
- Groundwater Protection Management Program;
- Waste Minimization Program;
- Pollution Prevention Awareness Program;
- Pre-operational Survey Reports;
- Environmental Monitoring Plan
- Groundwater Monitoring Program;

- **Meteorological Monitoring Program;**
- **Radiological Emergency Response Plans;**
- **Environmental ALARA Program;**
- **Contingency Plans;**
- **Phaseout of Soil Column Discharge Plans;**
- **NESHAP Annual Reports;**
- **NESHAP Quality Assurance Plan;**
- **Radioanalytical methods and quality control/quality assurance programs; and**
- **Radioactive Waste Performance Assessment.**

Additional documentation supporting the above programs will also be reviewed.

6.0 FORMALITY OF ENVIRONMENTAL PROGRAMS

6.1 ISSUE IDENTIFICATION

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.4, "Formality of Environmental Programs," and day-to-day management systems for ensuring environmental compliance will be evaluated. This discipline complements the Environmental Protection Programs discipline by focusing on the formal management systems and controls that are in place to assure compliance of day-to-day environmental operations. These systems include environmental regulatory tracking and translation, procedures and guidelines for implementing FERMCO's environmental protection policies and programs, routine facility inspections, and recordkeeping and reporting.

The general approach to the assessment will include interviews with DOE and FERMCO personnel responsible for environmental policy development and implementation. Selected subcontractors, who are expected to provide services in accordance with the site's environmental policies, will also be interviewed. A review of documentation supporting environmental programs will be conducted. Areas of particular interest will include:

- Systems to track, interpret, and translate environmental regulations and DOE Orders into FERMCO policies, standards, and procedures;
- Systems to distribute regulatory information, policies, and compliance guidance to field organizations in a timely manner;
- Methods established to ensure that field organizations are provided with sufficient guidance for compliance with new regulations or policies;
- Formal standards and procedures developed to ensure proper implementation of FERMCO's environmental protection programs. Furthermore, systems to ensure that environmental standards and procedures are issued from an organizational level with the authority to mandate such implementation;
- Formal guidelines and procedures established to conduct environmental restoration activities in accordance with DOE Orders, CERCLA/RCRA policies, and applicable regulatory consent orders/interagency agreements;
- Systems developed to effectively integrate and coordinate environmental restoration and monitoring activities among CERCLA/RCRA Units (CRU) and personnel with the Environmental Safety and Health Division;
- Policies developed to integrate site decontamination and demolition activities with CRU milestones and day-to-day operations;
- Systems established by maintenance and engineering departments to ensure that activities that might impact the environment contain sufficient environmental protection sections;
- FERMCO's process for creating and approving new procedures, and periodically reviewing and updating old procedures;

- Programs for routine site and equipment inspections, and compliance checks, including necessary document control systems;
- Systems for completing maintenance repairs identified during routine inspections and database for tracking applicable trends noted from such inspections;
- Policies and systems for record retention;
- Procedures established to ensure that contracts and procurement activities developed for non-FERMCO organizations contain appropriate environmental requirements; and
- Systems to maintain appropriate documentation and records of FERMCO's environmental performance for all environmental protection programs.

6.2 RECORDS REQUIRED

The assessment will include review of key documents supporting environmental programs prior to and during the site visit. Documents of particular interest include:

- Project and site office written procedures for the implementation of environmental protection programs;
- Long-range environmental protection plans;
- Regulatory tracking system and guidance documents;
- Recordkeeping and document control procedures;
- Examples of environmental records and reports;
- Documentation and records of environmental performance;
- Maintenance and construction standard operating procedures;
- Site and equipment inspection logs and records, including corrective action measures;
- Incident reports;
- Contractor guidance and oversight on environmental issues; and
- Other records as determined onsite.

7.0 INTERNAL AND EXTERNAL COMMUNICATION

7.1 ISSUE IDENTIFICATION

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.5, "Internal and External Communication," will be designed to determine whether formal and informal channels of effective communication are used to emphasize management's commitment to environmental protection; to promote awareness and support of environmental policies and programs throughout the organization; and to share information with external organizations, such as regulatory agencies, environmental groups, and the community. Key issues that will be addressed include the following:

Internal Communications

- Extent, effectiveness, and timeliness of FEMP's communication of environmental policies, standards, guidance, and performance to employees;
- Lateral communication of environmental activities and best management practices across CRUs, departments, divisions, and contractor organizations;
- Mechanisms for "bottom-up" communications of environmental concerns through traditional authority channels and through FEMP's ombudsman;
- Clarity and timeliness of directives and information that communicate environmental policies and guidelines to all personnel;
- Overall understanding of environmental policies and requirements throughout FEMP; and
- Employee awareness of personal environmental responsibilities and management systems to promote that awareness.

External Communications

- Working relationships with external oversight organizations;
- Frequent and timely formal communication of environmental risks and protection efforts to external organizations;
- Provision for external parties to be involved in key decisions related to environmental protection;
- Responsiveness to environmental concerns expressed by external parties; and
- External recognition of FEMP's commitment to environmental protection.

The general approach to the assessment will include interviews with FEMP personnel responsible for environmental policy and program communication, as well as affected personnel (management and staff). As appropriate, interviews will also be conducted with selected external parties (regulatory agencies, environmental interest groups, and representatives of the local community). The assessment will also include a review of documentation supporting internal and external communication programs.

The scope of internal communication programs is interpreted widely, and is viewed as including staff meetings, memoranda, management reports, task forces, training programs, newsletters, speeches, and other relevant forms of communication. Given this wide scope, and the overlap with other assessment functional areas, communication with other team members will be routine and extensive.

7.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following records will be examined at FEMP:

- Samples of the scope of relevant management reports and staff meeting minutes;
- Forms and guidelines for internal anonymous reporting of environmental issues;
- Guidance documents for interpretation and implementation of environmental regulations and policies;
- Internal Fernald newsletter(s) that communicate and promote environmental awareness;
- Press releases relating to environmental activities and programs;
- Documentation of information and awareness programs for affected external parties; and
- Other records as determined onsite.

8.0 STAFF RESOURCES, TRAINING, AND DEVELOPMENT

8.1 ISSUE IDENTIFICATION

The Environmental Management Assessment for Performance Objectives Criteria (POC) EM.6, "Staff Resources, Training, and Development," will involve a review and analysis of FEMP operations to verify that staff resources are sufficient to develop and implement environmental protection programs; that all personnel have received environmental protection training commensurate with their job responsibilities; and that professional development opportunities for environmental staff are equal to those of their peers in non-environmental positions. Specifically, the assessment will verify the following:

Resources

- Environmental support group and/or line management staffing levels are sufficient to achieve the environmental performance goals of FERMCO;
- Environmental managers and support personnel have the relevant background and training to carry out their responsibilities;
- Staffing support for environmental protection activities is provided in a timely, responsive manner;
- A system is in place to identify both short-term and long-term environmental staffing and resource requirements; and
- Appropriate job descriptions are established and maintained for environmental positions.

Training

- Environmental training programs are defined in a set of controlled documents (e.g., organizational policy statements or training manuals);
- There is a process to evaluate and establish environmental training needs;
- Environmental training programs are supported by appropriate materials and qualified instructors;
- There is a formal process to ensure that training programs provide adequate coverage of DOE Orders, Federal and state regulations, and internal policies and procedures;
- Environmental protection training is included in new employee and contractor orientation training;
- There are adequate training facilities and physical resources;
- Training activities are documented and the recordkeeping system is auditable; and

- There is a process for the periodic evaluation of the training program's effectiveness.

Development

- FERMCO provides career opportunities and advancement for environmental staff;
- Environmental performance criteria are included in job descriptions and performance appraisals and personnel are held accountable for meeting environmental goals; and
- Environmental support staff are encouraged to develop management, supervisory, and other professional skills.

The general approach to the assessment will include interviews with FN and FERMCO personnel regarding staff resources, training, and development, as well as a review of relevant and available documentation.

- Personnel have appropriate technical experience and background to develop and implement a groundwater protection management plan;
- Adequate procedures exist for selection of staff from the wage pool for specific projects, including procedures for ensuring adequate staffing during high demand periods;
- Adequate and timely procedures exist for approval of training plans;
- Environmental staffing resources are sufficient from a quantitative and qualitative perspective to develop and implement a General Environmental Protection Program consistent with DOE 5400.1;
- Environmental staffing resources are sufficient from a quantitative and qualitative perspective to develop and implement a formal ESH&S internal appraisal and self-assessment program;
- FERMCO has allocated sufficient staff to develop and implement standards for environmental training;
- The facility has adequate training facilities;
- FERMCO has trained personnel in asbestos management issues, including procedures for asbestos identification, inspection, collection, and disposal;
- Officials responsible for implementation of spill prevention control and countermeasure activities are adequately trained for these responsibilities;
- Personnel are trained in the inventorying, temporary storage and disposal practices of oil containing PCBs, spill response and clean-up measures, and handling of oil-filled electrical equipment;

- Personnel have the necessary training to develop and implement a Quality Assurance plan for FERMCO's environmental monitoring and analytical programs;
- Personnel have adequate training in the applicability of CERCLA and SARA requirements regarding hazardous waste site discovery and evaluation; and
- Personnel have been trained in any new policies and procedures associated with the Office of Environment, Safety, Health, and Security (ESH&S).

8.2 RECORDS REQUIRED

In addition to documents supplied prior to the assessment, the following records will be examined at FERMCO:

Resources

- Documented requests for environmental staff;
- Hiring plans for environmental staff;
- A sample of resumes or "171" forms for selected environmental staff and other staff with some environmental responsibilities; and
- A sample of job descriptions and performance criteria for key line management and operating personnel, not necessarily environmental staff;

Training

- Training program manuals and other materials (written and audiovisual);
- Documentation of training courses;
- Training records for a sample of environmental support personnel, their "line peers", and non-environmental personnel;
- A sample of resumes from environmental trainers; and
- Written material on the formal orientation program for new hires and contractors.

Development

- Individual professional development plans;
- Written criteria/procedures for conducting performance appraisals of staff at all levels;
- Copies of actual performance appraisals for relevant environmental staff; and

- Copies of any guidelines or criteria for any formal or informal staff recognition awards programs.

9.0 PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION

9.1 ISSUE IDENTIFICATION

The assessment activities for Performance Objectives Criteria (POC) EM.7, "Program Evaluation, Reporting, and Corrective Action," will assess whether the organization has systems in place to effectively evaluate environmental protection activities, implement corrective actions, and report environmental concerns in a comprehensive manner. The emphasis of the review will be to evaluate the self-appraisal programs in place and the followup to those appraisals.

Based on a review of the information provided to the Assessment Team, the key issues that will be addressed include the following:

- Design of the FERMCO and DOE self-assessment, audit, and appraisal programs, including objectives, scope, approach, organization, coverage, and resources;
- Responsibility for the programs;
- Program implementation;
- Selection of qualified staff to conduct self-assessments, audits, and appraisals;
- Training for auditing staff;
- Functional independence of auditing teams;
- Scheduling and frequency of assessments, audits, and appraisals;
- Annual budget for assessments, audits, and appraisals;
- Reporting format and distribution;
- Corrective action followup and tracking; and
- Allocation of budget to address deficiencies.

The general approach to the assessment will include interviews with FERMCO, FN, OR, and EM personnel responsible for environmental self-assessments, audits, appraisals, followup and corrective actions, and documentation supporting the programs. Areas of particular interest will include the following;

- Development and implementation of FERMCO and FN self-assessment and internal audit and appraisal programs;
- Comprehensiveness of the programs with respect to DOE Orders and guidance;

- Provision of FN, OR, and EM self-assessment oversight and guidance;
- Responsibility for conducting self-assessments, audits, and appraisal activities within FERMCO;
- Phased approach of FERMCO's implementation schedule and frequency of audits;
- Definition of and responsibilities for tracking performance indicators;
- Responsibilities for conducting root cause analysis;
- Responsibilities for development of action plans and followup of corrective actions, especially with respect to actions conducted by the CERCLA/RCRA Units;
- Responsibilities for dissemination of lessons learned across CERCLA/RCRA Units and support groups; and
- Periodic evaluation of the effectiveness of the audit and appraisal programs.

9.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following documentation will be examined at FEMP:

- Description of the programs, procedures, and responsibility;
- Audit and appraisal reports;
- Corrective action plans;
- Program budget allocation;
- Followup and trends analysis reports;
- Auditor training records; and
- Other documentation as determined onsite.

10.0 ENVIRONMENTAL PLANNING AND RISK MANAGEMENT

10.1 ISSUE IDENTIFICATION

The Environmental Management Assessment activities for Performance Objectives Criteria (POC) EM.8, "Environmental Planning and Risk Management," will evaluate the effectiveness of project-wide environmental planning activities. The scope of the planning portion of the assessment will include environmental activities as well as more standard business planning activities, such as budgeting, priority-setting, and allocation of resources. Short- and long-term planning will be addressed. In addition to planning, this portion of the assessment will evaluate the adequacy of systems designed to identify environmental hazards and to minimize and control environmental risks.

The assessment will evaluate the organization's systems for environmental planning (excluding NEPA) which address budgeting and priority-setting for the allocation of available funds. Planning for environmental remediation and protection will be evaluated to determine if it is integrated across the organization. This planning evaluation will be conducted in order to ensure sufficient resources to achieve environmental performance goals are available. Both short- and long-term planning will be addressed. Environmental planning and guidance at EM will also be assessed.

The assessment will also evaluate the facility's systems for identifying environmental hazards, assessing the environmental risks associated with the hazards, establishing criteria for risk acceptability, and addressing the risks. The emphasis of the review will be to determine whether the site has adequately identified and quantified environmental risks to make informed management decisions on risk minimization and control. Issues that will be considered include risk management program design and approach, and management involvement in the processes used by the site.

Based on a review of information provided to the Assessment Team, the key issues that will be addressed include the following:

Environmental Planning

- Prioritization mechanisms for allocation of short- and long-term funds;
- Integration of the planning process across the facility, including the five CERCLA/RCRA Units;
- Adequacy of funding for environmental remediation and protection activities;
- Adequacy of pollution control technologies; and
- Control and oversight to purchase materials, equipment, and services.

Risk Management

- Risk management program design, approach, and procedures;
- Program responsibility and implementation;

- Issues identification;
- Levels of management involvement; and
- Review of capital expenditures and projects for environmental risk evaluation.

The general approach to the assessment will include interviews with FERMCO, FN, OR, and EM personnel responsible for environmental planning and risk management, and documentation supporting these programs. Areas of particular interest include the following:

Environmental Planning

- The mechanisms of resource allocation and priority setting, and the extent to which actual resource allocation is consistent with environmental objectives;
- Adequacy and timing of resources allocated to environmental remediation and protection faculties;
- Extent of FN, OR, and EM guidance and oversight; and
- Responsibilities for implementing environmental planning activities.

Risk Management

- FERMCO's systems to identify environmental risks;
- Responsibilities for implementing risk management activities;
- Risk management prioritization criteria;
- Extent of FN, OR, and EM guidance and oversight;
- A management policy of looking beyond compliance; and
- Methods of assuring that FERMCO is employing the best available technologies for environmental risk management.

