

July 1990

General

LIBRARY COPY

LOS ALAMOS NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION AND

WASTE MANAGEMENT

FIVE-YEAR PLAN

SITE SPECIFIC PLAN

Prepared by:

Health, Safety, and Environment Division,

Los Alamos National Laboratory

for the

Department of Energy, Albuquerque Operations Office

July 1990

Los Alamos National Laboratory
Los Alamos, New Mexico 87545



12287

CONTENTS

FOREWORD

1.0.	INTRODUCTION	1
1.1.	Location, Site Description, and Mission	1
1.2.	Management Overview	2
1.2.1.	Corrective Activities Management Overview	3
1.2.2.	Environmental Restoration Management Overview	7
1.2.3.	Waste Management Management Overview	10
1.2.4.	RDDT&E Management Overview	18
2.0.	REQUIREMENTS FOR IMPLEMENTATION	19
2.1.	Corrective Activities Requirements for Implementation	19
2.2.	Environmental Restoration Requirements for Implementation	20
2.3.	Waste Management Requirements for Implementation	21
3.0.	ORGANIZATION AND MANAGEMENT	21
3.1.	Corrective Activities Organization/Management	22
3.2.	Environmental Restoration Organization/Management	23
3.3.	Waste Management Organization/Management	24
4.0.	CORRECTIVE ACTIVITIES FIVE-YEAR PLAN PROGRAM	25
4.1.	Task Descriptions	25
4.2.	Resources	28
4.3.	Schedules	28
4.4.	Costs	28
5.0.	ENVIRONMENTAL RESTORATION FIVE-YEAR PLAN PROGRAM	29
5.1.	Task Descriptions	29
5.2.	Resources	38
5.3.	Schedules	38
5.4.	Costs	38
6.0.	WASTE MANAGEMENT FIVE-YEAR PLAN PROGRAM	41
6.1.	Task Descriptions	41
6.2.	Resources	48
6.3.	Schedules	48
6.4.	Costs	48
7.0.	COMPLIANCE WITH NEPA	51
7.1.	Corrective Activities Compliance With NEPA	53
7.2.	Environmental Restoration Compliance With NEPA	53
7.3.	Waste Management Compliance With NEPA	54

8.0.	REPORTING AND DATA MANAGEMENT	54
8.1.	Corrective Activities Reporting and Data Management	54
8.2.	Environmental Restoration Reporting and Data Management	54
8.3.	Waste Management Reporting and Data Management	54
9.0.	QUALITY ASSURANCE	55
9.1.	Corrective Activities Quality Assurance	55
9.2.	Environmental Restoration Quality Assurance	55
9.3.	Waste Management Quality Assurance	56
10.0.	FEDERAL, STATE, AND LOCAL INTERACTIONS	56
10.1.	Corrective Activities Federal, State, and Local Interactions	56
10.2.	Environmental Restoration Federal, State, and Local Interactions	57
10.3.	Waste Management Federal, State, and Local Interactions	57
11.0.	UNBUDGETED/UNFUNDED NEEDS ASSESSMENT	58
11.1.	Corrective Activities Unbudgeted/Unfunded Needs Assessment	58
11.2.	Environmental Restoration Unbudgeted/Unfunded Needs Assessment	58
11.3.	Waste Management Unbudgeted/Unfunded Needs Assessment	58
	ATTACHMENTS	60
	Attachment 1. LANL Five-Year Plan Management Structure	61
	Attachment 2. Permits Under Which the Laboratory Operated in 1989	62
	Attachment 3. LANL ER Program Documentation Requirements	63
	Attachment 4. RCRA Corrective Action Plan	64

FOREWORD

Utilizing the Department of Energy's Environmental Restoration and Waste Management (ER/WM) Five-Year Plan (FYP), dated August 1989 as a foundation, this document focuses on FY 1990 activities and provides preliminary projections of activities for the ER/WM programs beyond FY 1992 through FY 1995. Individuals outside the DOE should focus their review of this document on an evaluation of the FYP planning and implementation process; evaluation of specific program scope, schedules, and costs which should utilize the revised DOE ER/WM FYP, dated July 1990 and the specific installation's Activity Data Sheets available at public reading rooms, located near each DOE installation.

This is the first in a series of annual Site Specific Plans (SSPs) that will follow the Department of Energy's annual Environmental Restoration and Waste Management Five-Year Plan. In the future, the Department's annual Five-Year Plan is expected to be issued in May of each calendar year and the SSP will be issued in or about October of each year.

As currently defined, the funding and activities in the SSP will be consistent with the appropriations for the fiscal year it is issued (e.g., this SSP is to be consistent with appropriations for fiscal year 1990, the next SSP to be issued in October 1990 will be consistent with the appropriations for fiscal year 1991). The funding for the remaining years of the planning period are to tie to the Department's Five-Year Plan issued earlier in the year.

This year's SSP is being issued four months later than usual and is subject to a dynamic environment affected by agreements, permits, regulations, and site activities. These changing conditions are reflected in the SSP current activities for fiscal year 1990; however, they are not fully reflected in the remaining years of the planning period. These out-year projections should be considered as first approximations and are consistent with funding requirements identified in the Department's Five-Year Plan issued August 1989.

Since the primary purpose of the SSP is to describe the activities for the fiscal year it is issued, the differences in funding from the Five-Year Plan in the out years will not significantly affect the usefulness of the SSP.

We appreciate your cooperation in working with the Department of Energy during our first year of implementing this process. Your suggestions and recommendations are most welcome. Comments regarding this Site Specific Plan may be directed to:

Los Alamos Laboratory Contact:

Martin Janowski
Los Alamos National Laboratory
P.O. Box 1663, MS K481
Los Alamos, NM 87545

Los Alamos Area Office Contact:

H. T. Season, Jr., Act. Area Mgr.
Department of Energy
528 35th Street
Los Alamos, NM 87544

DOE/AL Contact:

Patrick J. Higgins, Jr., Director
Environmental Restoration and Waste
Management Five-Year Plan Task
Group Leader
Department of Energy
Albuquerque Operations Office
P.O. Box 5400
Albuquerque, NM 87115

**ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT
FIVE-YEAR PLAN
SITE SPECIFIC PLAN
LOS ALAMOS NATIONAL LABORATORY**

1.0. INTRODUCTION

The Los Alamos National Laboratory Site Specific Plan to implement the Environmental Restoration and Waste Management (ER/WM) Five-Year Plan is written to encompass all activities necessary to comply with laws and regulations applicable to the Five-Year Plan that protect the public health and the environment. The Department of Energy (DOE) conducted a comprehensive environmental survey at Los Alamos National Laboratory in 1987 and found no environmental problems at the Laboratory that represented an immediate threat to human life. The identified concerns varied in terms of their magnitude and risk. Since the survey, the DOE and the Laboratory have investigated all of the findings, and most findings have been mitigated and closed out. Any findings that are still outstanding have been placed in a Corrective Activities Plan, included in this document, for systematic and scheduled corrective action.

1.1. Location, Site Description, and Mission

The Los Alamos National Laboratory (LANL or the Laboratory) is located in Los Alamos County in north central New Mexico, approximately 60 mi north-northeast of Albuquerque and 25 mi northwest of Santa Fe. The 24,400-acre Laboratory site (1,400 acres of developed land in a mountainous landscape) is situated on the Pajarito Plateau, which is composed of a series of finger-like mesas separated by deep, east-west oriented canyons cut by intermittent, short-lived streams. The mesa tops range in elevation from approximately 7,800 ft at the flank of the Jemez Mountains to about 6,200 ft on their eastern margin, terminating above the Rio Grande Valley.

The area includes large tracts of federal and state land located north, west, and south of the Laboratory site. Undeveloped land, much of which is not developable, buffers hazardous operations and acts as security zones. The developed area is spread out among 37 populated or active technical areas within Los Alamos County and in the Jemez Mountains west of Los Alamos. Eleven technical areas are inactive. Twenty-six material disposal areas have been designated within Laboratory boundaries.

The County population is approximately 20,000. Two major residential and related commercial areas exist in the county. About 40% of those employed in Los Alamos commute from other counties.

Laboratory environmental impact is minimal because of biological and hydrological characteristics of the area and past waste management practices. Surface water flow crossing the Laboratory is intermittent/ephemeral and reaches the Rio Grande only during significant periods of runoff caused, for example, by snowmelt or thunderstorms.

The main aquifer lies 600-1,200 ft below the surface and is separated from the surface by unsaturated tuff, a volcanic ash. There is no known hydrological connection between the Laboratory surface and the main aquifer from which the municipal water supply for Los Alamos is obtained.

The Laboratory's primary mission is research and development of nuclear weapons. Programs include weapons development, nuclear fission and fusion research, nuclear safeguards and security, and verification and control technologies. Basic research in physics, chemistry, mathematics, engineering, and materials science is integral to Laboratory activities.