10.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the assessment, the following documentation will be reviewed at FEMP:

Environmental Planning

- Description, if any, of budgeting process mechanics;
- Budget requests by all CERCLA/RCRA Units and supporting functions;

- Description of any programs, policies, and/or procedures for tracking current trends in pollution control technologies and for selecting technologies;
- Short- and long-term operating plans; and
- Other records as determined onsite.

Risk Management

- Risk management plans and implementing procedures;
- Description of risk management criteria and guidance;
- Risk assessment reports;
- Environmental risk tracking and trending reports; and
- Other records as determined onsite.

APPENDIX C

SCHEDULE OF ONSITE ACTIVITIES

APPENDIX C:

SCHEDULE OF ONSITE ACTIVITIES

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
J. Fichera am Program Evaluation, Reporting, and Corrective Action Environmental Planning and Risk Management	• Travel	• Badging • Training	• Interviews - G. Gartrell - D. Porco - W. Weddendorf	• Interviews - M. Nelson - R. Reinhart - P. Losacker - R. Hernon	• Interviews - M. MacPherson - W. Den Herder - D. Dalga - G. Latulippe	• Team Meeting
pm	• Travel	• Site Briefings • Site Tour	• Interviews - R. Janke - H. Clawson	• Interviews - B. Schmidt - C. Chappell	• Interviews - C. Reichel - J. Curry	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
am	• Interviews - R. Hansen - M. Bishop - S. Peterson - D. Menefee - J. White	• Interviews - A. Saha - B. Gorog • Followup Interviews • Review Documents	• Interviews - R. Campbell - J. Williams - V. Werner • Develop Findings	• Develop Findings	• Develop Findings	• Develop Findings
pm	• Interviews: - D. Yesso - M. Albertin - M. Galper - B. Varchol	• Followup Interviews • Interviews - S. Cossell - G. Risenhoover • Review Documents	• Develop Findings	• Develop Findings	• Develop Findings	• Develop Findings

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
L. Krupp Staff Resources, Training, and Development	am • Travel	• Badging • Training	• Interviews - P. Turner - S. Wendell	• Interviews - A. Appleton - M. King - R. Skalka	• Interviews - S. Dahl - J. Thiesing - P. Clay	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour	• Interviews - E. Hodge - G. Gartrell - R. Rightmire - M. Brown	• Interviews - J. Williams - J. Forrelli - P. Norman	• Interviews - M. Paige - J. Oxendine - J. King - J. Wilcox	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - J. Vanta - R. Sullivan - J. Golden - E. Zobrist	• Interviews - R. Weathered - D. Noxsel - R. Campbell	• Interviews - P. Turner - M. Thomas	• Develop Findings • Interview - C. Pacheco	• Interview - A. Maloney • Factual Accuracy Review	• Develop Findings
	pm • Interviews - L. Brown - E. Hodge - P. Turner - R. Weathered - F. Peters - A. Bomberger	• Interviews - L. Brown - N. Kaufman	• Interviews - J. Long	• Develop Findings	• Finalize Findings	• Develop Findings

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
M. Pine Organizational Structure Internal and External Communication	am • Travel	• Badging • Training	• Interviews - G. Latulippe - W. Pickles - T. Rowland	• Interviews - R. Hernon - P. Kelley - D. Dubois	• Interviews - K. Morgan - J. Hoopes	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour	• Interviews - J. Rasile - J. Williams	• Interviews - R. Hansen - C. Daniels - A. Hannum	• Interviews - J. Skridulis - M. Cherry - L. Rogers	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - P. Mohr - G. Brown - R. Allen	• Interviews - P. Yerace - J. Thiesing	• Develop Findings	• Develop Findings	• Develop Findings	• Finalize Findings
	pm • Interviews - C. Reichel - D. Kozlowski - J. Fibre	• Interviews - W. Quaider - N. Kaufman - P. Whitfield	• Interview - P. Whitfield • Develop Findings	• Develop Findings	• Factual Accuracy Review (FAR) • Finalize Findings	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
M. Bell Environmental Commitment Environmental Protection Programs	am • Travel	• Training	• Interviews - P. Kraps - L. Rogers	• Interview - P. Spotts	• Interviews - J. Lojak - G. Latulippe	• Team Meeting • Document Review
	pm • Badging • Interviews - R. McCullough - C. Palmer - J. Witzeman	• Site Briefings • Site Tour • Interview - J. Thiesing	• Interviews - S. Hinnefeld - J. Curry - D. Hoover - F. Ford	• Interviews - M. Galper - D. Faris	• Interview - J. Eckstein	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - L. Ko - C. Waugh	• Interviews - K. Kolthoff - P. Beirne	• Interview - W. Sidle	• Develop Findings	• Develop Findings	• Develop Findings
	pm • Interviews - D. Paine - J. Hoopes	• Document Review	• Document Review • Develop Findings	• Develop Findings	• Develop Findings	• Develop Findings

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
P. Feuerbach Formality of Environmental Programs	am • Travel	• Badging • Training	• Interviews - D. Harmel - L. Rogers - C. Reichel - C. Daniels - A. Hannum - R. Reinhart	• Interviews - J. Long - A. Lydic - D. Hoover	• Interviews - K. Wilkenson - M. Albertin - R. Tousignant	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour	• Interviews - M. Strimbu - P. Clay	• Interviews - S. Blankenship - B. Den Herder	• Interviews - D. Dubois - S. Beckman - D. Cook - J. Skridulis - M. Cherry	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - W. Pickles - A. Hannum	• Interviews - B. Hawley - J. Craig	• Interviews - H. Sterling - L. Abirached • Develop Findings	• Develop Findings	• Develop Findings	• Develop Findings
	pm • Interview - N. Weichold	• Interviews - W. Quaider - S. Cossell - G. Risenhoover	• Develop Findings	• Develop Findings	• Develop Findings	• Develop Findings

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
C. Martel Radiation Technical Specialist	am • Travel	• Badging • Training	• Interviews - S. Hinnefeld - L. Rogers - R. McCullough - D. Farris	• Interviews - S. Beckman - D. Farris - M. Galper - F. Johnston - L. Pennington	• Interview - P. Grumski	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour	• Interviews - M. Galper - R. Roulston - R. Palmer - J. Hensley • Tour - Effluent Monitoring	• Interview - J. Wise • Tour - Laboratory	• Followup Interviews	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - J. Byrne - L. Williams • Develop Findings	• Interviews - J. Cullen - R. Roulston - P. Clay • Develop Findings	• Interview - B. Shroff • Develop Findings	• Develop Findings	• FAR	• Travel
	pm • Develop Findings	• Followup Interviews • Develop Findings	• Develop Findings	• Develop Findings	• Finalize Findings	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
D. Allard Radiation Technical Specialist	am • Travel	• Badging • Training	• Interviews - S. Hinnefeld - L. Rogers	• Interviews - P. Kraps - J. Byrne	• Interviews - J. King - S. Beckman - W. Sidle	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour • Interview - H. Bruce	• Interview - L. Rogers	• Interviews - A. Snyder - J. Williams - B. Skalka	• Interviews - W. Sidle - M. Cherry	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - J. Love - S. Hinnefeld	• Interviews - D. Brettschneider - R. Gibson	• Develop Findings	• Develop Findings	• FAR	• Travel
	pm • Interviews - L. Rutherford • Develop Findings	• Interview - G. Calhoun	• Interviews - J. Byrne - S. Hinnefeld - L. Rogers • Develop Findings	• Develop Findings	• Finalize Findings	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
J. Melloni Quality Assurance Technical Specialist	am • Travel	• Badging • Training	• Interviews - J. Trujillo - R. Friske - L. Abernathy	• Interviews - S. Adkins - J. Lojek - J. Curry	• Interviews - L. Russell - C. Sutton	• Team Meeting
	pm • Travel	• Site Briefings • Site Tour	• Interviews - H. Clawson - W. Kehew	• Interviews - D. Hoover - F. Ford - J. Weissenberg - D. Eddy	• Interview - M. Ansley	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - D. Hoover - S. Adkins - S. Lojek - T. Dall	• Interviews - M. Orleanca - R. Friske - G. Hester	• Develop Findings	• Develop Findings	• FAR	• Travel
	pm • Interviews - J. Maple - J. Trygier - R. Friske	• Interview - S. Cossell	• Develop Findings	• Overviews and Draft Report	• Finalize Findings	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
J. I. John Air Support Specialist	am • Travel	• Training	• Interviews - L. Rogers - M. Galper - S. Hinnefeld	• Tour - Waste Pits • Interview - R. Roulston	• Tour - Ambient Air Monitors • Interviews - P. Grumski - J. Gore	• Team Meeting
	pm • Badging • Interviews - R. McCullough - R. Palmer	• Site Briefings • Site Tour • Interview - H. Bruce	• Tour - Effluent Sources With M. Galper • Interview - R. Palmer	• Interviews - J. Wise - C. Anderson - M. Corleanca	• Visit - Meteorological Monitoring Station • Interviews - J. Selasky - E. Ray	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - J. Byrne - J. Neyer - D. Siefert	• Interviews - D. Hooper - B. Shroff	• Interview - B. Shroff • Develop Input for Findings	• Develop Input for Findings	• Travel	• Offsite
	pm • Interviews - L. Tomszak - W. Lohner - R. McCullough • Develop Input for Findings	• Interviews - R. Roulston - P. Shanks • Document Review • Develop Input for Findings	• Followup Interviews • Develop Input for Findings	• Develop Input for Findings	• Offsite	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
C. Summers Surface Water/ Drinking Water Support Specialist	am • Travel	• Badging • Training	• Interviews - C. Sutton - R. Hilbert - D. Luken - R. Lehrter - D. Brettschneider	• Interviews - H. Bruce - D. Faris - S. Beckman - F. Johnston	• Interviews - M. Galper - D. Faris - M. Mercadel - G. Ruehrwein - T. Crawford	• Team Meeting • Develop Input for Findings
	pm • Travel	• Site Briefings • Site Tour • Interview - M. Galper	• Tours - Laboratory - Water Plant • Interview - J. Hensley	• Interviews - L. Pennington - J. Hensley • Tour - Sanitary Wastewater Treatment Plant	• Interview - J. Leslie • Tour • Water Pollution Control Plants	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - R. Danahy - M. Mercadel - B. Ko - G. Ruehrwein • Tour - Verifying SPCC Plan Implementation	• Interviews - F. Johnston • Followup Interviews	• Develop Input for Findings • Followup Interviews	• Develop Input for Findings • Followup Interviews	• Offsite	• Offsite
	pm • Interviews - H. Wahl - J. Hensley • Observation of sampling at MH175	• Develop Input for Findings • Followup Interviews	• Develop Input for Findings • Followup Interviews	• Travel	• Offsite	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
Donald Neal Waste Management Support Specialist	am • Travel	• Badging • Training	• Interviews - B. Varchol - D. Beirne - J. Witzeman	• Interviews - R. Hansen - L. Moody - R. Gardner	• Interviews - J. Eckstein - M. Harper - D. Howe/J. Macy - C. Waugh	• Team Meeting • Document Review
	pm • Travel	• Site Briefings • Site Tour	• Interviews - L. Honigford - J. Erfman - J. Long/J. McGuire	• Interviews - J. Knight - S. Hinnefeld - S. Beckman	• Interviews - A. Craig - T. Trujillo - R. Friske	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - P. Blake - L. Allmon	• Interviews - G. Paulson • Inspect Plant 1 Pad, Plant 9, Bldg. 81, KC-2 Warehouse	• Inspect CRU-4 Project Waste Sampling • Interviews - P. Blake - C. Waugh	• Develop Input for Findings	• Develop Input for Findings	• Travel
	pm • Interviews - B. Ko - C. Waugh	• Interviews - D. Burns - P. Blake - R. Cohen	• Interview - B. Varchol • Develop Input for Findings	• Develop Input for Findings	• Develop Input for Findings	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
P. Rodden Inactive Waste Sites Support Specialist	am • Travel	• Badging • Training	• Interviews - P. Clay - E. R. Schmidt	• Interviews - M. Cherry - R. Heath	• Interviews - J. King - K. Nelson	• Team Meeting • Develop Input for Findings
	pm • Travel	• Site Briefings • Site Tour	• Interview - W. Sublette	• Interviews - S. Rutherford - J. Williams - R. Skalka - M. Cherry	• Interviews - J. Harmon - S. Garland - W. Pickles - S. Wolinsky - A. Bomberger	• Document Review
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Interviews - D. Beissel - F. Thompson - D. Zdelar-Bush	• Interview - P. Kelley	• Interviews - D. Brettschneider - F. Jebens - S. Garland - J. Skridulis - B. Hertel	• Interview - K. Kolthoff	• Travel	• Offsite
	pm • Interviews - J. King - K. Kolthoff - D. Brettschneider • Develop Input for Findings	• Interviews - F. Jebens - M. Nelson - J. Foster • Develop Input for Findings	• Develop Input for Findings	• Develop Input for Findings	• Offsite	• Offsite

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 3/15/93	Tues. 3/16/93	Wed. 3/17/93	Thurs. 3/18/93	Fri. 3/19/93	Sat. 3/20/93
J. Rea Groundwater Support Specialist Soil, Sediment, and Biota Support Specialist	am • Travel	• Badging • Training	• Interviews - L. Rogers - E. Ogilvie - R. Farris - J. Berretz - A. Lydic	• Interviews - M. Lockett - E. Fisher - P. Kraps	• Interviews - S. Beckman - B. Sidel - D. Harmel - J. Herskowitz - G. Latulippe	• Team Meeting • Develop Input for Findings
	pm • Travel	• Site Briefings • Site Tour • Interview - M. Cherry	• Interviews - S. Hinnefeld - J. White	• Interviews - S. Oberjohn - D. Muenzenmayer	• Interview - M. Cherry	• Develop Input for Findings
Week 2	Mon. 3/22/93	Tues. 3/23/93	Wed. 3/24/93	Thurs. 3/25/93	Fri. 3/26/93	Sat. 3/27/93
	am • Observe Field Groundwater Sampling Event • Interviews - A. Lydic - J. Schomaker - J. Shoemaker - S. Tombragel - L. Williams - G. Mertz	• Interviews - D. Brettschneider - R. Gibson - M. Cherry	• Interviews - B. Sidle - D. Harmel - G. Latulippe - A. Lydic - K. Broberg	• Develop Input for Findings	• Offsite	• Offsite
	pm • Continue Observation of Field Groundwater Event • Interviews - S. Tombragel - J. Norber - M. Cherry - S. Siler - L. Rogers	• Interview - P. Kraps	• Develop Input for Findings	• Travel	• Offsite	• Offsite

APPENDIX D

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM

APPENDIX D:

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM

Document #	Title/Description	Author	Organization	Recipient	Document Date
Environmental Planning and Risk Management (RM)/Program Evaluation, Reporting, and Corrective Action (PE)					
D-A-1	A Formal Priority System for Environmental Restoration	DOE	EM	Not indicated	12/92
D-A-2	Field Input on EM Self-Assessment Program	DOE	EM-20	Not indicated	1/11/93
D-A-3	Office of Environmental Restoration and Waste Management Self-Assessment Management Plan	DOE	EM	Not indicated	11/92
D-A-4	U.S. DOE FN Self-Assessment Assessable Units	DOE	FN	Not indicated	Not indicated
D-A-5	U.S. DOE FN Self-Assessment Charter	DOE	FN	Not indicated	Not indicated
D-A-6	Self-Assessment Milestones	DOE	FN	Not indicated	Not indicated
D-A-7	Fernald Field Office Self-Assessment Schedule Appendices to Self-Assessment Plan	DOE	FN	Not indicated	Not indicated
D-A-8	U.S. DOE FN Self-Assessment Surveillance Program	DOE	FN	Not indicated	Not indicated
D-A-9	U.S. DOE FN Self-Assessment Walkthrough Program	DOE	FN	Not indicated	Not indicated
D-A-10	FERMCO Self-Assessment Program Implementation Plan (Draft)	FERMCO	Not indicated	Not indicated	3/1/93
D-A-11	Risk Assessment Considerations and Guidance	FERMCO	Not indicated	Not indicated	Not indicated
D-A-12	Discussion of Uncertainty in the Remedial Investigation	FERMCO	Not indicated	Not indicated	Not indicated
D-A-13	Annual Easy Assessment Report for Personnel/Radiological Protection	WEMCO	Not indicated	Not indicated	3/25/93
D-A-14	Annual WEMCO Assessment Report for Environmental Compliance	WEMCO	Not indicated	Not indicated	2/27/92
D-A-15	Trend Review of Occurrence Reports	H. Clawson	FERMCO	Distribution	3/11/93
D-A-16	Semi-Annual Trend Report on CPAF Performance Measure Charting	P. Mohr	WEMCO	W. Britton	10/22/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-17	Corrective Action Report Trend Analysis First Half CY 1992	H. Clawson	WEMCO	Distribution	8/13/92
D-A-18	Corrective Action Plan for Root Cause Analysis Findings	H. Clawson	WEMCO	W. Britton	10/10/91
D-A-19	Environmental Strategic Planning Scope of Work	Not indicated	FERMCO	Not indicated	Not indicated
D-A-20	Environmental Planning Department Operating Procedures and Responsibilities	Not indicated	FERMCO	Not indicated	Not indicated
D-A-21	Strategic Planning FY 1993 Work Plan	Not indicated	FERMCO	Not indicated	Not indicated
D-A-22	Regulatory Integration FY 1993 Work Plan	Not indicated	FERMCO	Not indicated	Not indicated
D-A-23	Projected ES&H Self-Assessment Timeline	Not indicated	FERMCO	Not indicated	2/4/93
D-A-24	ES&H Surveillance Schedule 4th Quarter, FY 1993	Not indicated	FERMCO	Not indicated	3/10/93
D-A-25	ES&H Surveillance Schedule 3rd Quarter, FY 1993	Not indicated	FERMCO	Not indicated	3/16/93
D-A-26	ES&H Appraisal Program Schedule/Status Report	Not indicated	FERMCO	Not indicated	2/11/93
D-A-27	ES&H Self-Assessment Program Implementation Plan (Draft)	Not indicated	FERMCO	Not indicated	Not indicated
D-A-28	Draft Procedure Conduct of Surveillances	Not indicated	FERMCO	Not indicated	Not indicated
D-A-29	FERMCO Self-Assessment Program Implementation Plan (Final)	Not indicated	FERMCO	Not indicated	3/18/93
D-A-30	Risk Assessment Work Plan Addendum	Not indicated	FERMCO	Not indicated	6/92
D-A-31	FEMP Strategic Plan	Not indicated	FN	Not indicated	5/26/92
D-A-32	FEMP Road Map	Not indicated	WEMCO	Not indicated	9/30/91
D-A-33	Environmental Restoration and Waste Management Five-Year Plan	Not indicated	DOE	Not indicated	1/93
D-A-34	FEMP Project Plan	Not indicated	FN	Not indicated	10/92
D-A-35	FEMP Site Specific Plan FY 1993	Not indicated	FN	Not indicated	Not indicated
D-A-36	Tenera Risk-Prioritization Model Questions and Logic Sequence Computer Modeling	Tenera	Not indicated	Not indicated	2/24/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-37	Consolidation of ESH&QA Assessment Results and Development of an Integrated Corrective Action Plan	FERMCO	Program Assessment and Reporting	Not indicated	3/12/93
D-A-38	Risk Assessment and Management System Study Guide and Training Materials	V. Werner	WEMCO	Not indicated	2/11/92
D-A-39	Risk Assessment and Management System Manual	WEMCO	Not indicated	Not indicated	1/24/92
D-A-40	Readiness Review Board Appointments	N. Kaufman	FERMCO	Distribution	2/1/93
D-A-41	Readiness Review Process	FERMCO	Not indicated	Not indicated	1/12/93
Staff Resources, Training, and Development (SR)					
D-B-1	Memorandum of Agreement between FN and OR	W. Young, et al.	DOE	Not indicated	2/26/92
D-B-2	FERMCO Transition Interview Instructions and Questionnaire	Not indicated	FERMCO	Not indicated	9/92
D-B-3	Salaried Employment Openings, Computer Printout	Human Resources	FERMCO	Not indicated	3/24/93
D-B-4	WEMCO Performance Appraisal Form	Not indicated	WEMCO	Not indicated	10/1/88
D-B-5	Fluor Daniel Performance Appraisal Form	Not indicated	Fluor Daniel	Not indicated	10/91
D-B-6	Job Descriptions for Wage Personnel	Not indicated	FERMCO	Not indicated	Not indicated
D-B-7	Job Descriptions for Environmental Personnel	Not indicated	FERMCO	Not indicated	3/22/93
D-B-8	Professional Development Plan, 1993, Draft	Not indicated	FERMCO	Not indicated	3/18/93
D-B-9	Questionnaire for Training Profiling	M. King	FERMCO	Not indicated	Not indicated
D-B-10	Training Records, Computer Printouts	Not indicated	FERMCO	Not indicated	Not indicated
D-B-11	Transition Readiness Review, Training	Not indicated	FERMCO	Not indicated	10/92
D-B-12	Regulatory Bulletin Worklist	Not indicated	FERMCO	Not indicated	Not indicated
D-B-13	Continuous Performance Improvement, Recognition and Reward Plan, Draft	Not indicated	FERMCO	Not indicated	3/93
Organizational Structure (OS)/Internal and External Communication (IC)					
D-C-1	Memorandum re: Office of Environmental Restoration Work Breakdown Structure	G. Turi, EM-43	DOE	R. Whitfield, EM-40	1/15/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-2	Draft Office of Environmental Restoration Strategic Plan	EM-40	DOE	Not indicated	Not indicated
D-C-3	Memorandum re: Lessons Learned Programs	G. Turi, EM-43	DOE	Distribution	1/19/93
D-C-4	EM-40 Baseline Process: Next Steps	EM-40	DOE	Not indicated	Not indicated
D-C-5	EM-40 Management Policies and Requirements EM-40 Management Plan	R. Whitfield	DOE	Not indicated	3/92
D-C-6	Talking Points for J. Fiore Briefing	J. Fiore	FN	FN Staff and FERMCO	2/4/93
D-C-7	Environment, Safety and Health Progress Assignment of the Fernald Environmental Management Project	EH	EH	DOE	11/91
D-C-8	Briefing Slides re: Transition to the Environmental Restoration Management Contractor Fernald, Ohio	J. Fiore	FN	Not indicated	2/9/93
D-C-9	FEMP Environmental Protection Implementation Plan	WEMCO	WEMCO	FN	11/9/92
D-C-10	Management Appraisal of ESH&QA for FEMP	FN	FN	DUE	7/13-21/92
D-C-11	Plan for ESH&QA Functional Appraisal of FEMP	OR	OR	DOE	Not indicated
D-C-12	ES&H & QA Functional Appraisal of FEMP	OR	OR	DOE	11/2-20/92
D-C-13	Memorandum re: Quality Assurance Program Description Document	T. Rowland	FN	W. Kehew	2/12/93
D-C-14	Slides for FERMCO All-Employee Address	N. Kaufman	FERMCO	FERMCO Staff	12/1/92
D-C-15	ERMC Agreement	DOE and FERMCO	DOE and FERMCO	DOE and FERMCO	8/18/92
D-C-16	Report on the Transition to FEMP Environmental Restoration Management Contractor, Volumes 1 and 2	D. Kozlowski, EM-424	DOE	EM	12/92
D-C-17	Memorandum re: Memorandum of Understanding between EM-30 and EM-40	J. Lytle and R. Whitfield	DOE	EM-30, EM-40	9/15/92
D-C-18	Bulletin re: environmental Restoration Activities at Feed Materials Production Center	EM	DOE	General public	6/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-19	Summary of Public Participation Workshop	EM-4	EM-4	EM	1/93
D-C-20	Background on EM Public Participation Quarterly Workshops	EM-4	EM-4	EM	2/93
D-C-21	Internal Communication Mechanisms for EM Public Participation	EM-4	EM-4	EM	Not indicated
D-C-22	Public Participation Guidance for EM	EM-4	EM-4	EM	3/93
D-C-23	Public Participation Policy for Environmental Restoration and Waste Management	EM-4	EM-4	EM	11/92
D-C-24	Draft Public Involvement Plan for Operable Unit 1	Public Affairs Office	FN and FERMCO	FN and FERMCO	3/93
D-C-25	Memorandum re: OU Public Affairs Counselors	J. Hoopes	FERMCO	Public Affairs Office of FN and FERMCO	1/12/93
D-C-26	Memorandum re: OU Public Affairs Counselors (update)	J. Hoopes	FERMCO	Public Affairs Office of FN and FERMCO	2/19/93
D-C-27	Summary of FEMP Community Relations Programs	J. Hoopes	FERMCO	Public Affairs Office of FN and FERMCO	1/3/92
D-C-28	How FEMP Communicates with the Public	Public Relations Office	WEMCO	General Public	Not indicated
D-C-29	Responsiveness Summary for Removal Action No. 27: Management of Contaminated Structures	Public Affairs Offices	FN and FERMCO	Community Workshop Attendees	3/93
D-C-30	Progress Report re: RI/FS for OU1 Waste Pit Area	R. Warner	FN	General Public	2/93
D-C-31	Progress Report re: RI/FS for OU2	J. Reising	FN	General Public	2/93
D-C-32	Progress Report re: RI/FS for OU3	R. Janke	FN	General Public	2/93
D-C-33	Progress Report re: RI/FS for OU4	R. Allen	FN	General Public	2/93
D-C-34	Progress Report re: RI/FS for OU5	P. Yerace	FN	General Public	2/93
D-C-35	Fernald Environmental Management Plan Section IV (Draft)	FERMCO	FERMCO	DOE	11/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-36	Employment Offer Letter	N. Kaufman	FERMCO	P. Mohr	11/30/92
D-C-37	Employment Offer Letter	N. Kaufman	FERMCO	All Fernald Contractor Employees	12/1/92
D-C-38	Bulletin To Introduce Staff	T. Rowland	FN	All FN Employees	2/25/93
D-C-39	"Transition Update" Newsletter	Employee Communications Office	FERMCO	All FERMCO Employees	9/2/92 through 1/28/93
D-C-40	"Employee Update" Newsletter	Employee Communications Office	FERMCO	All FERMCO Employees	11/25/92 through 3/19/93
D-C-41	"You Name It" Newsletter	Employee Communications Office	FERMCO	All FERMCO employees	12/92
D-C-42	"New Name" Newsletter	Employee Communications Office	FERMCO	All FERMCO employees	1/93
D-C-43	Oak Ridge Field Office Employee Phone List, pp. 87-89	OR	OR	OR Employees	Not indicated
D-C-44	FERMCO Organizational Charts	FERMCO	FERMCO	FERMCO Employees	2/28/93
D-C-45	"Concept of the Organization"	FERMCO	FERMCO	FERMCO Employees	12/92
D-C-46	Fernald Field Office Organizational Charts	FN	FN	FN Employees	2/93
D-C-47	Draft Fernald Field Office Organizational Charts	FN	FN	FN Employees	3/16/93
D-C-48	Draft Identification of Authorities and Responsibilities of EM-424 Managers	K. Hayes	EM-424	EM-424 Staff	3/8/93
D-C-49	Memorandum re: Identification of Authority and Responsibilities of EM-424 Managers	K. Hayes	EM-424	EM-424 Staff	4/6/92
D-C-50	EM Organizational Charts and Descriptions	EM	EM	EM Staff	Not indicated
D-C-51	Consent Agreement with EPA	DOE and EPA	DOE and EPA	DOE and EPA	9/20/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-52	Consent Decree with Ohio EPA	DOE and Ohio EPA	DOE and Ohio EPA	DOE and Ohio EPA	1/22/93
Environmental Commitment (EC)/Environmental Protection Program (EP)					
D-D-1	Draft Waste Minimization and Pollution Awareness Plan Update	L. Farmer	FERMCO	FERMCO	Not indicated
D-D-2	Comprehensive Environmental Occupational Safety and Health Program	FERMCO	FERMCO	FERMCO	2/10/93
D-D-3	Telephone Directory	FERMCO	FERMCO	FERMCO	2/93
D-D-4	Waste Minimization and Pollution Prevention Awareness Plan	WEMCO	WEMCO	FMPC	4/30/91
D-D-5	Radionuclide Air Emissions Quality Assurance Project Plan (RAEQAPjP)	WEMCO	WEMCO	FEMP	5/26/92
D-D-6	Draft FEMP NPDES Compliance Plan	FERMCO	FERMCO	FERMCO	3/12/93
D-D-7	Site Policy and Procedure	M. Boswell	WEMCO	WEMCO	1/12/90
D-D-8	Distribution List for the Comprehensive Environmental, Occupational Safety, and Health Program Manual	FERMCO	FERMCO	FERMCO	3/17/93
D-D-9	FERMCO All Employee Meeting	FERMCO	FERMCO	FERMCO	12/1/92
D-D-10	FEMP Glacial Till/Vadose Zone Hydraulic Investigations Work Plan, Operable Unit 5, Project Order 37, Revision B, 90 Percent	Not indicated	Parsons	FERMCO	3/93
D-D-11	Groundwater Model Evaluation Report and Improvement Plan, Revision No. A, Preliminary	Not indicated	FERMCO	Not indicated	3/11/93
D-D-12	South Plume Groundwater Recovery System Pump Test Work Plan, Revision No. 1	Not indicated	FN	Not indicated	2/93
Formality of Environmental Programs (FP)					
D-E-1	FERMCO - Matrix Chart	Not indicated	FERMCO	Not indicated	Not indicated
D-E-2	FERMCO - Administration Chart	Not indicated	FERMCO	Not indicated	Not indicated
D-E-3	Mission Statement	Not indicated	WEMCO	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-4	Conduct of Operations Policy	Not indicated	WEMCO	Not indicated	8/24/90
D-E-5	Fernald Site Environmental Monitoring Plan	Not indicated	WEMCO	Not indicated	11/6/92
D-E-6	DOE Directives Applicable to FERMCO Contracts	Not indicated	Not indicated	Not indicated	Not indicated
D-E-7	Environmental Protection Implementation Plan (EPIP)	Not indicated	Not indicated	Not indicated	Not indicated
D-E-8	Draft Functional Appraisal of FEMP	Not indicated	WEMCO	Not indicated	11/2-20/92
D-E-9	Site-Wide CERCLA QA Project Plan	Not indicated	Not indicated	Not indicated	Not indicated
D-E-10	Management Appraisal of ESH&QA Assurance Activities of FEMP	FN	FN	FEMP	7/13-21/92
D-E-11	Comprehensive ES&H Program Manual	FERMCO	FERMCO	FEMP	2/10/93
D-E-12	FEMP Site Document System	WEMCO	WEMCO	FEMP	10/14/92
D-E-13	Construction Planning	FERMCO	FERMCO	FEMP	Not indicated
D-E-14	Functional Area Requirements Ownership Matrix	FERMCO	FERMCO	FEMP	Not indicated
D-E-15	FERMCO Site Document Index	FERMCO	FERMCO	FEMP	3/1/93
D-E-16	ES&H Compliance - Flow of Activities	FERMCO	FERMCO	FEMP	Not indicated
D-E-17	MOU Between Waste Management and Environmental Restoration	DOE	DOE	DOE	9/15/92
D-E-18	US EPA Consent Agreement	EPA	EPA	EPA	9/20/92
D-E-19	Ohio EPA	Ohio EPA	Ohio EPA	Ohio EPA	1/22/93
D-E-20	Draft File Record Storage Copy	FERMCO	FERMCO	FERMCO	3/12/93
D-E-21	Proposed ES&H Procedure System Numbers	FERMCO	FERMCO	FERMCO	3/17/93
D-E-22	Outline for ES&H Document Control Department	FERMCO	FERMCO	FERMCO	Not indicated
D-E-23	Outline for ES&H Records Management Department	FERMCO	FERMCO	FERMCO	Not indicated
D-E-24	Draft Document Filing System	FERMCO	FERMCO	FERMCO	3/3/93
D-E-25	FEMP Groundwater Integration	FERMCO	FERMCO	FERMCO	3/4/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
Environmental Protection Programs (EP) Radiation (RAD)					
D-F-1	Fernald Site Environmental Monitoring Plan	Not indicated	FERMCO	Not indicated	2/26/93
D-F-2	1991 Annual Site Environmental Report	Not indicated	WEMCO	DOE	12/92
D-F-3	Uranium Discharged to Paddy's Run due to Stormwater Runoff	D. Brettschneider	WEMCO	S. Beckman	11/10/92
D-F-4	Issuance of DOE 5400.5	R. Nelson	OR	J. Hall, et al.	3/28/90
D-F-5	Compliance Status of Fernald with DOE 5400.5	M. Boswell	WEMCO	G. Westerbeck	5/14/90
D-F-6	CERCLA Consent Agreement	R. Whitfield D. Ullrich	DOE EPA	WEMCO	9/18/91
D-F-7	Memorandum re: ALARA Committee Meeting	J. Cullen	WEMCO	W. Britton, et al.	6/13/90
D-F-8	ALARA Committee Charter - Draft	Not indicated	WEMCO	Not indicated	8/25/89
D-F-9	ALARA Assessment Checklist - Occupational	Not indicated	WEMCO	Not indicated	4/5/90
D-F-10	1991 NESHAP Report and Supporting Documentation	R. Tiller	WEMCO	V. Adamkus-EPA	6/25/92
D-F-11	Well # 4101, 4102, and 4103 Analytical Results	Not indicated	FERMCO	Not indicated	3/18/93
D-F-12	Determination of Uranium in Water: Laser Method	W. Neyer	FERMCO	Not indicated	2/12/93
D-F-13	Gravimetric Determination of Airborne Particles	W. Neyer	FERMCO	Not indicated	12/29/92
D-F-14	ALARA Committee Charter	H. Daugherty	WEMCO	Not indicated	8/19/92
D-F-15	Determination of Uranium and Gross Beta Particle Activity in High Volume Air Dust Samples	W. Neyer	WEMCO	Not indicated	12/08/92
D-F-16	FEMP Air Monitoring	P. Kraps	WEMCO	Not indicated	10/31/91
Environmental Protection Program (EP) Radiation (RAD)					
D-G-1	Pathway Assessment Activities and Schedule	N. Kaufman	FERMCO	T. Rowland	3/4/93
D-G-2	Review of Aerial Photos	S. Garland	FERMCO	J. Skridulis	3/19/93
D-G-3	Plan* 7 Dismantling, Removal Action 19, Work Plan	J. King	FERMCO	R. Janke	2/19/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-G-4	Contaminated Soils Removal Action 14 Work Plan Addendum	Not indicated	FN	Not indicated	3/93
D-G-5	Radiation Contamination Surveys (SP-P-35-023)	Not indicated	WEMCO	Not indicated	1/22/92
D-G-6	Unrestricted Release of Materials from the FEMP	Not indicated	DOE	Not indicated	8/7/92
D-G-7	Plant 1 Ore Silos Removal Action No. 13 Work Plan	Not indicated	DOE	Not indicated	7/92
D-G-8	Plant 7 Dismantling Removal Action No. 19 Work Plan	Parsons	DOE	Not indicated	2/93
Environmental Protection Programs (EP) Quality Assurance (QA)					
D-H-1	Quality Assurance Program Description (Draft)	T. Rowland	FN	DOE Principal Staff	2/12/93
D-H-2	Organization Charts	Not indicated	FERMCO	Not indicated	3/93
D-H-3	Quality Assurance Division Independent Oversight	Not indicated	FERMCO	Not indicated	Not indicated
D-H-4	First Half, CY 1992 Corrective Action Report Trend Analysis	H. Clawson	WEMCO	S. Dechter, et al.	8/13/92
D-H-5	Annual WEMCO Assessment Report for Environment Compliance	H. Daugherty	WEMCO	L. Bugar, et al.	2/27/92
D-H-6	Occurrence Report Trend Analysis July-November 1992	H. Clawson	FERMCO	L. Abernathy, et al.	3/11/93
D-H-7	Quality Assurance Program Description Rev. No. 1	H. Daugherty	WEMCO	Not indicated	11/2/92
D-H-8	Quality Assurance Program Description Rev. No. 2 (Draft)	N. Kaufman	FERMCO	Not indicated	Not indicated
D-H-9	Performance Evaluation Committee Reports for Westinghouse Environmental Management of Ohio	Not indicated	DOE	Not indicated	Not indicated
D-H-10	Cost Plus Award Fee Self Assessment Report for the Period April 1 - November 20, 1992	Not indicated	WEMCO	Not indicated	Not indicated
D-H-11	Organization Chart - Fernald Field Office (Draft)	Not indicated	FN	Not indicated	2/93
D-H-12	Organization Chart - Fernald Field Office (Draft)	Not indicated	FN	Not indicated	3/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-H-13	Contract Administration Involving the Remedial Investigation and Feasibility Study at the Feed Material and Production Center Report #ER-B-91-18	Not indicated	DOE-Office of the Inspector General	Not indicated	8/28/91
D-H-14	Environment, Safety and Health, and Quality Assurance - Functional Appraisal of FEMP (Draft)	Not indicated	OR	Not indicated	11/19/92
D-H-15	Memorandum re: Quality Assurance Acquisition Involvement	J. Curry	FERMCO	K. Lehman	3/2/93
D-H-16	Performance Evaluation Testing Programs	W. Maple	FERMCO	Not indicated	Not indicated
D-H-17	Laboratory Qualification External QC Sample Tracking Record	W. Maple	FERMCO	Not indicated	Not indicated
D-H-18	Wet Chemistry Analysis Sample Data	W. Maple	FERMCO	Not indicated	Not indicated
D-H-19	SSOP-0103 FEMP Site Document System	H. Daugherty	WEMCO	Not indicated	9/30/92
D-H-20	Sampling of Groundwater Monitoring Wells	L. Rogers	WEMCO	Not indicated	8/21/91
Environmental Protection Programs (EP) Air (AIR)					
D-I-1	FERMCO - Matrix Chart	Not indicated	FERMCO	Not indicated	Not indicated
D-I-2	Position Specifications	Not indicated	WEMCO	Not indicated	12/12/90
D-I-3	Asbestos Management Committee Charter	Not indicated	WEMCO	Not indicated	4/20/92
D-I-4	Environmental Management Department Charter	Not indicated	WEMCO	Not indicated	10/2/92
D-I-5	Fernald Site Environmental Monitoring Plan	Not indicated	WEMCO	Not indicated	11/6/92
D-I-6	Radionuclide Air Emissions Quality Assurance Project Plan (IAEQAP)PL-3008	Not indicated	WEMCO	Not indicated	5/26/92
D-I-7	Annual Site Environmental Report for Calendar Year 1990 and 1991	Not indicated	WEMCO	Not indicated	1990 and 1991
D-I-8	Environmental Protection Implementation Plan (EPIP)	Not indicated	Not indicated	Not indicated	Not indicated
D-I-9	Long Range Site Environmental Protection Plans	Not indicated	WEMCO	Not indicated	Not indicated
D-I-10	Administration and Conduct of Surveillance Activities (EQP-7.01)	Not indicated	WEMCO	Not indicated	8/31/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-I-11	Conduct of Independent Surveillance Activities (PP-0709)	K. Merriman	WEMCO	Not indicated	12/31/91
D-I-12	Current Operational and Capital Expenditure Budgets Identifying Key Environmental Control Expenditures by DOE and Contractor(s)	W. Den Herder	WEMCO	Not indicated	Not indicated
D-I-13	Draft Procedure re: Meteorological Tower Maintenance	E. Ray J. Selasky	WEMCO	Not indicated	1/1/93
D-I-14	Draft Procedure re: Meteorological Computer and Data Management (EM-RM-021)	E. Ray J. Selasky	WEMCO	Not indicated	1/1/93
D-I-15	Draft Procedure: Meteorological Monitoring	E. Ray J. Selasky	WEMCO	Not indicated	1/1/93
D-I-16	Stack Discharge Report	C. Siefert	WEMCO	D. Faris C. Lower Central Files CWP Files	12/11/92
D-I-17	Release/Emission Report	C. Siefert	WEMCO	D. Faris C. Lower Central Files CWP Files	12/11/92
D-I-18	Operating Procedures Maintenance Work Instructions, and Surveillance Tests for Laboratory MEPA/HEPA Filtration System	Not indicated	WEMCO	Not indicated	Not indicated
D-I-19	Operation and Maintenance Procedures for Boiler Plant ESP's	Not indicated	Not indicated	Not indicated	Not indicated
D-I-20	Operating Procedures Maintenance Work Instructions, and Surveillance Test Report for Portable HEPA Filtration Device	Not indicated	Not indicated	Not indicated	Not indicated
D-I-21	Section 3.0 of FEMP Environmental Monitoring Plan	Not indicated	WEMCO	Not indicated	11/6/92
D-I-22	Preventative Maintenance Procedures for Emission Monitor for Laboratory MEPA/HEPA Filtration System	Not indicated	Not indicated	Not indicated	7/27/92
D-I-23	Preventative Maintenance Procedures for Boiler Stack Opacity Monitor	Not indicated	Not indicated	Not indicated	1/31/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-I-24	Air Permit Status List of PTI's	Not indicated	FERMCO	Not indicated	1/93
D-I-25	SARA Title III, 312 Report 1991	Not indicated	Not indicated	Not indicated	Not indicated
D-I-26	1991 Radionuclide Effluent and Onsite Discharge Data Report (EIS/ODIS) - FEMP	Not indicated	Not indicated	Not indicated	Not indicated
D-I-27	1991 National Emissions Standards for Hazardous Air Pollutants Annual Report for FEMP, 40 CFR 61, Subpart H	Not indicated	Not indicated	Not indicated	Not indicated
D-I-28	Air Monitoring Filter Change Procedure	Not indicated	Not indicated	Not indicated	Not indicated
D-I-29	Analytical Laboratory QA Plan	Not indicated	Not indicated	Not indicated	Not indicated
D-I-30	Preparation, Documentation, and Delivery of Quality Control Samples	Not indicated	Not indicated	Not indicated	Not indicated
D-I-31	The Radiometric Determination of Radium-226 and Radium-228 in Various Matrices	Not indicated	Not indicated	Not indicated	Not indicated
D-I-32	Radiometric Procedure for the Determination of Neptunium-237	Not indicated	Not indicated	Not indicated	Not indicated
D-I-33	Alpha Spectrometer Operating Procedure Utilizing Silicon Surface Barrier Detectors	Not indicated	Not indicated	Not indicated	Not indicated
D-I-34	The Radiometric Determination of Total Beta Activity	Not indicated	Not indicated	Not indicated	Not indicated
D-I-35	SOP 1-C-701 Plant 1 Dust Collectors	Not indicated	WEMCO	Not indicated	5/24/89
D-I-36	SOP 2-C-701 Plant 2/3 Dust Collectors	Not indicated	WEMCO	Not indicated	2/7/91
D-I-37	SOP 4-C-701 Plant 4 Dust Collectors	Not indicated	WEMCO	Not indicated	2/7/88
D-I-38	SOP 5-C-701 Operation of Plant 5 Baghouse Type Dust Collectors	Not indicated	WEMCO	Not indicated	9/20/89
D-I-39	SOP 6-C-701 Operation of Plant 6 Dust Collectors	Not indicated	WEMCO	Not indicated	2/1/89
D-I-40	SOP 8-C-701 Plant 8 Baghouse Dust Collector Operation	Not indicated	WEMCO	Not indicated	8/22/90
D-I-41	SOP 9-C-701 Plant 9 Machining Area Dust Collector (Precipitron) Operation	Not indicated	WEMCO	Not indicated	4/13/89