Research on peaceful uses of nuclear energy has included space applications, power reactor programs, magnetic and inertial fusion, radiobiology, and medicine. Other programs include astrophysics, earth sciences, lasers, computer sciences, solar energy, geothermal energy, biomedical and environmental research, and nuclear waste management research.

1.2. Management Overview

Laboratory Management Overview. The Laboratory provides the highest possible level of protection to its employees, the public, government property, and environment from harm that could arise from Laboratory operations. To accomplish this objective, line management is responsible for conducting only those operations and activities that can be controlled safely, and the Health, Safety, and Environment (HSE) Division maintains a comprehensive health, safety, and environment program to assist line management and to provide oversight of health, safety, and environment activities. In addition, Laboratory employees must observe the health, safety, and environment procedures and requirements specified by their supervisors and the Laboratory.

The primary responsibility for employee health and safety on the job and for environmental protection from Laboratory operations rests with line management; this responsibility will be given first priority before Laboratory operations are approved or carried out. Supervisors are expected to recognize and anticipate potential hazards, to inform employees of risks associated with their work, to specify protective measures, and to ensure that their employees receive appropriate training. Supervisors also will establish and maintain a system to ensure that appropriate consideration is given to significant changes made in operations, procedures, materials, or equipment that could affect the safety of an activity, including environmental impact.

Employees are often in the best position to evaluate health and safety risks that might cause harm to themselves and their coworkers. Therefore, Laboratory employees must observe applicable health, safety, and environment procedures; use prescribed personal protective equipment; promptly report accidents, injuries, and unsafe conditions; and participate in required medical and biological monitoring programs.

The Laboratory's health, safety, and environment policies are implemented through the administrative requirements in the Laboratory's Health and Safety Manual. The Environment, Safety, and Health (ES&H) Council, whose members are upper-level managers, recommends policies to the Director and oversees policy implementation.

The HSE Division initiates and promotes comprehensive health, safety, and environment programs, which include such special fields as radiation protection, occupational medicine, industrial safety, industrial hygiene, nuclear criticality safety, waste management, and environmental protection and preservation. HSE Division addresses special requirements or needed emphasis within these programs, such as maintaining toxic and radiation levels as low as reasonably achievable; transporting, handling, and disposing of hazardous materials; providing specific health, safety, and environment training; and providing emergency response.

Five-Year Plan Management Overview. Attachment 1 shows the Five-Year Plan management structure. The ER/WM/CA programs are focused in the Division Office of Health, Safety, and Environment (HSE) Division. This focus includes a strong Planning and Resource Management function. The Environmental Restoration/Waste Management/Corrective Activities (ER/WM/CA) programs are headed by program managers in HSE Division who report to the Division Office. The Research, Development, Demonstration, Testing, and Evaluation (RDDT&E) Program is in the Environmental Research Applications organization. Its activities are coordinated with the ER/WM/CA program management function.

1.2.1. Corrective Activities Management Overview

Environmental Concerns and Issues. Los Alamos National Laboratory has numerous concerns regarding the protection and management of the environmental resources near and at the Laboratory. Many of these concerns and issues are driven by federal and state environmental regulations. These concerns cross multiple environmental programs such as air quality, surface and ground water quality, toxic and hazardous waste management, and radiation protection of the public.

The highest-priority concerns for corrective activities include such issues as upgrading wastewater treatment facilities regulated by the National Pollution Discharge Elimination System (NPDES) permit; consolidating sanitary wastewater treatment by constructing a sanitary wastewater consolidation system; replacing polychlorinated biphenyl (PCB) transformers/capacitors and cleaning up PCB leaks/spills; ensuring adequate wastewater treatment by doing biomonitoring tests on wastewater discharges; ensuring safe drinking water through prudent operation and management of the water supply system; testing underground tanks to prevent leaks; replacing the stack at the Los Alamos Meson Physics Facility (LAMPF) to meet modified National Emissions Standards for Hazardous Air Pollutants (NESHAPs) requirements which reduce allowable radiation exposure to the public; and ensuring proper staffing to respond to new environmental regulatory requirements, whether promulgated by federal or state environmental agencies. The DOE/AL guidance issued November 22, 1989, stated that corrective activities were redefined to also include out-of-compliance conditions with respect to internal DOE requirements.

In its staffing concerns, the Laboratory must respond to new DOE Orders such as 5400.1, which requires the Laboratory to prepare a Ground Water Protection Management Program Plan, a Pollution Prevention and Awareness Program Plan, a Long Range Environmental Protection Plan, an Environmental Monitoring Plan, and an implementation plan for the Order. This ability to respond and meet regulatory requirements requires adequate staffing and resources.

The public is particularly concerned about the possibility of environmental problems associated with hazardous waste management, drinking water, adequate treatment of wastewater discharges to surface and ground water sources, toxic chemicals, and radiation exposure. Several of these issues, such as hazardous waste management and wastewater discharges, have been the subject of federal and state administrative enforcement actions. Many of these issues also involve costly environmental solutions. For instance, the costs all individually exceed the million dollar funding level in upgrading wastewater treatment systems, replacing PCB electrical equipment, treatment and disposal of hazardous waste, potable water supply system management for cross-connection control and lead control, and treatment of radioactive air emissions.

Several specific examples of environmental concerns illustrate the complexity, cost, and seriousness of the problems. For instance, radioactive emissions to the atmosphere from LAMPF result in the highest potential radiation dose to members of the public from all Laboratory operations. The calculated dose is approximately 10 mrem/year (whole body), which is 40% of the pre-October, 1989, radiation limit of 25 mrem/year to members of the public from airborne emissions. These emissions are regulated under 40 CFR Part 61, Subpart H, the National Emission Standards for Hazardous Air Pollutants (NESHAPs) program as applied to DOE facilities.

On October 31, 1989, the federal Environmental Protection Agency (EPA) Administrator approved a significant reduction to the dose limit to 10 mrem/year (effective dose equivalent). This new dose standard, which approximately equals the current maximum dose to the public from LANL, could severely limit Laboratory operations. The LAMPF experimental program may have to be reduced. In addition, new research programs proposed at the Laboratory (not necessarily connected with LAMPF) that entail releases of airborne radioactivity could encounter significant difficulty in obtaining EPA construction or modification approval. Without significant reductions in air emissions at LAMPF by implementation of corrective activities, the Laboratory's operation at the 10 mrem/year dose limit would not leave any leeway for a slight increase in offsite dose because of radioactive emissions from a new project.

Another example involves hazardous waste management and underground storage tanks (USTs). In accordance with federal and state regulations, a five-year rotating schedule of UST tightness testing and general system upgrading must begin in FY90 for the 88 USTs in service at the Laboratory. This schedule allows for existing tank replacement with new underground tank vault systems, including secondary containment for all piping and automatic leak detection capability.

Another concern in hazardous waste management involves approximately 34 active firing sites at the Laboratory, where experimental detonations are conducted. These firing sites could be required to meet the standards of a hazardous waste disposal facility by virtue of the potential for high explosives and other hazardous constituents at the detonation areas. Although the Laboratory does not believe that these sites are regulated by the Resource Conservation and Recovery Act (RCRA), if these requirements were imposed by the New Mexico Environmental Improvement Division (NMEID), Closure Plans would be prepared for each site. Site monitoring for soil and water contamination would also be expanded, and run-on and run-off control structures would have to be constructed.

Approximately 50 high explosive wastewater treatment sumps physically separate high explosive and other contaminants from wastewater generated during high explosive experimental work. These sumps, currently regulated under the federal Clean Water Act, may eventually need to also meet RCRA requirements, which could ultimately require elimination of the sumps. The Laboratory believes that these sumps and their outfalls are exempt from RCRA regulation.

Current Status. The following information addresses the status of the majority of Laboratory corrective activities at the close of FY89 and summarizes activities planned in FY90.

- The Laboratory's NPDES permit regulates 112 treated wastewater discharges. Three violations of the permit occurred in FY89. During the year six upgrades of wastewater treatment systems were completed, four of which were installed pursuant to a Federal Facility Compliance Agreement negotiated between EPA and DOE. A

major modification of the wastewater treatment system was completed at Tech Area (TA)-53. During FY90 NPDES treatment system upgrading will continue.