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-I-42	SOP 11-C-238 Pilot Plant Dust Collectors	Not indicated	WEMCO	Not indicated	10/11/89
D-I-43	OSH-P-52-017 SOP changed to SP-P-35-047 Stack Sampler Inspection and Filter Change Procedure	Not indicated	WEMCO	Not indicated	6/19/91
D-I-44	OSH-P-11-005 SOP - changed to SP-P-41-005 SOP - Inspection of Single Point Stack Sampler Housings	Not indicated	WEMCO	Not indicated	3/27/92
D-I-45	ESH-P-11-040 SOP changed to SP-P-41-040 Standard Pilot Tube Method for Measuring Static Pressure in Ducts	Not indicated	WEMCO	Not indicated	3/10/92
D-I-46	FMPC-718 Measuring and Test Equipment Calibration and Control	S. Dechter	WEMCO	Not indicated	1/12/90
D-I-47	SOP-20-C-708 Inspecting and Troubleshooting Baghouse Type Dust Collectors and Precipitrons	Not indicated	WEMCO	Not indicated	2/16/90
D-I-48	ANL-SP-1001 Analytical Laboratory Quality Assurance Plan	S. Madaris	WEMCO	Not indicated	10/16/91
D-I-49	Working Papers Used in Preparation of the 1991 NESHAP Annual Report	R. Roulston	FERMCO-RTP	File	1/2/92
D-I-50	Ambient Monitoring Station Data Listings for 1992	J. Byrne	FERMCO-EHS	File	3/19/93
D-I-51	Pathway Assessment Activity Scope of Work	N. Kaufman	FERMCO	T. Rowland	3/4/93
D-I-52	FEMP Site Wide Laboratory Hoods	J. Neyer	FERMCO-RSO	Not indicated	3/22/93
D-I-53	Analytical Laboratory Stack Monitoring Requirements for MEPA/HEPA System	R. Palmer	FERMCO-ESH	J. Long	12/16/92
Environmental Protection Programs (EP) Surface Water/Drinking Water (SW)					
D-J-1	Overview of the FEMP (Former FMPC)	Not indicated	Not indicated	Not indicated	Not indicated
D-J-2	Mission Statement	Not indicated	WEMCO	Not indicated	Not indicated
D-J-3	Fernald Site Environmental Monitoring Plan	Not indicated	WEMCO	Not indicated	11/6/92
D-J-4	NPDES Permit Compliance Plan	F. Johnston	WEMCO	Not indicated	9/10/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-J-5	DOE Directives Applicable to FERMCO Contracts	Not indicated	DOE	FERMCO	Not indicated
D-J-6	Annual Site Environmental Report for Calendar Year 1990 and 1991	Not indicated	WEMCO	Not indicated	1990 and 1991
D-J-7	Environmental Protection Implementation Plan (EPIP)	Not indicated	Not indicated	Not indicated	Not indicated
D-J-8	Environmental Monitoring Plans (EMP)	Not indicated	WEMCO	Not indicated	11/6/92
D-J-9	List of Contacts	Not indicated	Not indicated	Not indicated	Not indicated
D-J-10	FEMP Effluent Management Plan	Not indicated	WEMCO	Not indicated	Not indicated
D-J-11	Draft Functional Appraisal of FEMP	Not indicated	WEMCO	Not indicated	11/2/92-11/20/92
D-J-12	Long Range Site Environmental Protection Plans	Not indicated	WEMCO	Not indicated	Not indicated
D-J-13	Drawing of Storm Sewer System	Not indicated	WEMCO	Not indicated	Not indicated
D-J-14	Drawing of Effluent Streams	Not indicated	FERMCO	Not indicated	Not indicated
D-J-15	December 1992 Discharge Monitoring Report	Not indicated	FERMCO	Not indicated	Not indicated
D-J-16	Monthly Progress Report for US EPA Consent Agreement	Not indicated	Not indicated	Not indicated	Not indicated
D-J-17	Annual Effluent Radiation Report	Not indicated	Not indicated	Not indicated	Not indicated
D-J-18	Sewage Treatment Plant (STP) Sludge Management Plan	Not indicated	WEMCO	Not indicated	Not indicated
D-J-19	Water Treatment Plant Operation (SOP 43-C-301)	Not indicated	WEMCO	Not indicated	Not indicated
D-J-20	Addendum FMPC National Pollutant Discharge Elimination System (NPDES) Permit Application	Not indicated	Not indicated	Not indicated	Not indicated
D-J-21	Ohio EPA Letter (DOE Log # D-1152)	Not indicated	Not indicated	Not indicated	Not indicated
D-J-22	Radiological Environmental Monitoring Sample Collection Schedule	Not indicated	FERMCO	Not indicated	3/93
D-J-23	FMPC Best Management Practices Plan (FMPC/SUB-011/UC-11)	R. Ferguson P. Phoenix R.F. Weston, Inc.	WEMCO	Not indicated	2/88
D-J-24	List of Spill Coordinators	Not indicated	FERMCO	Not indicated	1/14/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-J-25	FMPC Spill Prevention Control and Countermeasure Plan (FMPC-2194)	Not indicated	WEMCO	Not indicated	Not indicated
D-J-26	FMPC Raw Water System	Not indicated	Not indicated	Not indicated	Not indicated
D-J-27	Drinking Water Operation Report (November 1992)	Not indicated	Not indicated	Not indicated	Not indicated
D-J-28	Analytical Laboratory QA Plan	Not indicated	Not indicated	Not indicated	Not indicated
D-J-29	Preparation, Documentation, and Delivery of Quality Control Samples	Not indicated	Not indicated	Not indicated	Not indicated
D-J-30	Training and Qualifications of Analysts within the WEMCO Analytical Laboratories	Not indicated	Not indicated	Not indicated	Not indicated
D-J-31	SOP-Chain of Custody for Environmental Samples	Not indicated	Not indicated	Not indicated	Not indicated
D-J-32	SOP-Preparation of Reagents and Standards	Not indicated	Not indicated	Not indicated	Not indicated
D-J-33	Logkeeping	Not indicated	Not indicated	Not indicated	Not indicated
D-J-34	Deviation and Corrective Action Reporting	Not indicated	Not indicated	Not indicated	Not indicated
D-J-35	Management and Reporting of Analytical Laboratory Results	Not indicated	Not indicated	Not indicated	Not indicated
D-J-36	Processing the Site-Wide Analysis Request/Custody Record for Sample Control	Not indicated	Not indicated	Not indicated	Not indicated
D-J-37	Analytical Document Processing and Implementation	Not indicated	Not indicated	Not indicated	Not indicated
D-J-38	Administrative Requirements for Repair, Calibration, and Preventative Maintenance of Instruments and Equipment in the Analytical Laboratories	Not indicated	Not indicated	Not indicated	Not indicated
D-J-39	The Radiometric Determination of Radium-226 and Radium-228 in Various Matrices	Not indicated	Not indicated	Not indicated	Not indicated
D-J-40	Determination of Uranium in Water: UA-3 Laser Induced Phosphorescence Method (Method 9136)	W. Neyer	FERMCO	Not indicated	2/19/93
D-J-41	Application for Permit to Discharge Stormwater Discharges Associated with Industrial Activity	WEMCO	WEMCO	OEPA	9/92
D-J-42	Fernald Site Environmental Monitoring Plan, Rev. 1 (Draft)	FERMCO	FERMCO	Not indicated	2/93