- A Title I engineering design was completed for the Sanitary Wastewater Consolidation System (SWCS) Project. This project will replace seven existing sanitary wastewater treatment plants and approximately 30 septic tanks, implementing state-of-the-art sanitary wastewater treatment and improving NPDES compliance. During FY90 the Title II engineering design will be completed and construction started.
- Water quality data were collected on all NPDES wastewater outfalls in preparation for submission of a NPDES reapplication during FY90. Additional water quality data, including biomonitoring analyses, will be collected during FY90.
- During FY89, two product and three radioactive waste USTs were removed. Eighty-eight tanks are currently in use (35 product and 53 radioactive waste tanks). Fifteen USTs are scheduled to be upgraded by replacement or retrofitting to new tank standards during FY90. Current plans are to install leak detection on all radioactive tanks.
- During FY89 engineering designs were completed for all major potential spill sites, and most sites were redressed with secondary containment structures pursuant to the Laboratory's Spill Prevention Control and Countermeasure (SPCC) Plan. Twelve construction projects were implemented in FY89; additional construction will be initiated in FY90.
- Septic tanks systems were upgraded at TA-9 during FY89. Additional upgrades will be required during FY90 at TA-15 and TA-16; other technical areas were investigated for septic tank system upgrading.
- Throughout FY89 numerous PCB transformers and capacitors were replaced by non-PCB equipment. At the close of FY89, the Laboratory had 118 PCB transformers and 365 PCB large capacitors on its inventory. During FY90 other PCB electrical equipment will be replaced.
- Ground water protection was augmented at TA-56, the Fenton Hill Geothermal Site, during FY89 by cleaning out the large drilling mud pond (EE-1 pond) and preparing a design for installation of a seepage detection system and membrane liner during FY90.
- Throughout FY89 hazardous waste was primarily managed by using facilities located at TA-50 and TA-54. During FY90 the Laboratory will pursue the construction of a Hazardous Waste Treatment Facility at TA-50. This system will consolidate and improve the handling and treatment of hazardous waste and will better ensure compliance with RCRA requirements.

Waste Types. Under the Corrective Activities Program numerous waste types must be addressed. They include sanitary and industrial wastewater consisting of sewage effluent, power plant and boiler blowdown effluent, treated cooling water and noncontact cooling water effluent, high explosive processing effluent, photographic processing effluent, printed circuit board processing effluent, and radioactive wastewater treatment effluent; toxic substances such as polychlorinated biphenyls (PCBs); radioactive air emissions, such as those at LAMPF, which are primarily made up of short-lived radionuclides having half-lives of 71 seconds to 1.8 hours; and various hazardous wastes.

Specific hazardous wastes result from various Laboratory operations and programs. For example, underground storage tanks (USTs) at the Laboratory contain petroleum products such as gasoline, kerosene, dielectric mineral oil, and waste motor oil. Other USTs contain chemical products, such as acids and bases, and miscellaneous hazardous and radioactive wastes. Wastes generated at high explosive processing and testing sites can include high explosive compounds; various chemicals, such as solvents; elements such as lead; and sometimes trace amounts of radioactive solids. Other hazardous wastes are generated because of diverse research and development activities throughout the 33 active technical areas at the Laboratory.

Regardless of the type of waste, mismanagement of waste materials could cause noncompliance with federal and state environmental regulations. If noncompliance occurs, programmatic interruptions can result, with temporary curtailment of Laboratory operations potentially occurring. A more severe environmental problem could cause discontinuance of specific Laboratory operations.

Site and Facilities Involved. The Laboratory covers 43 square miles, with 33 active technical areas. The Laboratory's Corrective Activities Program affects virtually all of these technical areas. Throughout the Laboratory are 9 active sanitary wastewater treatment facilities, approximately 76 active septic tanks, 102 active industrial wastewater treatment facilities, 88 active underground storage tanks, more than 200 active satellite or less-than-90-day hazardous waste storage facilities, 118 PCB transformers, 60 PCB-contaminated transformers, 365 large PCB capacitors, 6 pieces of miscellaneous PCB equipment, 26 large-volume secondary containment facilities for spill control, and 1 major radioactive air emission source at TA-53.

Risks. The DOE conducted a comprehensive environmental survey at Los Alamos National Laboratory from March 29, 1987, to April 17, 1987. The survey team developed a sampling and analysis plan to assist in further assessing certain environmental problems identified during its onsite activities; the plan was implemented the following year by the Idaho National Engineering Laboratory. The survey found no environmental problems at the Laboratory that represented an immediate threat to human life. The identified problems varied in terms of their magnitude and risk. Since the survey, the DOE and the Laboratory have investigated all of the findings, and most findings have been mitigated and closed out. Any findings that are still outstanding have been placed in a Corrective Activities Plan, included in this document, for systematic and scheduled corrective action.

The major risk associated with not funding and implementing the Corrective Activities Plan is noncompliance with federal and state environmental regulations; potential curtailment of Laboratory operations and delays or prohibitions for implementing new Laboratory projects could occur. In the meantime, all available means are being investigated and implemented toward reducing the risk of environmental violations and operational interruptions at the Laboratory.

Major Objectives. The major objective of the Corrective Activities Program is the protection of public health and the environment. To accomplish this objective, the Laboratory is committed to attaining and maintaining full compliance with all federal and state environmental regulations.

1.2.2. Environmental Restoration Management Overview

Environmental Concerns and Issues. No known measurable near-term environmental, public health or safety concerns are associated with potential release sites under existing conditions at the Laboratory.

The Laboratory was evaluated under Phase 1 of the DOE-AL Comprehensive Environmental Assessment and Response Program (CEARP), which was initiated in 1984. A major CEARP objective was to determine whether waste disposal practices followed in the past, before recognition of environmental hazards and passage of extensive environmental legislation, created environmental concerns that require remedial action today.

The CEARP Phase 1 conducted and documented DOE and Laboratory Preliminary Assessment/Site Inspection (PA/SI) activities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund" and preliminary activities under RCRA. The CEARP Phase 1 report is a public document, which is available at the Mesa Public Library in Los Alamos, New Mexico; it was distributed to State of New Mexico Environmental Improvement Division (NMEID) and to the US Environmental Protection Agency (EPA, Region VI, Dallas, TX) in October 1987.

Potential hazardous and radioactive waste sites, referred to as potential release sites, identified during CEARP Phase 1 include managed material disposal areas; several canyon areas; older facilities, including several decontaminated and decommissioned facilities; and areas that have received waste discharges from past Laboratory operations. The Phase 1 effort identified several potential release sites and areas of concern outside DOE Laboratory boundaries (primarily associated with historic Laboratory facilities that were decontaminated and decommissioned), including private property and properties belonging to Los Alamos County. The potential sites, which were identified during Phase 1, are aggregated into tasks to be addressed during the RCRA corrective action process.

As CEARP Phase 2, site characterization, was being implemented, CEARP was replaced by the DOE-wide Environmental Restoration (ER) Program in 1988. Although the two programs differ somewhat in scope, the intent to fulfill the Laboratory's and DOE's obligations under CERCLA and RCRA (both acts as amended) for assessment and remediation of potential hazardous and radioactive waste sites has not changed. The Laboratory and DOE have continued to investigate potential release sites to fulfill RCRA and CERCLA requirements.

Current ER Program issues include timely DOE compliance with the National Environmental Policy Act (NEPA) so that RCRA corrective measures are not delayed; adequate funding to support requirements of the Laboratory's RCRA permit schedule for closure and corrective activities; timely construction and operation of a RCRA-permitted mixed waste disposal facility at the Laboratory; and timely implementation of institutional interim actions, which requires adequate funding.

Current Status. The NMEID issued its portion of the RCRA permit for the Laboratory in November 1989. The EPA portion of the permit is expected in early 1990. The RCRA permit will require the Laboratory to follow procedural requirements set forth in the Hazardous and Solid Waste Amendments (HSWA), which are amendments to the original RCRA for assessing and remediating potential release sites that meet the definition of solid waste management units (SWMUs).

The Laboratory submitted to EPA and NMEID a listing of approximately 1100 currently identified SWMUs in the December 1988 SWMU Report. Of these 1100, the EPA identified about 600 potential SWMUs that require further corrective action investigation based on EPA site inspections and review of documents prepared by the Laboratory. The EPA currently believes the other 500 units do not require corrective action investigation. Most of the currently identified SWMUs are on Laboratory property; however, 27 SWMUs are on private and Los Alamos County properties. In addition to specific SWMUs, several known potential areas of concern must be addressed. It is anticipated that additional SWMUs and areas of concern will be added to the Laboratory's official listing of sites as investigations continue. The EPA or NMEID can require these SWMUs to be addressed under the Laboratory's RCRA permit.

The Laboratory and DOE modified procedural requirements within the ongoing ER Program during FY89 to comply with the anticipated RCRA permit. The ER Program includes continued approval and oversight by regulating agencies and public review and comment during RCRA facility investigations (RFIs) (that is, site characterization activities); corrective measures studies (CMSs) (that is, selection of the most appropriate remedial alternative); and corrective measures implementation (CMI) (that is, remedial action). SWMUs identified by EPA for corrective action consideration were already included in the Laboratory's ER Program tasks.

The FY89 ER Program at the Laboratory primarily consisted of RCRA closure activities; development of a task data base, including archival review, interviews, site reconnaissance, and site mapping; and reconnaissance sampling activities. The Laboratory must prepare the Laboratory Installation Work Plan, which will be updated annually, and site characterization work plans for 10% of the SWMUs in FY90 (see Subsection 5.1. Task Descriptions). The Laboratory will also continue RCRA closure activities at several SWMUs during FY90.

Three Laboratory reactor facilities are presently funded for decontamination and decommissioning by the DOE Surplus Facilities Management Program (SFMP). Work is scheduled for completion in FY90. Other projects scheduled for the next few years include Wing 9 at the CMR Building, Buildings 3 and 4 South at TA-21, and a phase separator pit, structure TA-35-3.

Waste Types. Carrying out the mission of the Laboratory has generated hazardous and radioactive wastes. These exist at potential release sites that are being addressed by the ER Program. The hazardous and radioactive wastes can be defined broadly as four waste types: wastes from processing operations, wastes from research and development, high explosive waste, and wastes from Decontamination and Decommissioning (D&D). Each of these general waste types has unique characteristics. Wastes from processing operations typically consisted of significant volumes of materials that contain a limited number of contaminants, including radionuclides, solvents, organics, and metals. Treated and untreated liquid process streams were discharged to the canyons. Wastes from R&D, however, were usually smaller volumes of different laboratory reagents, chemicals, solvents, metals, radionuclides, and other general laboratory wastes. The composition and concentration of the contaminants in a given process waste were generally uniform, unless modifications to the process were made. Conversely, the waste constituents from R&D activities continually varied depending on the nature of the rapidly changing R&D efforts of the Laboratory. High explosive wastes consisted of a relatively small number of formulations, some of which contained small proportions of hazardous constituents such as barium and other metals. D&D wastes typically consisted of large quantities of building debris that were contaminated with radionuclides and occasionally with high-

explosive residuals. Laboratory wastes were typically disposed of in managed material disposal areas, usually consisting of trenches, pits, and shafts.

Sites and Facilities Involved. Potential release sites exist throughout the Laboratory and several exist offsite. The sites have been aggregated into tasks to address site characterization and potential remediation, as required by the Laboratory's RCRA permit, in an efficient, cost-effective process under the ER Program.

ER Program tasks, aggregations of potential release sites, of highest priority include the following:

- Potential release sites that are off DOE property, including Los Alamos, New Mexico (because of public perception and potential public exposure);
- Canyon alluvial systems (because of potential offsite transport);
- Material disposal areas, especially those that received or still receive liquid wastes (because these sites contain most of the Laboratory's disposed hazardous and radioactive wastes);
- Sites requiring closure under the Resource Conservation and Recovery Act (RCRA) (because of mandated time frames once submitted Closure Plans are approved); and
- Sites requiring interim removal (because of institutional operational requirements).

The Laboratory proposes to construct and operate a RCRA permitted mixed waste disposal facility at the Laboratory to receive waste generated by the LANL ER Program. The goal of the ER Program is to minimize the number of land disposal units that require long-term management (for example, maintenance and monitoring); this will be done by cleaning up the units to acceptable risk-based residual contamination levels. ER Program activities will comply with land ban restrictions.

ER Program D&D activities are directed toward providing decontaminated space for reuse by future programs.

Risks. Continuing the existing institutional programs in monitoring and maintenance would maintain conditions as outlined in Subsection 1.2.2. Environmental Restoration Management Overview "Current Status." However, maintaining current conditions is not sufficient to comply with the Laboratory's RCRA permit, including acceptable long-term risks to the environment, public health and safety; other applicable environmental regulations; and DOE orders. The ER Program will be implemented as outlined in this Laboratory Site Specific Plan to help ensure compliance with the RCRA permit and other applicable requirements. In the unlikely event that unacceptable risks are identified for a potential release site while implementing the ER Program, the Laboratory's RCRA permit has provisions for taking interim remedial measures, which require approval by the Administrative Authority (currently the EPA).

Major Objectives. The primary objective of the ER Program is to implement assessment and remediation activities as required for potential release sites and contaminated facilities at the Laboratory. The ultimate goal is to bring identified sites and facilities into compliance with environmental regulations and DOE orders that govern environmental restoration at the Laboratory, while ensuring environmental protection and public health and safety.

The Laboratory's proposed approach includes constructing and operating a RCRA-permitted mixed-waste disposal facility to receive waste generated by the ER Program. Cleanup will be based on cost-effective risk-based standards approved by the appropriate regulating agency. In situ stabilization and appropriate long-term monitoring will be used when possible for some sites. Laboratory environs are compatible with siting of a mixed-waste disposal facility and using in situ stabilization. Each site-specific action will be approved by the appropriate regulating agency through the regulatory process, including public participation. Major advantages of the Laboratory's proposed approach of retaining wastes on the Laboratory as described above are that the wastes would remain on DOE property under federal institutional control, worker exposure would be minimized during cleanup, offsite transportation risks would be minimized, and the total program would be more cost effective. ER Program activities will comply with RCRA land ban restrictions.

1.2.3. Waste Management Management Overview

Environmental Concerns and Issues. Major efforts in environmental monitoring focus on measurement programs involving environmental sampling of air, surface water runoff, transported sediments, and penetrating radiation at the active and inactive waste management areas. Routine monitoring includes detailed surface reconnaissance of all the radioactive waste areas and intensive sampling surveys of one or more of the areas. Results are documented appropriately.

Six radioactive waste burial sites are known to contain or are suspected of containing transuranic (TRU) waste materials disposed of before the requirements for segregation and retrievable storage were implemented. Conditions at each site are annually inspected and documented. Results of the routine and special monitoring of waste management areas at Los Alamos are published in the annual Environmental Surveillance Report and in topical reports.

Performance assessment efforts in waste management continue. The appraisal will assess the long-term risk to the general public, and the continuing emphasis in FY90 will be the active disposal site, TA-54, Area G. A complete assessment of this site is required for operations to be in compliance with DOE Order 5820.2A. It is anticipated that the FY90 assessment will include review of ongoing polychlorinated biphenyl (PCB) disposal at this site as well. When the performance assessment is complete, the waste acceptance criteria and the environmental surveillance program for the site will be finalized. Operations criteria and plans for site closure will also be developed.

Efforts in future years will be devoted primarily to continued validation of the established criteria for environmental monitoring data and results of the performance assessment.

Curent Status

Waste Minimization. DOE Order 5820.2A and RCRA require a formal documented waste minimization program. To ensure compliance with these requirements, the Waste Management Group created the Waste Minimization and Transportation Team, composed of technical staff members who meet with generating groups and assist them in minimizing the waste generated in their operations. They provide technical and engineering assistance, training and education, and support for chemical substitution and disposal of hazardous waste.

The Laboratory has several current and planned programs to minimize the waste generated by specific types of operations at the Laboratory: hazardous waste coordinators; education, training, and publicity; monitored radioactive liquid waste collection; certification of TRU waste; purchasing discipline; review of HSE Division's internal procedures; minimization of mixed waste by segregation; solvent substitution; recycling of used oil; use of a policy for conservation and wastewater discharge; recycling of mercury; recycling of nitric acid; and silver recovery.

Planned activities in waste minimization include establishing a methodology data base, salvaging and reusing chemicals, recycling useful gas cylinders, recycling paper, and recycling D38. The Waste Minimization and Transportation Team will maintain an electronic data base to find and use applicable and emerging technologies from diverse sources. Implementation is planned for FY90.

Treatment. The Technical Support Section supplies the Group with engineering support for new waste treatment processes and facilities for incinerating transuranic (TRU)-contaminated solid and liquid wastes, low-level wastes (LLW), and mixed hazardous wastes (MHW). An existing incinerator, the controlled-air incinerator (CAI), is included in the RCRA Part B permit application for the Laboratory, and application for an air permit has been made for a planned and funded low-level/mixed hazardous waste (LLW/MHW) incinerator.

Operations of the CAI have been suspended since April 1987 to modify equipment and processes to prepare for routine incineration operations that will treat Laboratory-generated combustible TRU, LLW, and MHW. The FY89 efforts have centered on the installation of the Hastelloy off-gas treatment equipment and piping, the incinerator instrumentation and controls, a computer-based data acquisition system, and the documentation requirements. The solid waste feed system is also being modified. Originally scheduled to begin operations in FY89 for TRU combustible waste incineration, the program has experienced several delays in completion. The second edition of the Final Safety Analysis Report (FSAR) is proceeding under contract to a consulting firm with completion for submittal for review scheduled for FY90. In addition the New Mexico State Legislature in 1989 passed H.B. 57, which placed a moratorium on incineration; the CAI was excepted from that legislation.