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LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-J-43	Letter re: EPA Reg. 5 to FMPC Referencing Dispute Agreement regarding Sending Untreated Groundwater to GMR	EPA	EPA	FMPC	10/90
D-J-44	Spill Incident Reporting and Cleanup SSOP-0067	Not indicated	FEMP	FEMP	11/92
Environmental Protection Programs (EP) Waste Management (WM)					
D-K-1	Cost Plus Award Fee Self-Assessment Report	Not indicated	WEMCO	DOE	11/30/92
D-K-2	Waste Minimization and Pollution Prevention Awareness Plan	Not indicated	WEMCO	DOE	4/30/91
D-K-3	Accumulating Hazardous Waste in Satellite Accumulation Areas and Interim Containers	H. Daugherty	WEMCO	Not indicated	10/14/92
D-K-4	PMP-425, Construction Waste Handling	Not indicated	WEMCO	Not indicated	3/20/90
D-K-5	PMP-420, Preparation of ES&H Survey Form	Not indicated	WEMCO	Not indicated	3/20/90
D-K-6	SSOP-0002, Completing the Material Evaluation Form	Not indicated	WEMCO	Not indicated	10/22/91
D-K-7	FFCA Mixed Waste Inventory and Treatment Technology Report	Not indicated	FERMCO	DOE	1/29/93
D-K-8	RCRA Storage Facility Data Sheet	J. Eckstein	FERMCO	DOE	1/19/93
D-K-9	Waste Minimization Commitments	N. Kaufman	FERMCO	DOE	1/29/93
D-K-10	Pollution Prevention and Waste Minimization Team	L. Allmon	FERMCO	Not indicated	3/25/93
D-K-11	1992 Annual Report on Waste Generation and Waste Minimization Progress	L. Allmon	FERMCO	DOE	3/5/93
D-K-12	Meeting Notes, Pollution Prevention and Waste Minimization	L. Allmon	FERMCO	DOE	3/4/93
D-K-13	Waste Minimization and Pollution Awareness Plan Update	L. Farmer	FERMCO	DOE	7/30/92
D-K-14	Waste Acceptance Criteria for Offsite Generators	Not indicated	WEMCO	DOE	8/92
D-K-15	Meeting Notes Six Month Projection Meeting	D. Burns	FERMCO	DOE	3/4/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-K-16	Meeting Notes Weekly Shipping Meeting	J. Rowe	FERMCO	DOE	2/18/93
D-K-17	Proc. EM-SM-001, Environmental Monitoring Onsite Media Sampling	Not indicated	WEMCO	Not indicated	5/1/92
D-K-18	Proc. EM-SM-006, Sample Plan Development Procedure	Not indicated	WEMCO	Not indicated	5/1/92
D-K-19	Organizational Structure for Waste Management Program Section of RSO Operations Department	Not indicated	FERMCO	Not indicated	12/92
D-K-20	FMPC-519, Management of Hazardous Waste	Not indicated	WEMCO	Not indicated	7/28/89
Environmental Protection Programs (EP) Inactive Waste Sites (IWS)					
D-L-1	EPA Comments on CRU2 RI Report	Not indicated	EPA	DOE	12/16/92
D-L-2	State Comments on CRU2 RI Report	Not indicated	OEPA	DOE	12/17/92
D-L-3	CRU1 Draft RI Report	Not indicated	ASI-IT/DOE	EPA	2/93
D-L-4	Removal Site Evaluation Plant 7 Dismantling RA 19	DOE	DOE	EPA	1/93
D-L-5	Contaminated Soils Adjacent to the Sewage Treatment Plant Incinerator Work Plan Addendum	DOE	DOE	EPA	1/93
D-L-6	Contaminate Soils Adjacent to the Sewage Treatment Plant Incinerator RA#14 Work Plan	DOE	DOE	EPA	7/92
D-L-7	Conceptual Strategy for the Development of the FEMP Natural Resource Management Plan	Not indicated	Not indicated	Not indicated	Not indicated
D-L-8	Correspondence from EPA indicating Disapproval of Risk Assessment Procedures	EPA	EPA	DOE	Not indicated
D-L-9	Comment/Responses on the Final Risk Assessment Work Plan Addendum	EPA	EPA	DOE	8/6/92
Environmental Protection Programs (EP) Groundwater (GW)/Soil, Sediment, and Biota (SSB)					
D-M-1	Cost Plus Award Fee Self-Assessment Report	WEMCO	WEMCO	WEMCO	Not indicated
D-M-2	ASER	WEMCO	WEMCO	DOE	12/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ASSESSMENT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-M-3	Procurement of Water Treatment System for Private Residences Affected by South Plume Contamination	J. Hopper	WEMCO	L. Whiting	5/4/89
D-M-4	Fernald RI/FS Geochemical Program Issues 3 and 5	ASI/IT	ASI/IT	DOE	11/89
D-M-5	GPMP	WEMCO	WEMCO	DOE	5/90
D-M-6	RCRA Groundwater Monitoring Plan	FERMCO	WEMCO	DOE	12/92
D-M-7	Hydrogeologic Study of FMPC to the Great Miami River	WEMCO	WEMCO	DOE	8/88
D-M-8	Groundwater Procedures PCN-EM-GW-002-01	WEMCO	WEMCO	WEMCO	8/21/91
D-M-9	Environmental Protection/Groundwater Monitoring	FERMCO	Environmental Protection	Environmental Protection	1/11/93
D-M-10	Removal Site Evaluation KC-2 Warehouse Well #67	A. Simmons	FERMCO	A. Lydic	2/24/93
D-M-11	Knollman and BLK-14 Water Well Results	P. Kraps	FERMCO	FERMCO	6/25/92
D-M-12	Environmental Monitoring and Radiological Environmental Monitoring	WEMCO	WEMCO	WEMCO	3/27/91
D-M-13	Till Characterization	R. Tiller	DOE	H. Daugherty	7/9/92
D-M-14	Preliminary Determination of Background Uranium for FEMP Groundwater	W. Sidle	DOE	W. Quaid	3/13/92
D-M-15	Fernald ERM Coordination Strategy Great Miami Aquifer	A. Bomberger	FERMCO	FN	3/23/93
General Issues (Team Coordinator)					
D-N-1	The Report of the Joint Task Force on Uranium Recycle Materials Processing	Task Force on Uranium Materials Processing	Not indicated	Not indicated	9/85

APPENDIX E

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM

APPENDIX E:

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM

Ref. #	Date	Auditor	Organization	Position	Topic
Environmental Planning and Risk Management (RM)/Program Evaluation, Reporting, and Corrective Action (PE)					
I-A-1	3/9/93	J. Fichera	EM-22	Director	Self-assessment
I-A-2	3/9/93	J. Fichera	EM-4	Director	Formality and communication
I-A-3	3/9/93	J. Fichera	EM-20	Director	Self-assessment
I-A-4	3/9/93	J. Fichera	EM-20	Manager	Self-assessment
I-A-5	3/10/93	J. Fichera	EM-43	Director	Planning, risk assessment and management, self-assessment
I-A-6	3/10/93	J. Fichera	EM-431	Manager	Formality
I-A-7	3/10/93	J. Fichera	EM-432	Manager	Resources
I-A-8	3/10/93	J. Fichera	EM-433	Manager	Risk management
I-A-9	3/10/93	J. Fichera	EM-424	Director	All disciplines
I-A-10	3/11/93	J. Fichera	EM-14	Director	Planning
I-A-11	3/17/93	J. Fichera	FN	Office of Oversight and Assessment, Director	Self-assessment
I-A-12	3/17/93	J. Fichera	FN	Office of Oversight and Assessment, Director	Self-assessment
I-A-13	3/17/93	J. Fichera	FN	Engineer	Risk assessment
I-A-14	3/17/93	J. Fichera	FERMCO	Program Assessment and Reporting	Self-assessment
I-A-15	3/17/93	J. Fichera	FERMCO	Planner	Environmental planning
I-A-16	3/18/93	J. Fichera	FERMCO	Manager	Environmental planning
I-A-17	3/18/93	J. Fichera	FERMCO	ES&H Assurance Manager	Self-assessment, audits, and appraisals
I-A-18	3/18/93	J. Fichera	FERMCO	Safety Analysis and Risk Assessment	Risk assessment and risk management
I-A-19	3/18/93	J. Fichera	FERMCO	Project Control Integration	Project management, resource allocation

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-A-20	3/18/93	J. Fichera	FERMCO	ES&H Assignments and Evaluations	Self-assessment, audits, surveillance
I-A-21	3/18/93	J. Fichera	EM-424	Remediation Engineer	Self-assessment
I-A-22	3/19/93	J. Fichera	FERMCO	Planner	Prioritization issues
I-A-23	3/19/93	J. Fichera	FERMCO	Manager	Prioritization and planning issues
I-A-24	3/19/93	J. Fichera	FERMCO	CRU3 Planning	Planning and integration issues
I-A-25	3/19/93	J. Fichera	FERMCO	CRU3	Planning and integration issues
I-A-26	3/19/93	J. Fichera	FERMCO	ES&H Assurance	Self-assessment
I-A-27	3/19/93	J. Fichera	FERMCO	Independent Program Assessment and Oversight	Audits and appraisals
I-A-28	3/22/93	J. Fichera	FN	Manager	Self-assessment, planning
I-A-29	3/22/93	J. Fichera	FN	Program Analyst	Long-range planning
I-A-30	3/22/93	J. Fichera	FERMCO	CRU3	Environmental planning
I-A-31	3/22/93	J. Fichera	FERMCO	ES&H	Self-assessment
I-A-32	3/22/93	J. Fichera	FERMCO	CRU3 Field Integration	Risk assessment and management
I-A-33	3/22/93	J. Fichera	FERMCO	Vice President Construction	Risk assessment and management
I-A-34	3/22/93	J. Fichera	FERMCO	Manager, Effluent Monitoring and Control	Risk assessment and management
I-A-35	3/22/93	J. Fichera	FERMCO	Waste Management Program	Risk assessment and management
I-A-36	3/23/93	J. Fichera	FERMCO	Regulatory Compliance Specialist	Environmental planning
I-A-37	3/23/93	J. Fichera	FERMCO	Regulatory Compliance Specialist	Risk management
I-A-38	3/23/93	J. Fichera	FERMCO	Systems Integration and Assessment	Self-assessment and risk management
I-A-39	3/23/93	J. Fichera	FERMCO	Systems Integration and Assessment	Self-assessment and risk management
I-A-40	3/24/93	J. Fichera	FERMCO	Vice President, Engineering	Environmental planning

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-A-41	3/24/93	J. Fichera	FERMCO	Manager, CRU2	Environmental planning
I-A-42	3/24/93	J. Fichera	FERMCO	Engineer	Risk assessment and management
I-A-43	3/22/93	J. Fichera	NUS	Consultant	Corrective action
Staff Resources, Training, and Development (SR)					
I-B-1	3/17/93	L. Krupp	FERMCO	Training Manager	Training, staff resources
I-B-2	3/17/93	L. Krupp	FERMCO	Training Records	Training recordkeeping
I-B-3	3/17/93	L. Krupp	FERMCO	Human Resources Manager	Staff resources, staff development
I-B-4	3/17/93	L. Krupp	FN	Director, Office of Oversight and Assessment	FN staff levels, training, and development
I-B-5	3/17/93	L. Krupp	FN	Director, Training and Industrial Relations	FN staff levels, training, and development
I-B-6	3/17/93	L. Krupp	FN	Director, Personnel	FN staff levels, training, and development
I-B-7	3/18/93	L. Krupp	FERMCO	Manager, Professional Development	Staff development and training
I-B-8	3/18/93	L. Krupp	FERMCO	Manager, Training Administration	Training tracking and recordkeeping
I-B-9	3/18/93	L. Krupp	FERMCO	Manager, CRU2 Remediation Support Operation	Staff resources and training
I-B-10	3/18/93	L. Krupp	FERMCO	Manager, CRU2	Staff resources, training, and development
I-B-11	3/18/93	L. Krupp	FERMCO	Training Coordinator, CRU2	Training tracking and recordkeeping
I-B-12	3/18/93	L. Krupp	FERMCO	Manager, CRU2 Environmental	Staff resources, training, development
I-B-13	3/19/93	L. Krupp	FERMCO	Manager, CRU1 Engineering	Staff resources and development
I-B-14	3/19/93	L. Krupp	FERMCO	Executive Vice President, Environmental Programs	Staff resources, training, development
I-B-15	3/19/93	L. Krupp	FERMCO	Vice President	Staff resources, staff development, matrix structure
I-B-16	3/19/93	L. Krupp	FERMCO	Manager, RSO Administration	Staff resources, utilization, and planning

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-B-17	3/19/93	L. Krupp	FERMCO	Manager, RSO Administration, Work Coordination	Staff resources, utilization, and planning
I-B-18	3/19/93	L. Krupp	FERMCO	Training Coordinator, CRU3	Training tracking and recordkeeping
I-B-19	3/19/93	L. Krupp	FERMCO	Director, CRU3	Staff resources, training, development
I-B-20	3/22/93	L. Krupp	FERMCO	Manager, Compensation	Staff development, performance appraisals
I-B-21	3/22/93	L. Krupp	FERMCO	RSO Manager, CRU5	Staff resources
I-B-22	3/22/93	L. Krupp	FERMCO	Vice President, Administration	Staff resources
I-B-23	3/22/93	L. Krupp	FERMCO	Manager, Professional Development	Staff development
I-B-24	3/22/93	L. Krupp	FERMCO	Manager, Human Resources	Staff resources
I-B-25	3/22/93	L. Krupp	FERMCO	Manager, Training	Training
I-B-26	3/22/93	L. Krupp	FERMCO	Manager, Industrial Relations	Staff resources
I-B-27	3/22/93	L. Krupp	FERMCO	Manager, RSO Operations	Staff resources, training
I-B-28	3/22/93	L. Krupp	FERMCO	Director, CRU5	Staff resources, training, development
I-B-29	3/22/93	L. Krupp	OR	Personnel Director	FN staff resources
I-B-30	3/23/93	L. Krupp	FERMCO	Manager, Industrial Relations	Facility industrial relations
I-B-31	3/23/93	L. Krupp	FERMCO	Industrial Relations	Facility industrial relations
I-B-32	3/23/93	L. Krupp	FERMCO	VP Engineering	Engineering staffing and training
I-B-33	3/23/93	L. Krupp	FERMCO	Manager, Professional Development	Professional development
I-B-34	3/23/93	L. Krupp	FERMCO	President	Staffing levels
I-B-35	3/24/93	L. Krupp	FERMCO	Manager, Training	Training programs
I-B-36	3/24/93	L. Krupp	FERMCO	Human Resources	Position descriptions
I-B-37	3/24/93	L. Krupp	FERMCO	VP Remedial Support Operations	Staffing, training, development

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-B-38	3/25/93	L. Krupp	FERMCO	Human Resources	Job requisitions
I-B-39	3/26/93	L. Krupp	FERMCO	Human Resources	Job requisitions
Organizational Structure (OS)/Internal and External Communication (IC)					
I-C-1	3/17/93	M. Pine	FN	Manager	Organizational structure and internal and external communication
I-C-2	3/17/93	M. Pine	FERMCO	CRU3 Environmental Manager	Organizational structure and internal and external communication
I-C-3	3/17/93	M. Pine	FERMCO	CRU4 Manager	Organizational structure and internal and external communication
I-C-4	3/17/93	M. Pine	FERMCO	CRU2 Manager	Organizational structure and internal and external communication
I-C-5	3/17/93	M. Pine	FERMCO	Executive Vice President	Organizational structure and internal and external communication
I-C-6	3/18/93	M. Pine	FERMCO	Community Relations	External communication
I-C-7	3/18/93	M. Pine	FERMCO	Vice President, Regulatory Programs	Organizational structure and internal and external communication
I-C-8	3/18/93	M. Pine	FERMCO	ESH Compliance	Organizational structure and internal and external communication
I-C-9	3/18/93	M. Pine	FERMCO	ESH Compliance	Organizational structure and internal and external communication
I-C-10	3/18/93	M. Pine	EM-424	Conduct of Operations	Organizational structure and internal and external communication
I-C-11	3/18/93	M. Pine	FN	Assistant Manager	Organizational structure and internal and external communication
I-C-12	3/19/93	M. Pine	FN	Office of Public Information	Internal communications
I-C-13	3/19/93	M. Pine	FERMCO	Director, Public Affairs	Internal communications
I-C-14	3/19/93	M. Pine	FERMCO	CRU5 Environmental Manager	Organizational structure and internal communication
I-C-15	3/19/93	M. Pine	FERMCO	CRU5 Groundwater Manager	Organizational structure and internal communication

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-C-16	3/19/93	M. Pine	FERMCO	Environmental Monitoring	Organizational structure and internal communication
I-C-17	3/22/93	M. Pine	FERMCO	Employee Communications	Internal communications
I-C-18	3/22/93	M. Pine	FERMCO	ESH Assurance	Organizational structure and internal communication
I-C-19	3/22/93	M. Pine	FN	OU4 Branch Chief	Organizational structure and internal communication
I-C-20	3/22/93	M. Pine	FN	Environmental Engineer	Internal communication
I-C-21	3/22/93	M. Pine	EM-424	Branch Chief, CERCLA	Organizational structure and internal communication
I-C-22	3/22/93	M. Pine	EM-42	Director	Organizational structure and internal communication
I-C-23	3/23/93	M. Pine	FN	OU5 Branch Chief	Organizational structure and internal communication
I-C-24	3/23/93	M. Pine	FERMCO	Executive Vice President	Organizational structure and internal communication
I-C-25	3/23/93	M. Pine	FERMCO	President	Organizational structure and internal communication
I-C-26	3/23/93	M. Pine	FN	Assistant Manager	Organizational structure and internal communication
I-C-27	3/23/93	M. Pine	EM-40	Assistant Secretary	Organizational structure
Environmental Commitment (EC)/Environmental Protection Programs (EP)					
I-D-1	3/15/93	M. Bell	FERMCO	Manager, Clean Air Programs	FERMCO's clean air program, the Radionuclide Air Emissions Quality Assurance Project Plan (RAEQAPP)
I-D-2	3/15/93	M. Bell	FERMCO	Manager, Waste Minimization	Waste Minimization and Pollution Prevention Awareness Plan
I-D-3	3/16/93	M. Bell	FERMCO	Executive Vice President, Environmental Programs	Environmental commitment
I-D-4	3/17/93	M. Bell	FERMCO	Manager, Radiological Environmental Monitoring	Environmental monitoring plan
I-D-5	3/17/93	M. Bell	FERMCO	Manager, Environmental Monitoring and Surveillance	Environmental monitoring plan and environmental commitment
I-D-6	3/17/93	M. Bell	FERMCO	Manager, Environmental Protection	Environmental commitment

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-D-7	3/17/93	M. Bell	FERMCO	Manager, Independent Program Assessment and Oversight; Manager, Environmental Assurance; and Manager, Audits and Appraisals	Quality assurance program
I-D-8	3/18/93	M. Bell	FERMCO	Manager, Environmental Permitting	Air and water permitting and drinking water
I-D-9	3/18/93	M. Bell	FERMCO	Manager, Effluent Monitoring and Control and Manager, Clean Water Programs	Clean water programs and environmental commitment
I-D-10	3/19/93	M. Bell	FERMCO	Manager, Quality Systems	Quality assurance program
I-D-11	3/19/93	M. Bell	FERMCO	Manager, RSO, Materials Management (MM), Waste Storage and Disposition (WS&D), Low Level and RCRA Waste (LL&RW)	Underground storage tanks
I-D-12	3/19/93	M. Bell	FERMCO	Manager, Environmental, CRU3	Environmental commitment and support organizations
I-D-13	3/22/9	M. Bell	FERMCO	Supervisor, RCRA Permitting	PCB management program
I-D-14	3/22/93	M. Bell	FERMCO	Manager, Sample and Waste Determination	Waste characterization
I-D-15	3/22/93	M. Bell	FERMCO	Vice President, Environmental Safety and Health	Environmental Safety and Health Department objectives and philosophy and environmental commitment
I-D-16	3/22/93	M. Bell	FERMCO	Manager, Employee Communication and Multimedia Resources	Environmental commitment
I-D-17	3/23/93	M. Bell	FERMCO	Remedial Design	PCB management and environmental commitment
I-D-18	3/23/93	M. Bell	FERMCO	Manager, Waste Generation	Comprehensive waste management plan
I-D-19	3/24/93	M. Bell	DOE	Technical Support Group	Groundwater and DOE oversight responsibilities

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
Formality of Environmental Programs (FP)					
I-E-1	3/17/93	P. Feuerbach	Environmental Programs	Supervisor, Site Characterization and Data Management	Procedure development
I-E-2	3/17/93	P. Feuerbach	ES&H	Supervisor, Environmental Monitoring and Surveillance	Procedure development and regulatory compliance
I-E-3	3/17/93	P. Feuerbach	ES&H	Manager, ES&H Assurance	Regulatory compliance and ES&H inspections
I-E-4	3/17/93	P. Feuerbach	ES&H	ES&H Compliance	Regulatory compliance and ES&H inspections
I-E-5	3/17/93	P. Feuerbach	ES&H	ES&H Compliance	Regulatory compliance and ES&H inspections
I-E-6	3/17/93	P. Feuerbach	ES&H	ES&H Self Assessment	Regulatory compliance and ES&H inspections
I-E-7	3/17/93	P. Feuerbach	RTP	Manager, Regulatory Policy	Regulatory tracking, analysis and interpretation
I-E-8	3/17/93	P. Feuerbach	Environmental Programs	Manager, Environmental	Procedure development
I-E-9	3/18/93	P. Feuerbach	RSO	Director, RSO	Procedure development
I-E-10	3/18/93	P. Feuerbach	ES&H	Supervisor, Groundwater Monitoring	Procedure development and field inspections
I-E-11	3/18/93	P. Feuerbach	Quality Assurance	Supervisor, Environmental Assurance	Field inspections, reporting/recordkeeping
I-E-12	3/18/93	P. Feuerbach	RSO	Manager, Facility Engineering and Maintenance	Procedure development, field inspections, reporting/recordkeeping
I-E-13	3/18/93	P. Feuerbach	PCC	Manager, Strategic Planning	Project priority
I-E-14	3/19/93	P. Feuerbach	RTP	Regulatory Analysis and Guidance	Regulatory tracking, analysis and interpretation
I-E-15	3/19/93	P. Feuerbach	Environmental Programs	Manager, Construction	Procedure development, field inspections, reporting/recordkeeping
I-E-16	3/19/93	P. Feuerbach	ES&H	Supervisor, Procedure and Document Control	Procedure development and reporting/recordkeeping
I-E-17	3/19/93	P. Feuerbach	Environmental Programs	Manager, CRU5 Environmental	Procedure development, regulatory compliance and reporting/recordkeeping

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-E-18	3/19/93	P. Feuerbach	Environmental Programs	Supervisor, CRU5 Site-Wide Groundwater Management	Procedure development, regulatory compliance and reporting/recordkeeping
I-E-19	3/22/93	P. Feuerbach	Environmental Programs	Manager, CRU4	Procedure development, regulatory compliance and reporting/recordkeeping
I-E-20	3/22/93	P. Feuerbach	ES&H	ES&H Compliance	Regulatory compliance and ES&H inspections
I-E-21	3/22/93	P. Feuerbach	RSO	Supervisor, Procedure Administration and Internal Audit	Procedure development, regulatory compliance, field inspection and reporting/recordkeeping
I-E-22	3/23/93	P. Feuerbach	PCC	Supervisor, Project Document Control	Procedure development, reporting/recordkeeping
I-E-23	3/23/93	P. Feuerbach	FN	Assistance Manager, Environmental Restoration	ER oversight
I-E-24	3/22/93	P. Feuerbach	FERMCO	Supervisor, Procedure Administration and Internal Audit	Procedure development, regulatory compliance, field inspection and reporting/recordkeeping
I-E-25	3/23/93	P. Feuerbach	FERMCO	Supervisor, Project Document Control	Procedure development, reporting/recordkeeping
I-E-26	3/23/93	P. Feuerbach	FN	Assistant Manager, Envir. Restoration	ER oversight
I-E-27	3/23/93	P. Feuerbach	FN	Assistant Manager, Technical Support	FERMCO oversight
I-E-28	3/23/93	P. Feuerbach	FERMCO	Director, System Integration	Site-wide integration of environmental operations
I-E-29	3/23/93	P. Feuerbach	FERMCO	Program Integration and Documentation	Site-wide integration of environmental operations
I-E-30	3/24/93	P. Feuerbach	FERMCO	Manager, Information Resources Management	SCQ and SED
I-E-31	3/24/93	P. Feuerbach	FERMCO	Applications Development and Maintenance	SCQ and SED