The modifications to the solid feed and off-gas treatment processes will be completed in FY90. Low-ash liquid feed operations can technically begin in February 1990. Completion and installation of the ash removal system will be completed in the third quarter, and solid waste incineration operations can technically begin then. An incremental increase in section staffing, system testing, shakedown, and operator training are scheduled for FY90. However, current and pending regulatory actions are expected to overshadow the technical aspects and to further delay the start of operations. One such action is a federally mandated moratorium until August 1, 1990, so that the state can develop new regulations for radioactive air emissions.

Design of the LLW/MHW incinerator, feed system, and off-gas treatment systems has proceeded in FY89. An environmental assessment (EA) for the LLW/MHW incinerator was completed and submitted for review in March 1989. The program is now awaiting completion of the review and consideration of a Permit to Construct. FY90 activities hinge upon application for and processing of a Permit to Construct by the New Mexico Environmental Improvement Division (NMEID) and the Environmental Protection Agency (EPA) Region VI.

A two-phase research and development (R&D) program is ongoing for safely handling, sampling, and recontainerizing leaking or damaged compressed gas cylinders containing hazardous gases and/or cylinders containing unknown gases. During the R&D effort, a commercially available technology was identified as suitable for adaptation to a vehicle-transportable, skid-mounted system. Originally scheduled for FY89, the project was delayed, moving this activity to FY90. Equipment procurement, modification, demonstration, and documentation of the transportable gas cylinder handling, sampling, and recontainerization system will be completed in FY90.

In FY86, a final Inventory Work-off Plan was prepared that identified schedules, facilities, and resources needed for retrieving, certifying, and shipping Laboratory stored TRU wastes to the Waste Isolation Pilot Project (WIPP). Milestones established in the Defense Waste Management Plan and the Long-Range Master Plan for Defense Transuranic Waste are met in the Laboratory plan. Work-off of stored TRU waste continued in FY89 through the operation of the Size Reduction Facility (SRF). Work-off of stored TRU waste will continue in FY90 through the operations of the SRF and the Nondestructive Analysis/Nondestructive Examination (NDA/NDE) Facility, which began in FY89. Operations in NDA/NDE certify previously stored TRU waste as meeting WIPP criteria through assay verification and real-time x-ray radiography. Waste packages not found to be certifiable are returned to uncertified storage pending eventual opening and processing in the future TRU Waste Treatment Facility after installation of a corrugated metal pipe (CMP) saw. Certified waste packages are placed into certified TRU waste storage pending eventual shipment to the WIPP. Packages found to contain low-level wastes are buried if they are only low-level or are placed into storage if they are known to be or are suspected of being mixed. The major current change in the Laboratory TRU work-off planning is the anticipated delay in the start of shipments to the WIPP.

The Transportation Facility was completed during the first quarter of FY89, with NDA/NDE operations beginning the second quarter. Checkout of waste assay and real-time x-ray radiography equipment and operator training began during the third quarter of FY88 so that all systems were fully operational by the second quarter of FY89. Initial operations included verification of the certification of newly generated TRU wastes.

The feasibility and cost-effectiveness of incinerating at least portions of stored combustibles will now be determined by the end of FY90. If incineration still appears a viable, cost-effective option, the appropriate required equipment and glovebox systems for sorting and repackaging will be designed. It now appears that the most cost-effective option is to incinerate only those combustibles that can be reasonably sorted from packages that must be opened for other reasons to do the certification. Any such sorting would be done in the future TRU Waste Treatment Facility.

Design criteria and specifications for the Corrugated Metal Pipe Saw Facility were completed in FY89. The bandsaw for cutting the CMPs and associated equipment was ordered and was received by the end of the FY. Final design and specifications for the CMP Saw Facility will be completed in FY90, with facility construction expected to begin by the end of the fourth quarter. Facility construction is scheduled for completion by mid FY91, with equipment installation following. Equipment installation and cold-test operations will begin according to this schedule in mid FY91.

Another task to be initiated in FY90 is the evaluation of actual TRU waste processing methods, followed by technical design and testing of processes for implementation in the second phase of operations in the TRU Waste Treatment (CMP Saw) Facility. After the

A two-phase research and development (R&D) program is ongoing for safely handling, sampling, and recontainerizing leaking or damaged compressed gas cylinders containing hazardous gases and/or cylinders containing unknown gases. During the R&D effort, a commercially available technology was identified as suitable for adaptation to a vehicle-transportable, skid-mounted system. Originally scheduled for FY89, the project was delayed, moving this activity to FY90. Equipment procurement, modification, demonstration, and documentation of the transportable gas cylinder handling, sampling, and recontainerization system will be completed in FY90.

In FY86, a final Inventory Work-off Plan was prepared that identified schedules, facilities, and resources needed for retrieving, certifying, and shipping Laboratory stored TRU wastes to the Waste Isolation Pilot Project (WIPP). Milestones established in the Defense Waste Management Plan and the Long-Range Master Plan for Defense Transuranic Waste are met in the Laboratory plan. Work-off of stored TRU waste continued in FY89 through the operation of the Size Reduction Facility (SRF). Work-off of stored TRU waste will continue in FY90 through the operations of the SRF and the Nondestructive Analysis/Nondestructive Examination (NDA/NDE) Facility, which began in FY89. Operations in NDA/NDE certify previously stored TRU waste as meeting WIPP criteria through assay verification and real-time x-ray radiography. Waste packages not found to be certifiable are returned to uncertified storage pending eventual opening and processing in the future TRU Waste Treatment Facility after installation of a corrugated metal pipe (CMP) saw. Certified waste packages are placed into certified TRU waste storage pending eventual shipment to the WIPP. Packages found to contain low-level wastes are buried if they are only low-level or are placed into storage if they are known to be or are suspected of being mixed. The major current change in the Laboratory TRU work-off planning is the anticipated delay in the start of shipments to the WIPP.

The Transportation Facility was completed during the first quarter of FY89, with NDA/NDE operations beginning the second quarter. Checkout of waste assay and real-time x-ray radiography equipment and operator training began during the third quarter of FY88 so that all systems were fully operational by the second quarter of FY89. Initial operations included verification of the certification of newly generated TRU wastes.

The feasibility and cost-effectiveness of incinerating at least portions of stored combustibles will now be determined by the end of FY90. If incineration still appears a viable, cost-effective option, the appropriate required equipment and glovebox systems for sorting and repackaging will be designed. It now appears that the most cost-effective option is to incinerate only those combustibles that can be reasonably sorted from packages that must be opened for other reasons to do the certification. Any such sorting would be done in the future TRU Waste Treatment Facility.

Design criteria and specifications for the Corrugated Metal Pipe Saw Facility were completed in FY89. The bandsaw for cutting the CMPs and associated equipment was ordered and was received by the end of the FY. Final design and specifications for the CMP Saw Facility will be completed in FY90, with facility construction expected to begin by the end of the fourth quarter. Facility construction is scheduled for completion by mid FY91, with equipment installation following. Equipment installation and cold-test operations will begin according to this schedule in mid FY91.

Another task to be initiated in FY90 is the evaluation of actual TRU waste processing methods, followed by technical design and testing of processes for implementation in the second phase of operations in the TRU Waste Treatment (CMP Saw) Facility. After the

scheduled CMP cutting operations in FY91-92, the facility will be decontaminated and refitted with processing equipment in FY92, leading to startup of processing operations in FY93.

In FY89 it was determined that the Laboratory must provide a capability for installing approved filter vents in all drums of TRU waste because of TRUPACT-II transport requirements. Designing an appropriate system for installing the filter vents and developing the safety analysis documentation in support of this system are anticipated to be completed early in FY90. System fabrication and operational startup are also scheduled to be completed in FY90.

The Hazardous Waste Treatment Facility is an FY90 line item construction project. FY89 activities have included the ES&H documentation requirements, conceptual design report, design criteria, and organization of the architect/engineer (A/E) selection committee. Activities for FY90 include issuing a request for proposal to the A/E firms, continuation of the activities of the A/E selection committee toward an A/E selection, and beginning the Title I design.

Operations at the Size Reduction Facility (SRF) with TRU-contaminated waste will continue. All currently generated TRU waste requiring size reduction treatment will be processed, and previously generated wastes, primarily from the decontamination of the old Los Alamos Plutonium Facility, will continue to be retrieved from storage for appropriate processing. An overall volume reduction of approximately 5:1 is anticipated from these operations.

In FY89 approximately 1100 compressed gas cylinders were inventoried at the Laboratory. Of these, 175 were treated by detonation and 250 were disposed of as empty nonregulated containers. In FY90 20 cylinders of various sizes and content were treated by detonation. The remaining nontransportable cylinders will be treated in approximately ten additional detonations in FY90. In FY90 an offsite contractor will sample and analyze approximately 100 transportable cylinders with unknown contents.