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
Environmental Protection Programs (EP) Radiation (RAD)					
I-F-1	3/17/93	C. Martel	FERMCO	Manager	Environmental monitoring
I-F-2	3/17/93	C. Martel	FERMCO	Manager	Effluent monitoring
I-F-3	3/17/93	C. Martel	FERMCO	Manager	Clean air program
I-F-4	3/17/93	C. Martel	FERMCO	Manager	Clean water program
I-F-5	3/17/93	C. Martel	FERMCO	Manager	Radiological environmental monitoring
I-F-6	3/17/93	C. Martel	FERMCO	Environmental Engineer	Stack effluent monitoring
I-F-7	3/17/93	C. Martel	FERMCO	Environmental Engineer	Stack effluent monitoring
I-F-8	3/17/93	C. Martel	FERMCO	Wastewater Engineer	Cooling tower sampling
I-F-9	3/18/93	C. Martel	FERMCO	Managers and Senior Engineer	Liquid effluent monitoring
I-F-10	3/18/93	C. Martel	FERMCO	Manager	Drinking water monitoring
I-F-11	3/18/93	C. Martel	FERMCO	Laboratory technician	Air sample analysis
I-F-12	3/19/93	C. Martel	FERMCO	Environmental Field Technician	Air sample collection
I-F-13	3/22/93	C. Martel	FERMCO	Senior Project Engineer	Use of environmental sample analysis results
I-F-14	3/22/93	C. Martel	FERMCO	Senior Project Engineer	Interim cleanup operations at incineration area
I-F-15	3/23/93	C. Martel	FERMCO	Manager	ALARA committee
I-F-16	3/23/93	C. Martel	FERMCO	Manager	Integration of site activities to control releases
I-F-17	3/23/93	C. Martel	FERMCO	Environmental Engineer	NESHAP documentation
I-F-18	3/24/93	C. Martel	FN	Engineer	Transmittal of DOE Orders to the site contractor
Environmental Protection Programs (EP) Radiation (RAD)					
I-G-1	3/16/93	D. Allard	FERMCO	Community Relations	Site tour
I-G-2	3/17/93	D. Allard	FERMCO	Manager, Environmental Protection	Overview of environmental protection programs

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-G-3	3/17/93	D. Allard	FERMCO	Manager, Environmental Monitoring and Surveillance	Environmental monitoring and surveillance program overview
I-G-4	3/18/93	D. Allard	FERMCO	Manager, Environmental Monitoring	Environmental monitoring and surveillance program activities
I-G-5	3/18/93	D. Allard	FERMCO	Environmental Health Physicist	ASER, dir. radiation monitoring, offsite dose
I-G-6	3/18/93	D. Allard	FERMCO	Environmental Technologist	Environmental monitoring plan
I-G-7	3/18/93	D. Allard	FERMCO	Senior Director, CRU2	RI report, inactive waste sites
I-G-8	3/18/93	D. Allard	FERMCO	Manager, Remediation CRU2	South Field, inactive waste site
I-G-9	3/19/93	D. Allard	FERMCO	Director, CRU3	CRU3 D&D plans
I-G-10	3/19/93	D. Allard	FERMCO	Manager, Permitting and Regulatory Programs	Permitting
I-G-11	3/19/93	D. Allard	FN	Hydrologist	Groundwater monitoring program
I-G-12	3/19/93	D. Allard	FERMCO	Manager, Groundwater Management	Groundwater monitoring plan
I-G-13	3/22/93	D. Allard	FERMCO	Environmental Field Supervisor	Site media sampling
I-G-14	3/22/93	D. Allard	FERMCO	Radiation Control Supervisor	Project radiation control
I-G-15	3/23/93	D. Allard	FERMCO	Environmental Engineer, CRU5	Groundwater remediation
I-G-16	3/23/93	D. Allard	FERMCO	Manager, Treatability Department	Soil wasting and vitrification
I-G-17	3/23/93	D. Allard	FERMCO	Manager, Radiation Compliance	Surface contamination release criteria
I-G-18	3/24/93	D. Allard	FERMCO	Environmental Health Physicist	Offsite drinking water analysis
I-G-19	3/24/93	D. Allard	FERMCO	Manager, Environmental Monitoring and Surveillance	Offsite drinking water analysis
I-G-20	3/24/93	D. Allard	FERMCO	Manager, Environmental Protection	Assessment concerns

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
Environmental Protection Programs (EP) Quality Assurance (QA)					
I-H-1	3/17/93	J. Melloni	FERMCO	Quality Control Manager	Quality control organization
I-H-2	3/17/93	J. Melloni	FERMCO	Quality Control Operations Manager	Quality control organization
I-H-3	3/17/93	J. Melloni	FERMCO	Quality Assurance Director	Quality assurance organization
I-H-4	3/17/93	J. Melloni	FERMCO	Program Assessment and Reporting Manager	Oversight
I-H-5	3/17/93	J. Melloni	FERMCO	QA Branch Chief	FN quality assurance organization and oversight
I-H-6	3/18/93	J. Melloni	FERMCO	Procurement Quality Manager	Procurement
I-H-7	3/18/93	J. Melloni	FERMCO	Quality Systems Manager	Quality assurance organization and documentation
I-H-8	3/18/93	J. Melloni	FERMCO	Independent Program Assessment and Oversight Manager	Oversight
I-H-9	3/18/93	J. Melloni	FERMCO	Environmental Assurance Manager	Oversight
I-H-10	3/18/93	J. Melloni	FERMCO	Audits and Appraisals Manager	Oversight
I-H-11	3/18/93	J. Melloni	FERMCO	Audits and Appraisals Staff	Records management
I-H-12	3/18/93	J. Melloni	FERMCO	Audits and Appraisals Staff	Records management
I-H-13	3/19/93	J. Melloni	FERMCO	Environmental Assurance Staff	Laboratory quality assurance
I-H-14	3/19/93	J. Melloni	FERMCO	Analytical Laboratory Services Manager	Laboratory quality assurance
I-H-15	3/19/93	J. Melloni	FERMCO	Senior Buyer	Procurement
I-H-16	3/22/93	J. Melloni	FERMCO	Environmental Assurance Manager	Procurement
I-H-17	3/22/93	J. Melloni	FERMCO	Procurement Quality, M ?	Procurement
I-H-18	3/22/93	J. Melloni	FERMCO	Quality Systems Manager	Document control

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-H-19	3/22/93	J. Melloni	FERMCO	Quality Assurance Staff	Oversight of offsite laboratories
I-H-20	3/22/93	J. Melloni	FERMCO	Laboratory Qualification Survey	Quality control of laboratories
I-H-21	3/22/93	J. Melloni	FN	Quality Engineer	Procurement review and quality assurance implementation
I-H-22	3/23/93	J. Melloni	FERMCO	Quality Control Operations Manager	Quality control of offsite laboratories
I-H-23	3/23/93	J. Melloni	FERMCO	Low Level Environmental Analysis Laboratory Group Supervisor	Quality control of onsite laboratories
I-H-24	3/23/93	J. Melloni	FERMCO	Quality Control Operations Manager	Quality control of analytical services
I-H-25	3/23/93	J. Melloni	FERMCO	Forms and Procedures Development Manager	Procedure control
I-H-26	3/23/93	J. Melloni	FERMCO	System Integration and Assessment	System structure and integration program
Environmental Protection Programs (EP) Air (AIR)					
I-I-1	3/15/93	I. John	FERMCO	Clean Air Program Supervisor	Air programs
I-I-2	3/15/93	I. John	FERMCO	Clean Air Program	Air effluent monitoring program
I-I-3	3/16/93	I. John	FERMCO	Community Relations	Site tour
I-I-4	3/17/93	I. John	FERMCO	Manager, ESH	Environmental programs
I-I-5	3/17/93	I. John	FERMCO	Manager, Clean Air Program	Air programs
I-I-6	3/17/93	I. John	FERMCO	Manager, Environmental Monitoring	Air surveillance monitoring program
I-I-7	3/17/93	I. John	FERMCO	Clean Air Program	Tour of emission stacks and waste pits
I-I-8	3/18/93	I. John	FERMCO	Permitting Specialist, Air Programs	NESHAP reporting
I-I-9	3/18/93	I. John	FERMCO	Isotopic Laboratory Technicians	Analysis of air monitor samples

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-I-10	3/19/93	I. John	FERMCO	Engineering Technician III	Environmental surveillance monitoring program
I-I-11	3/19/93	I. John	FERMCO	Engineering Technician Supervisor	Environmental surveillance monitoring program
I-I-12	3/19/93	I. John	FERMCO	Engineering Technician	Meteorological monitoring program
I-I-13	3/19/93	I. John	FERMCO	Engineering Technician	Meteorological monitoring program
I-I-14	3/22/93	I. John	FERMCO	Senior Project Engineer	Environmental surveillance program
I-I-15	3/22/93	I. John	FERMCO	Manager, Analytical Laboratory	Laboratory stack emissions
I-I-16	3/22/93	I. John	FERMCO	Technician III	Air emissions reporting
I-I-17	3/22/93	I. John	FERMCO	Senior Staff Scientist	Radon monitoring program
I-I-18	3/22/93	I. John	FERMCO	Technician	Radon monitoring program
I-I-19	3/22/93	I. John	FERMCO	Clean Air Program Supervisor	Clean air program
I-I-20	3/23/93	I. John	FERMCO	Environmental Assurance Manager	FERMCO quality assurance program
I-I-21	3/23/93	I. John	FERMCO	Permitting Specialist, Air Programs	NESHAP reporting
I-I-22	3/24/93	I. John	FN	Engineer	Air program oversight
I-I-23	3/23/93	I. John	FERMCO	Environmental Engineer	Radon monitoring program
Environmental Protection Programs (EP) Surface Water/Drinking Water (SW)					
I-J-1	3/16/93	C. Summers	FERMCO	Manager, Effluent Monitoring and Control	Interview schedule
I-J-2	3/17/93	C. Summers	FERMCO	Manager, Analytical Services Department	Department operations
I-J-3	3/17/93	C. Summers	FERMCO	Manager, Analytical Laboratory Sample Processing	Management of processing incoming samples
I-J-4	3/17/93	C. Summers	FERMCO	Supervisor, Sample Processing	Processing samples

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-J-5	3/17/93	C. Summers	FERMCO	Engineering Manager, CRU5	CRU5 responsibility regarding surface water/drinking water management
I-J-6	3/17/93	C. Summers	FERMCO	Supervisor, Inorganic Analysis	Sample analysis
I-J-7	3/18/93	C. Summers	FERMCO	Public Relations	Tour waste pit area
I-J-8	3/18/93	C. Summers	FERMCO	Manager, Clean Water Program	Water programs at Fernald
I-J-9	3/18/93	C. Summers	FERMCO	Manager, Permitting and Reporting	Water programs at Fernald
I-J-10	3/18/93	C. Summers	FERMCO	Senior Engineer, Environmental Permitting	Permitting
I-J-11	3/18/93	C. Summers	FERMCO	Manager, Utilities Department	Permitting
I-J-12	3/18/93	C. Summers	FERMCO	Supervisor, Sanitary/Process Waste and Water	Water treatment
I-J-13	3/19/93	C. Summers	FERMCO	Manager, Effluent Monitoring and Control	BMP and SPCC plans, SARA, Title III reporting
I-J-14	3/19/93	C. Summers	FERMCO	Manager, Clean Water Program	BMP and SPCC plans, SARA, Title III reporting
I-J-15	3/19/93	C. Summers	FERMCO	Senior Engineer, Clean Water Program	BMP and SPCC plans, SARA, Title III reporting
I-J-16	3/19/93	C. Summers	FERMCO	Co-op, Clean Water Program	BMP and SPCC plans, SARA, Title III reporting
I-J-17	3/19/93	C. Summers	FERMCO	Senior Engineer, Clean Water Program	BMP and SPCC plans, SARA, Title III reporting
I-J-18	3/19/93	C. Summers	FERMCO	Supervisor, Water Pollution Control	Tour of water pollution control units
I-J-19	3/22/93	C. Summers	FERMCO	Manager, Radiological and Isotopic Analysis	Analysis of radiological samples
I-J-20	3/22/93	C. Summers	FERMCO	Staff Chemist, Radiological and Isotopic Analysis	Analysis of radiological samples
I-J-21	3/22/93	C. Summers	FERMCO	Senior Engineer, Clean Water Program	SPCC plan implementation

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-J-22	3/22/93	C. Summers	FERMCO	Co-op, Clean Water Program	SPCC plan implementation
I-J-23	3/22/93	C. Summers	FERMCO	Supervisor, RCRA Permitting	PCB management
I-J-24	3/22/93	C. Summers	FERMCO	Supervisor, Water Treatment Plant	Sampling at MH175
I-J-25	3/22/93	C. Summers	FERMCO	Staff, Water Treatment Plant	Sampling at MH175
Environmental Protection Programs (EP) Waste Management (WM)					
I-K-1	3/10/93	D. Neal	EM-30	Staff	FEMP waste program
I-K-2	3/17/93	D. Neal	FERMCO	Manager, Remediation Support Operations (RSO), RSO Operations (RSOO), Waste Management Program (WMP)	Waste management
I-K-3	3/17/93	D. Neal	FERMCO	Manager, RSO, RSOO, WMP, Waste Generation	Waste planning
I-K-4	3/17/93	D. Neal	FERMCO	Manager, RSO, RSOO, WMP, Waste Minimization	Waste minimization
I-K-5	3/17/93	D. Neal	FERMCO	Staff, Environmental Safety and Health (ES&H), Hazardous Waste (HW), Sample and Waste Determination (S&WD)	Waste characterization
I-K-6	3/17/93	D. Neal	FERMCO	Staff, ES&H, HW, S&WD	Waste characterization
I-K-7	3/17/93	D. Neal	FERMCO	Manager/Assistant Manager, RSO	Waste planning
I-K-8	3/18/93	D. Neal	FN	Assistant Manager, Site Operations	Waste planning, DOE oversight
I-K-9	3/18/93	D. Neal	FERMCO	Manager, RSO, RSOO, Facilities and Waste Operations (FWO), East Area Operations	Waste planning
I-K-10	3/18/93	D. Neal	FERMCO	Manager, RSO, RSOO, FWO	Waste planning, minimization and characterization

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-K-11	3/18/93	D. Neal	FERMCO	Supervisor, RSO, RSOO, FWO, East Area Operations	Waste minimization
I-K-12	3/18/93	D. Neal	FERMCO	Manager, ES&H, Environmental Protection (EP)	Waste characterization
I-K-13	3/18/93	D. Neal	FERMCO	Manager, Regulatory and Technology Programs, Permitting and Reporting	RCRA permitting
I-K-14	3/19/93	D. Neal	FERMCO	Manager, RSO, Materials Management (MM), Waste Storage and Disposition (WS&D), Low Level and RCRA Waste (LL&RW)	Waste storage
I-K-15	3/19/93	D. Neal	FERMCO	Staff, RSO, MM, WS&D, LL&RW	Waste characterization
I-K-16	3/19/93	D. Neal	FERMCO	Managers, ES&H, EP, HW, Corrective Action and Field Implementation	Inspections
I-K-17	3/19/93	D. Neal	FERMCO	Manager, ES&H, EP, HW, S&WD	Waste characterization
I-K-18	3/19/93	D. Neal	FERMCO	Manager, RSO, Quality Control (QC), Waste Verification	Waste characterization
I-K-19	3/19/93	D. Neal	FERMCO	Manager, RSO, QC/ Manager, RSO, QC, QC Operations	Waste characterization
I-K-20	3/22/93	D. Neal	FERMCO	Manager, ES&H, Environmental Monitoring and Surveillance, Site Media Sampling	Waste characterization
I-K-21	3/22/93	D. Neal	FERMCO	Staff, RSO, RSOO, WMP, Waste Minimization	Waste minimization
I-K-22	3/22/93	D. Neal	FERMCO	Manager, Regulatory and Technology Programs, Permitting and Reporting	Permitting