During FY89 radioactive liquid wastes generated at the Laboratory were collected and treated in compliance with existing DOE, EPA, and NMEID orders, permits and regulations. In FY90 it is anticipated that operations will continue with no major changes needed. Planning for compliance with future changes in DOE orders, NPDES permit conditions, and other EPA and NMEID regulations will begin in FY90. FY93 line item funding will be requested for replacing the existing radioactive liquid waste treatment plant.

Storage. It will be at least six to eight years before the disposal of solid mixed wastes at Nevada Test Site (NTS) is possible. Consequently, the Laboratory urgently needs to expand its storage capacity and plan for a mixed waste landfill at the Laboratory. This effort will include expanding the asphalt storage pad and purchasing and installing additional cover sections. This expansion will provide storage capacity for approximately one to two years of waste generation and will be in full RCRA compliance for these mixed low-level wastes.

Packages of precertified TRU wastes awaiting WIPP disposal are stored on an asphalt pad covered by a tension support structure. At least a five-year delay is now anticipated for the start of Laboratory shipments to the WIPP facility. Consequently, additional storage capacity is required in FY90, because less than one year of capacity currently remains. The planned addition will provide storage capacity for one to two additional

years, with the actual time depending on generation rates and the requirements of the State of New Mexico for mixed TRU wastes. About 40% of Laboratory TRU wastes are known to be or are suspected of being mixed.

The Los Alamos TRU waste hot-cell facility is proceeding toward complete shutdown and decontamination, with the effort now scheduled to be completed by the end of FY91. An estimated 30 canisters of remote-handled (RH) TRU waste will be prepared for WIPP disposal, but with at least a five-year delay in planned Los Alamos shipments, a far more substantial storage facility for these filled canisters is mandated. The Laboratory currently does not have the option of delaying the filling of these RH TRU canisters, because the hot-cell facility must now be closed down. The canisters will be stored at TA-54, Area G.

The Treatment/Cold Assembly, Testing, and Storage Facility is scheduled for design in FY91, depending on General Plant Project (GPP) selection and funding. Environment, Safety, and Health (ES&H) documentation requirements were completed in FY89.

The Mixed Waste Receiving and Storage Facility is a proposed FY92 line item construction project. FY89 activities included determining the ES&H documentation requirements. Planned activities in FY90 include design efforts leading to the conceptual design report and design criteria.

The Storage/Waste Oil Storage Facility is an FY91-funded GPP construction project that will be used to bulk organic liquid wastes for offsite shipment. The Laboratory currently disposes of 30,000 gallons of hazardous organic liquids each year that are currently stored and shipped in drums. This facility will increase the Laboratory's hazardous waste storage capacity that can be permitted, reduce analytical costs for these wastes, reduce treatment costs, improve waste handling safety, and reduce spill risks. FY90 activities are limited to completion of an independent assessment required by RCRA regulations. Completion of permitting and equipment purchase is scheduled for FY91, with construction completed in FY92.

The Combustible Chemical and Radioactive Waste Storage/Staging Facility is expected to reach Title III construction design in FY90. Titles I and II designs have been completed.

Greater than 90-day storage of RCRA hazardous waste is permitted at TA-54, Area L. In FY89 the inventory of hazardous and nonregulated chemical wastes stored at this facility significantly decreased because of increased offsite disposal efforts. In FY90 inventories at the permitted storage area will remain within permitted storage capacities. In FY89 permitted storage of Toxic Substance Control Act (TSCA) waste was moved from TA-21 to TA-54, Area L. Waste is stored only to accumulate sufficient amounts for offsite shipments.

MHWs are currently stored at two locations at TA-54. At the end of FY89, 255 m³ of low-level mixed wastes were in storage. It is projected that in FY90, approximately 180 m³ of low-level mixed wastes will be added to storage.

Disposal. No facilities currently exist at the Laboratory for disposal of RCRA regulated wastes, both chemical and mixed wastes. Facility design will start in FY90 for a mixed waste/hazardous waste landfill that meets RCRA regulatory requirements.

Efforts are under way to advance operations at the Radioactive Waste Disposal/Storage Facility at TA-54, Area G. DOE Order 5820.2A is expected to significantly alter the low-level radioactive waste disposal and storage at TA-54, Area G. The other DOE orders involving worker and environmental protection activities are also expected to significantly alter the techniques and procedures followed at the Radioactive Waste Disposal/Storage Site.

A major continuing effort in FY90 is expanding the active portion of the solid waste disposal site, including fencing, relocating and expanding office facilities and facilities for radiation surveillance support, expanding site utilities, and excavating and removing archaeological sites. Expanded facilities for waste compaction and equipment storage are also planned. To ensure compliance with DOE Order 5820.2A, the expanded site area will be evaluated against the requirements for a new disposal site.

Nonradioactive and radioactively contaminated asbestos is disposed of by landfill at TA-54, Area G. In FY89, 243.6 m³ of asbestos were disposed of. A similar amount is expected in FY90.

PCB-contaminated soil and cleanup debris and radioactively contaminated PCB equipment are disposed of by landfill at TA-54, Area G. Under a TSCA permit in FY89, 2,056,000 pounds of PCB-contaminated waste was disposed of at the solid waste disposal site. About 1,000,000 pounds is expected in FY90, depending on the amount of cleanup activity required.

Other. The Data Management Section supports the management of wastes and compliance with state and federal regulations. In FY89 a major upgrade of the section's data management system began. The upgrades included improved waste tracking systems and quality assurance.

New efforts to be initiated in FY90 include the sampling and analysis of mixed wastes in storage for characterization and disposal and an effort to implement a certification program for improved management of mixed wastes.

Waste Types. Low-level waste (LLW) is solid or liquid waste that contains radioactivity and that is not high-level waste from reprocessing spent nuclear fuel; TRU waste; MHW; or by-products of production, extraction, or use of special nuclear material. Test specimens of fissionable material irradiated only for R&D and not for producing power or plutonium may be classified as LLW if the TRU concentration is <100 nCi/g (DOE Order 5820.2A).

LLW is the largest volume of radioactive waste generated at Los Alamos. Averages from the last several years indicate that approximately 94% of the total radioactive solid waste volume is LLW; 5% is TRU; and 1% is mixed waste. The volume of D&D waste varies from project to project and has been incorporated into the low-level and TRU waste volumes. High-level wastes are not generated at the Laboratory.

Transuranic (TRU) waste is radioactive material that has been contaminated with alpha-emitting transuranic radionuclides (atomic number >92) with half-lives greater than 20 years and concentrations greater than 100 nCi/g of waste material. Laboratory averages from the last several years indicate that up to approximately 5% of the total TRU solid waste volume is mixed TRU waste. TRU mixed waste is not distinguished from TRU waste, although it is identified in the documentation.

Newly generated TRU wastes are those produced by ongoing operations and are considered newly generated until they are placed into interim storage. Special case (SC) TRU waste is contact-handled (CH) or remote-handled (RH) TRU waste for which there is no identified practical means of processing for WIPP acceptance. Such wastes include massive metallic objects that cannot be processed in the Size Reduction Facility. Classified TRU waste may also be included in this category because of the special processing requirements needed to declassify the waste. Buried transuranic waste (BTW) is TRU waste disposed of by shallow land burial before the establishment of the TRU waste classification in 1970.

If TRU waste also contains hazardous chemicals regulated by the EPA, it is classified as TRU mixed hazardous waste (MHW). The hazardous components can be toxic, carcinogenic, teratogenic, mutagenic, or corrosive to living tissue. Included are solvents, heavy metals (primarily lead), spray cans (which must be removed and treated), and other chemically contaminated items.

A hazardous chemical waste is any waste as defined under RCRA (40 CFR 261.3). Chemical wastes commonly generated at the Laboratory include laboratory research chemicals, oils, solvents, beryllium, asbestos, carcinogens, compressed gases, and other nonradioactive solid or liquid wastes contaminated with hazardous chemicals.

Mixed hazardous waste (MHW) is radioactive waste that is also regulated as a chemical waste under RCRA (40 CFR 261). Included are solvents, pyrophoric substances, spray cans, scintillation vials, uranium-contaminated lithium hydride, miscellaneous reagent chemicals, uranium chips and turnings, vacuum pump oil contaminated with mercury, and other chemically contaminated material. The State of New Mexico identified sludge from the industrial waste treatment plant at TA-50-1 as a waste stream that should be regulated as a MHW. Approximately 400-500 55-gallon drums of this waste are generated annually.

The other primary MHW streams are uranium chips and turnings and scintillation vials. Approximately 50-100 drums of each of these wastes are generated annually. Other smaller quantities of other MHW are stored in tension support structures at the solid waste disposal site.

Sites and Facilities Involved. Activities within Waste Management include treating radioactive liquid and solid waste; packaging, transporting, and treating hazardous chemical waste; and operating the disposal and storage sites for radioactive and PCB waste. Waste Management provides and operates the following sites and facilities:

TA-54, Area G

- TRU Waste Storage
- Low-Level Waste Disposal
- Mixed Waste Storage
- PCB Solid Disposal

TA-54-38

- TRU Waste - NDA/NDE

TA-54, Area J

- Solid Disposal

TA-54, Area L

- **Mixed Waste Storage**
- **Hazardous Waste Storage**
- **Hazardous Waste Treatment Tanks**
- **PCB Storage**

TA-50-1

- **Batch Waste Treatment Facility**
- **Radioactive Liquid Waste Treatment Plant**
- **TRU Waste Treatment Plant**
- **Decontamination Facilities**

TA-50-37

- **Hazardous/PCB/Mixed Waste Incinerator**

TA-50-69

- **TRU Size Reduction Facility**

TA-21-257

- **Radioactive Liquid Waste Treatment Plant**

Risks. The risks associated with not implementing the activities addressed in the plan are possible environmental degradation and environmental regulatory noncompliance. Areas of anticipated regulatory noncompliance include RCRA, TSCA, Clean Air Act (CAA), and NEPA. Unanticipated restrictions in the RCRA Part B Permit would greatly disrupt the management of hazardous waste at the Laboratory. Insufficient funding of treatment, storage, and disposal activities combined with limited permitted hazardous waste storage capacity would almost immediately put the Laboratory out of compliance and jeopardize many operations and projects.

Future environmental restrictions are expected in the following areas: more stringent National Pollutant Discharge Elimination System (NPDES) conditions on effluents after the March 1991 permit is renewed; more stringent effluent standards by NMEID and/or Indian Tribes; better radioactive containment standards; and inspectable underground storage tanks. The inability to comply with future requirements may cause activities that generate radioactive liquids to be shut down or their future growth restricted.

Major Objectives. The major objectives of the Waste Management Program at the Laboratory are to provide the highest possible level of protection to employees, the public, government property, and the environment that could arise from Laboratory operations, and to comply with federal and state regulations.

The Laboratory requires that the amount of waste generated by Laboratory operations be reduced to a minimum; that the storage, treatment, and disposal of wastes be performed in ways that protect employees, the public, government property, and the environment; and that radioactivity of waste discharges be kept to a level as low as reasonably achievable.

The objective of the waste minimization program is to address methods of reducing hazardous chemical waste, LLW and TRU waste, liquid radioactive waste, MHW, and sanitary waste.

The objective of waste storage at the Laboratory is to control hazardous materials and eliminate the potential for their endangering life or the environment, and to ensure that all storage fully complies with applicable regulations.

1.2.4. RDDT&E Management Overview

The Research, Development, Demonstration, Testing and Evaluation (RDDT&E) Five-Year Plan summarizes environmental R&D activities that will support corrective activities, waste management, and environmental restoration activities. LANL has many of the skills necessary to support the needs cited in the plan. In particular, the Laboratory can support waste treatment site characterization, robotics, development of geophysical techniques, remote sensing, and the development of appropriate models to support performance assessment. Because of the Laboratory's unique role in supporting ER activities at other AL sites, the Laboratory also proposes to develop techniques that are widely applicable to all DOE sites.

The Laboratory has extensive experience in developing performance assessment models and supporting analytical and field tests for high-level waste and proposes to use this expertise in development of performance assessment models for ER and waste management sites.

Because of the Laboratory's extensive experience in plutonium processing and handling in its support role for the Rocky Flats facility, the Laboratory proposes to play a major role in developing waste minimization schemes that will reduce the amount of actinide-contaminated slag and solutions emanating from plutonium processing operations. This work will be done in conjunction with work at other DOE sites with the intent of rapidly transferring it to industry and DOE sites.

The following is a list of the activities currently proposed for the RDDT&E Program at the Laboratory. Support and funding for these activities are currently under review; schedules and funding levels have not yet been determined.

<u>ADS#</u>	<u>ACTIVITY TITLE</u>
2008:	Unsaturated zone transport of contaminants
8110:	Development and implementation of onsite and in situ chemical analysis for waste
2003:	In situ characteristics of waste sites by ion trap mass spectrometry
2006:	Spark analysis of soil contamination
2204:	Measurements of radionuclides, plutonium
2210:	Use of robotics for improved ER-related environmental sampling
8105:	Demonstrate global positioning site environmental evaluation
8106:	Optical in situ analysis of strata
8107:	Vadose zone sampling & borehole instrument system
2209:	Non-invasive ER site characterization
2203:	Risk and performance assessment improvements
4136:	In situ stripping technologies for cleanup
2030:	Soil counting system (at RFP)
2031:	Site restoration development (at RFP)
4131:	Closure technologies for LLW, hazardous chemicals, MW sites
4138:	Waste minimization process changes for tritium
4057:	RH NDA development
4109:	RD&D support for new radioactive liquid waste treatment facility
8102:	Hanford/LANL/Sandia SCWO mixed waste partnership

ADS#**ACTIVITY TITLE**

8103:	Center for federal facilities RDDDT&E activities
4048:	Demonstration of supercritical water oxidation
4050:	Disposal of hazardous organic wastes - plasma destruction
8104:	Jimson weed cell cultures for liquid waste treatment
4133:	Standardization & data management for waste minimization
8109:	Data management & analysis system for ER
4139:	Plasma waste treatment technology development
2219:	Optical diagnostics for real-time in situ monitor
4137:	Remote determination of radionuclides and hazardous organisms
2026:	Unsaturated zone transport: organic tracers
2032:	Enriched UR detection in the presence of PU
8101:	Biological & chemical treatment methods for soil, waste and groundwater
2029:	In situ treatment of groundwater or soil
2004:	Microbial degradation of explosives
2211:	In situ interim barrier materials, development, & emplacement
4135:	WM using aerosol controls
2202:	Cost analysis of RDDDT&E program
60:	Supercritical carbon dioxide extraction of solids
4058:	RH waste imaging
4060:	TRU waste reduction screening
4140:	Waste minimization for TRU processing
8111:	Analysis of contaminated soils using supercritical CDE/GCMS
4110:	Demonstration of gas cylinder disposal phase IV
4059:	Supercritical water oxidation of hazardous wastes
4049:	Development of cylinder gas disposal phase II
4054:	Microwave fluid bed detoxification of hazardous waste

2.0. REQUIREMENTS FOR IMPLEMENTATION**2.1. Corrective Activities Requirements for Implementation**

Regulatory Interfaces. The EPA is the primary interface for corrective activities and waste management activities associated with the Clean Water Act (NPDES permits, Spill Prevention Control and Countermeasures, and Best Management Practices); radioactive emission requirements under the Clean Air Act; Hazardous and Solid Waste Amendments, Comprehensive Environmental Response and Liability Act, and Superfund Amendments and Reauthorization Act; and Toxic Substances Control Act (replacement of PCB equipment and disposal of PCBs).

The NMEID assists in implementation of these programs and has primary responsibilities in the environmental areas of water supply regulation (having primacy for implementing the federal Safe Drinking Water Act); hazardous waste regulation (having primacy for Resource Conservation and Recovery Act and underground storage tank regulations); air quality regulation (having primacy for nonradioactive air quality regulations); liquid waste disposal (implementing the New Mexico Liquid Waste Disposal Regulations); water quality (enforcing the New Mexico Water Quality Control Commission Regulations affecting surface and ground water quality and New Mexico Underground Storage Tank Regulations); and solid waste (implementing the New Mexico Solid Waste Disposal Regulations). Other state agencies that interface with the Laboratory's environmental programs include the New Mexico Oil Conservation Division that regulates the Fenton Hill Geothermal Site activities as they affect ground water quality.

Laboratory-Specific Drivers. Most of the environmental compliance activities at the Laboratory, in corrective activities, are implemented because of federal and state environmental permits. Specific agreements such as the Federal Facilities Compliance Agreement (FFCA) also affect specific environmental media such as wastewater discharges. The FFCA requires the Laboratory to upgrade wastewater treatment facilities associated with noncompliant wastewater discharges within a specified time period so that compliance with the NPDES permit can be assured. A list of environmental permits under which the Laboratory operated in 1989 is included in Attachment 2.

Pending Requirements. DOE orders which define requirements as they relate to corrective activities are expected to be refined and clarified. In addition, amendments to the FFCA are expected.

2.2. Environmental Restoration Requirements for Implementation

The primary objective of the ER Program is to implement assessment and remediation activities as required for potential release sites and contaminated facilities at the Laboratory. The ultimate goal is to bring identified sites and facilities into compliance with environmental regulations and DOE orders that govern environmental restoration at the Laboratory while ensuring environmental protection and public health and safety. The scope of the DOE/AL ER program and DOE orders applicable to implementing the ER Program are identified in DOE/AL Section 4. See also Section 10.2 of this plan for a discussion of federal, state, and local interactions.