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-K-23	3/22/93	D. Neal	FERMCO	Manager, ES&H, EP, HW, S&WD	Waste characterization
I-K-24	3/23/93	D. Neal	FERMCO	Supervisor, RSO, MM, WS&D	Waste storage facilities
I-K-25	3/23/93	D. Neal	FERMCO	Manager, RSO, MM, WS&D	Waste minimization and planning
I-K-26	3/23/93	D. Neal	FERMCO	Manager, ES&H, Environmental Monitoring and Surveillance, Site Media Sampling	Waste characterization
I-K-27	3/23/93	D. Neal	FERMCO	Staff, ES&H	Waste characterization
I-K-28	3/24/93	D. Neal	FERMCO	Manager, ES&H, EP, HW, S&WD	Waste characterization
Environmental Protection Programs (EP) Inactive Waste Sites (IWS)					
I-L-1	3/17/93	P. Rodden	FERMCO	Vice President Environmental	Integration of CRU units consistency in approach
I-L-2	3/17/93	P. Rodden	FERMCO	Manager, Safety, Risk Assessment	Environmental and human health risk assessments
I-L-3	3/17/93	P. Rodden	FERMCO	Project Control Manager	Control team role in CRUs
I-L-4	3/18/93	P. Rodden	FERMCO	Groundwater Manager, CRU5	Integration of sitewide GW chara. within each CRU
I-L-5	3/18/93	P. Rodden	FERMCO	Design Engineer	Function of engineering
I-L-6	3/18/93	P. Rodden	FERMCO	Radiation Control Supervisor	Integration of treatability across CRUs and with FS studies
I-L-7	3/18/93	P. Rodden	FERMCO	CRU2 Director	Integration of sitewide GW chara. within each CRU
I-L-8	3/18/93	P. Rodden	FERMCO	CRU2 RSO	RSO support, RI activities
I-L-9	3/18/93	P. Rodden	FERMCO	Groundwater Manager, CRU5	Purge water waste handling
I-L-10	3/19/93	P. Rodden	FERMCO	CRU3 Manager	Overall management, planning
I-L-11	3/19/93	P. Rodden	FERMCO	CRU1 FS Leader	FS planning, coordination between CRUs responsible for treatability studies
I-L-12	3/19/93	P. Rodden	FERMCO	CRU4 RI Manager	RI status, planning coordination

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-L-13	3/19/93	P. Rodden	FERMCO	CRU2 RI/FS Engineer	FS activities, project status coordination between CRUs
I-L-14	3/19/93	P. Rodden	FERMCO	CRU4 Manager	CRU4 management roles and responsibilities for RI characterization, treatability studies
I-L-15	3/19/93	P. Rodden	FERMCO	Risk Assessment	Risk assessment procedures
I-L-16	3/19/93	P. Rodden	FERMCO	Manager	CRU5 activities, management
I-L-17	3/22/93	P. Rodden	FERMCO	Acting Manager	CRU1 management status
I-L-18	3/22/93	P. Rodden	FERMCO	Manager, Radiation/NDE Quality	Quality assurance activities
I-L-19	3/22/93	P. Rodden	FERMCO	RCRA Representative	RCRA/CERCLA integration
I-L-20	3/22/93	P. Rodden	FERMCO	Manager	Management activities
I-L-21	3/22/93	P. Rodden	FERMCO	Manager, Environmental Engineering	Renewal actions RCRA/CERCLA
I-L-22	3/22/93	P. Rodden	FERMCO	Manager, Environmental Engineering	CRU5 removal actions
I-L-23	3/23/93	P. Rodden	FERMCO	Community Relations	Community relations
I-L-24	3/23/93	P. Rodden	FERMCO	Environmental Engineer	Renewal action
I-L-25	3/23/93	P. Rodden	FERMCO	Policy Specialist	NRDA
I-L-26	3/23/93	P. Rodden	FERMCO	Community Relations	Community relations
I-L-27	3/24/93	P. Rodden	FERMCO	Environmental Engineer	South plume removal action
I-L-28	3/24/93	P. Rodden	FERMCO	Environmental Engineer	Sewage treatment plant, soils
I-L-29	3/24/93	P. Rodden	FERMCO	Environmental Engineer	Visitor surveys, new scope of RI
I-L-30	3/24/93	P. Rodden	FERMCO	FS Manager	Clarification in remedial activities
I-L-31	3/24/93	P. Rodden	FERMCO	RI Manager	Historic surveys
I-L-32	3/25/93	P. Rodden	FERMCO	Environmental Engineer	RCRA/CERCLA integration

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
Environmental Protection Programs (EP) Groundwater (GW)/Soil, Sediment, and Biota (SSB)					
I-M-1	3/16/93	J. Rea	FERMCO	Manager, GW Management	Groundwater South Plume
I-M-2	3/17/93	J. Rea	FERMCO	Manager, Environmental Monitoring and Surveillance Regulatory Specialist	Environmental monitoring/sampling
I-M-3	3/17/93	J. Rea	FERMCO	Groundwater Monitoring	Production wells
I-M-4	3/17/93	J. Rea	FERMCO	Regulatory Specialist	Production wells
I-M-5	3/17/93	J. Rea	FERMCO	Environmental Specialist	Leased grazing
I-M-6	3/17/93	J. Rea	FERMCO	Manager, Groundwater Monitoring	Groundwater sampling
I-M-7	3/17/93	J. Rea	FERMCO	Manager, Environmental Protection	South Plume/residence wells
I-M-8	3/17/93	J. Rea	FERMCO	Manager, Facilities Characterization	Soil characterization at CRU3
I-M-9	3/18/93	J. Rea	FERMCO	Technician I	Groundwater data management
I-M-10	3/18/93	J. Rea	FERMCO	Environmental Permitting	Permits for groundwater treatment systems
I-M-11	3/18/93	J. Rea	FERMCO	Manager, Radiological Environmental Monitoring	Offsite well monitoring program
I-M-12	3/18/93	J. Rea	FERMCO	Technician III	Ecological risk assessment
I-M-13	3/18/93	J. Rea	FERMCO	Technician II, Manager	Database for groundwater results
I-M-14	3/19/93	J. Rea	FERMCO	Site Characterization Data Management	South Plume/south field
I-M-15	3/19/93	J. Rea	FERMCO	Senior Engineer	Plume contamination
I-M-16	3/19/93	J. Rea	FERMCO	Manager, CRU3	CRU3/CRU5 responsibility
I-M-17	3/19/93	J. Rea	FERMCO	Manager, Permitting and Reporting	Perched groundwater
I-M-18	3/19/93	J. Rea	FN	Hydrogeologist	Groundwater programs

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE ASSESSMENT TEAM (continued)

Ref. #	Date	Auditor	Organization	Position	Topic
I-M-19	3/19/93	J. Rea	FERMCO	Manager, Groundwater Management	Groundwater programs
I-M-20	3/22/93	J. Rea	FERMCO	Field Coordinator, Technologist I	Groundwater sampling event
I-M-21	3/22/93	J. Rea	FERMCO	Groundwater Monitoring	Groundwater sampling event
I-M-22	3/22/93	J. Rea	FERMCO	Field Coordinator, Technologist I	Groundwater sampling event
I-M-23	3/22/93	J. Rea	ERA	Engineering Technician	Groundwater sampling event
I-M-24	3/22/93	J. Rea	ERA	Engineering Technician	Groundwater elevation
I-M-25	3/22/93	J. Rea	ERA	Engineering Technician	Groundwater sampling event
I-M-26	3/22/93	J. Rea	ERA	Engineering Technician	Groundwater sampling event
I-M-27	3/22/93	J. Rea	ERA	Engineering Technician	Groundwater sampling event
I-M-28	3/22/93	J. Rea	FERMCO	Manager, Groundwater Management	Groundwater sampling event
I-M-29	3/22/93	J. Rea	FERMCO	Self-Assessment	Drilling observation
I-M-30	3/22/93	J. Rea	FERMCO	Manager, Environmental Monitoring	Drinking water sampling
I-M-31	3/23/93	J. Rea	FERMCO	Manager, Engineering	South Plume
I-M-32	3/23/93	J. Rea	FERMCO	Manager, Treatability Dept.	Soil washing
I-M-33	3/23/93	J. Rea	FERMCO	Manager, Groundwater Management	Groundwater characterization
I-M-34	3/23/93	J. Rea	FERMCO	Radiological Environmental Monitoring	Private drinking water wells
I-M-35	3/24/93	J. Rea	FERMCO	Manager, CRU3	Groundwater responsibilities
I-M-36	3/24/93	J. Rea	FN	Hydrogeologist	Groundwater concerns
I-M-37	3/24/93	J. Rea	FERMCO	Manager, Groundwater Monitoring	Groundwater sampling
I-M-38	3/24/93	J. Rea	FERMCO	Senior Technologist	Groundwater modeling

APPENDIX F

DEFINITIONS OF CAUSAL AND CONTRIBUTING FACTORS

APPENDIX F:

DEFINITIONS OF CAUSAL AND CONTRIBUTING FACTORS

Causal Factor	Definition
Policy	Evaluate whether ineffective, outdated, or nonexistent policies contributed to the finding.
Policy Implementation	Ascertain whether written policies reflecting Federal, state, and local laws and regulations, codes, and standards were appropriately disseminated, implemented, and updated.
Risk	Evaluate whether the site personnel responsible for a situation contributing to a finding have assessed and were aware of the relative degree of risk involved in the action.
Procedures	Identify whether written procedures that have been prepared to effectively implement site policy, DOE Orders, and Federal, state, and local laws and regulations were a contributing factor to the finding. Determine whether unfamiliarity with, or unavailability of those procedures contributed to the finding.
Personnel	Identify whether the educational and work experience backgrounds for personnel holding responsible positions contributed to the finding. Determine whether the level of personnel knowledge about the technical and environmental aspects of their jobs contributed to the finding.
Resources	Ascertain whether the number of personnel or external resources available to a job were a contributing factor to the finding. Evaluate whether inadequacies in facilities and equipment were a contributing factor to the finding.
Training	Identify whether adequate personnel training on implementing site policy, DOE Orders, and Federal, state, and local laws and regulations was a contributing factor to the finding.

DEFINITIONS OF CAUSAL AND CONTRIBUTING FACTORS (continued)

Causal Factor	Definition
Change	Evaluate whether changes in site mission, function, operation, and established requirements, which rendered existing policies or procedures inadequate or inappropriate, were contributing factors to the finding. Evaluate whether the timeliness and effectiveness of changes to site and DOE policy, and the implementing procedures, were a contributing factor to the finding.
Appraisals/Audits/Reviews	Determine whether ineffective or insufficient appraisals/ audits/reviews or oversight were contributing factors to the finding. These factors should only be used as <u>secondary</u> contributing factors to the finding.
Design	Evaluate whether inadequate design of a system was a contributing factor to the finding.
Human Factors	Ascertain whether human factors, such as fatigue or deliberate circumvention of a safety system, were contributing factors to the finding.
Barriers and Controls	Determine whether inadequacies in established barriers and controls, both administrative and physical, including operational readiness, routine inspections, and preventive maintenance, and/or a lack of these controls contributed to the finding.
Supervision	Identify whether ineffective supervisory controls for implementing policies, procedures, standards, laws, etc., were a contributing factor to the finding.
Quality Assurance/ Quality Control	Identify whether inadequacies in the quality assurance/ quality control program were causal factors to the identified finding. This includes inadequate followup to previously identified findings.

APPENDIX G

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

APPENDIX G:
GLOSSARY OF ACRONYMS AND ABBREVIATIONS

Acronym/ Abbreviation	Definition
ACA	Amended Consent Agreement
ADL	Arthur D. Little, Inc.
ALARA *	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ARAR	Applicable or Relevant and Appropriate Requirements
ASER	Annual Site Environmental Report
ASI	Advanced Sciences Incorporated
AWWT	Advanced Waste Water Treatment
BMP	Best Management Practice
CAA	Clean Air Act
CAR	Corrective Action Request
CERCLA *	Comprehensive Environmental Response, Compensation, and Liability Act
CRU	CERCLA/RCRA Unit
CWA	Clean Water Act
CWID	Construction Waste Identification/Disposition
D&D	Decontamination and Decommissioning
DOE *	U.S. Department of Energy
DP	Defense Programs
DU	Depleted Uranium
EC	Environmental Commitment
EH	Office of Environment, Safety and Health
EH-1	Assistant Secretary for Environment, Safety and Health
EH-24	Office of Environmental Audit
EM	Office of Environmental Restoration and Waste Management

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/ Abbreviation	Definition
EM-20	Office of Oversight and Self-Assessment
EM-40	Office of Environmental Restoration
EM-42	Director of Office of Environmental Restoration and Waste Management
EM-424	Office of Eastern Areas Programs - FEMP Division
EMP	Environmental Monitoring Plan
EP	Environmental Protection Division
EPA *	Environmental Protection Agency
ERMC	Environmental Restoration Management Contractor
ESH	Environmental Safety and Health Division
ES&H	Environment, Safety, and Health
FEMP *	Fernald Environmental Management Project
FERMCO *	Fernald Environmental Restoration Management Corporation
FMPC	Feed Materials Production Center
FN *	Fernald Field Office
FP	Formality of Environmental Programs
FRESH	Fernald Residents for the Environment, Safety and Health
FRIP	Fernald Remediation Integration Program
FTE	Full-Time Equivalent
FY	Fiscal Year
gpm	Gallons Per Minute
HQ	Headquarters
IC	Internal and External Communication
IT	IT Corporation
LLW	Low-Level Radioactive Waste
M&O	Management and Operations

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/ Abbreviation	Definition
MOA	Memorandum of Agreement
mrem	Millirem
mrem/yr	Millirem Per Year
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRDA	Natural Resource Damage Assessment
ODIS	Onsite Discharge Data
OH/EPA	Ohio Environmental Protection Agency
OR	Oak Ridge Field Office
OS	Organizational Structure
OSHA	Occupational Safety and Health Act
OU	Operable Unit
PCB	Plychlorinated Biphenyl
Pci/g	Picocuries Per Gram
PE	Program Evaluation, Reporting, and Corrective Action
POC	Performance Objectives and Criteria
QA	Quality Assurance
RAM	Risk Assessment and Management
RAEQAPjP	Radionuclide Air Emissions Quality Assurance Project Plan
RCRA *	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/ Abbreviation	Definition
RM	Environmental Planning and Risk Management
RP	Regulatory Programs Division
RSO	Remediation Support Organization
SARA	Superfund Amendments and Reauthorization Act
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SEN	Secretary of Energy Notice
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasure
SR	Staff Resources, Training, and Development
TC	Training Coordinator
TLD	Thermoluminescent Detector
TSCA	Toxic Substances Control Act
WEMCO *	Westinghouse Management Company of Ohio

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

DATE

FILMED

5/9/94

END