The following Laboratory ER Program activities are within the current scope of the DOE/AL ER Program: RCRA corrective measures-related activities; RCRA closure-related activities; and/or equivalent CERCLA activities for units in operation before November 1988, including underground storage tank removal.

The following activities are not within the scope of the Laboratory ER Program: RCRA compliance for currently generated waste streams; emergency response to spills and releases; new waste management facilities, except as required as an integral part of ER Program activities; and routine environmental monitoring and maintenance required after completion of remedial action.

Regulatory Interfaces. The ER Program regulatory interfaces have been established with the NMEID since the RCRA permit was issued November 1989. Interface with EPA will be established when the HSWA portion of the permit is issued. Regulatory interfaces were established for SWMU closure activities with NMEID during interim status under RCRA and will continue now that the Laboratory's RCRA operating permit is issued. The Laboratory's organization and management for implementing the ER Program is presented in Subsection 3.2. of this plan.

Laboratory-Specific Drivers. The ER Program at the Laboratory will be driven primarily by requirements of the HSWA portion of the RCRA permit, which is expected to be acted on by EPA in early 1990. DOE orders applicable to the ER Program will also be implemented. The ER Program will complete the requirements for activities and documentation presented in Attachment 3 and Section 3.2 of this plan, on a program basis and on a task/site basis.

Pending Requirements. The Laboratory anticipates that the federal HSWA portion of the RCRA permit will be acted on in early 1990. The permit will outline ER Program requirements. DOE orders will also define requirements, especially as they relate to radioactive waste management. The administrative authority for RCRA activities will depend on delegation of authority by EPA to the State of New Mexico. Regulatory requirements for mixed waste are also still evolving.

2.3. Waste Management Requirements for Implementation

Regulatory Interfaces. The EPA is the primary interface for corrective activities and waste management activities associated with the Clean Water Act (NPDES permits, Spill Prevention Control and Countermeasures [SPCC], and Best Management Practices); radioactive emission requirements under the Clean Air Act; Hazardous and Solid Waste Amendments, Comprehensive Environmental Response and Liability Act, and Superfund Amendments and Reauthorization Act; and Toxic Substances Control Act (replacement of PCB equipment and disposal of PCB-contaminated solid waste); and the National Environmental Policy Act (NEPA), as discussed in Section 7.3 of this plan.

The New Mexico Environmental Improvement Division (NMEID) assists in implementing these programs and has primary responsibilities in water supply regulation (implementing the federal Safe Drinking Water Act); hazardous waste regulation (having primacy for RCRA); air quality regulation (having primacy for all regulations for nonradioactive air quality); liquid waste disposal (implementing the New Mexico Liquid Waste Disposal Regulations); water quality (enforcing the regulations of the New Mexico Water Quality Control Commission affecting quality of surface and ground water) underground storage tank regulations; and solid waste (implementing the New Mexico Solid Waste Regulations). Also interfacing with the Laboratory's environmental programs is the New Mexico Oil Conservation Division that regulates the activities at the Fenton Hill Geothermal Site as they affect the quality of ground water.

Laboratory-Specific Drivers. Most of the environmental compliance activities at the Laboratory in waste management are implemented because of federal and state environmental permits. Specific agreements such as the Federal Facilities Compliance Agreement also affect specific environmental media such as wastewater discharges. A list of environmental permits under which the Laboratory operated in 1989 is included as Attachment 2.

Pending Requirements. DOE orders which define requirements as they relate to corrective activities are expected to be refined and clarified. In addition, amendments to the FFCA are expected. A DOE/State of New Mexico Cooperative Agreement on Environment, Safety and Health issues is being finalized and is expected to be signed in the near future.

3.0. ORGANIZATION AND MANAGEMENT

The organizational structure related to activities addressed in the ER/WM Five-Year Plan, as discussed previously in Section 1.2., Management Overview, is presented in Attachment 1. The DOE/AL Manager is ultimately responsible for the Los Alamos ER/WM Five-Year Plan. The Health, Safety and Environment (HSE) Division of the Los Alamos National Laboratory is responsible for coordination and submission of the ER/WM Five-Year Plan through the DOE Los Alamos Area Office (DOE/LAAO).

DOE/LAAO, as an extension of DOE/AL, is responsible for oversight of the Laboratory and provides a path of communication regarding day-to-day activities of the Laboratory. DOE/LAAO and the Laboratory provide the primary interface (including negotiations) with regulatory agencies; however, DOE/AL must concur with regulatory agreements as they affect DOE policy, resource requirements, and funding requirements.

3.1. Corrective Activities Organization/Management

DOE/LAAO operates Los Alamos National Laboratory through its primary contractor, the University of California (UC). The University uses Pan American World Services, Inc., under subcontract as its major support contractor, and many of the utility systems, for example, water and wastewater, are operated by this subcontractor. Within the Laboratory, environmental protection is a line management responsibility. However, HSE Division is the primary Laboratory support program for all environmental activities. Specifically, HSE's Environmental Protection Group (HSE-8) has general responsibility for implementing and/or supporting environmental surveillance and environmental compliance activities.

Within HSE-8 the following sections are responsible for the indicated environmental programs.

- **Water Quality and Toxics Section:** NPDES Permits, ground water discharge plans, drinking water programs, liquid waste permits, spill control, and PCBs.
- **Solid Waste Section:** Hazardous and solid waste regulation and regulations for underground storage tanks.
- **Environmental Assessments and Resource Evaluations Section:** Environmental impacts, for example, NEPA, biological endangered species impacts, and historic/cultural impacts.
- **Air Quality and Meteorology Section:** Air quality regulations, for example, permits for nonradioactive pollutants.
- **Surveillance and Hydrology Section:** Compliance with DOE orders regarding environmental surveillance and applications for EPA construction approvals for projects involving radioactive air emissions.

To implement corrective activities, specific projects are assigned to personnel (Project Team Leaders) within HSE-8. The Project Team Leaders (PTLs) are responsible for detailed planning and organization to assure completion of milestones within the scope of the fiscal year funding. PTLs must coordinate required engineering design and construction with the Facilities Engineering Division and serve as a liaison between other operating groups, Pan American World Services, Inc., and other parties affected or involved. Furthermore, the PTL serves as the point of contact with respect to regulatory agency interfaces. Each PTL reports activities and project progress through the Section Leader to the Group Leader, who in turn assures upward line management communications.

Most assignments and action items stemming from correspondence from regulatory agencies or from DOE/AL come through DOE/LAAO and are directed to the Laboratory's Director. These items are assigned to personnel in HSE-8 through a

management chain-of-command. All replies to correspondence regarding environmental activities or environmental permit correspondence circulate through a hierarchy of management and legal review, before transmittal to DOE/LAAO for final concurrence and official transmittal.

3.2. Environmental Restoration Organization/Management

The organization and management of DOE Headquarters (DOE/HQ) and DOE/AL are discussed under the DOE/AL Section 2. The DOE/AL Manager is ultimately responsible for the conduct of the AL ER Program, including the D&D Program. The Laboratory ER Program will be implemented consistent with applicable DOE orders identified in the DOE/AL Plan, Section 4.

The following activities are the responsibilities of the DOE Los Alamos Area Office (DOE/LAAO) and the Laboratory:

- providing primary interface (including negotiations) with regulatory agencies;
- conducting assessment and remediation activities;
- preparing and/or reviewing ER Program documents (for example, RFI/CMS documents);
- conducting community relations activities;
- distributing documents for regulatory review;
- preparing Five-Year Plans;
- preparing long-range plans;
- preparing Current Year Work Plans;
- preparing monthly status reports by task for DOE/AL; and
- preparing completion reports for completed actions.

The Laboratory's ER Program documentation requirements are presented in Attachment 3. Cost, schedule, and technical performance of the Laboratory ER Program will be monitored through monthly Cost and Schedule Status Reports as defined by DOE/AL. The typical RFI/CMS process to be implemented by the Laboratory under the RCRA permit is presented in Attachment 4.

DOE/LAAO and the Laboratory will be responsible for negotiating agreements with regulatory authorities. DOE/AL management must concur with these agreements because they affect DOE policy, resource requirements and funding requirements. DOE Headquarters must concur with all negotiation strategies and approve final agreements. Daily interface with regulatory agencies is the primary responsibility of DOE/LAAO and the Laboratory.

The Laboratory ER Program is a large, multidisciplinary, multidivision program that will involve a comprehensive Laboratory-wide effort that will continue for several decades. The Health, Safety and Environment (HSE) Division has established the Laboratory ER Program Office in the HSE Division Office to track and manage the ER Program tasks (that is, geographical aggregations of potential waste sites that may require remedial action) as they pass through various phases of regulatory compliance.

The Laboratory ER Program Manager reports to the HSE Deputy Division Leader. The Program Manager is responsible for effective Laboratory-wide implementation of the Laboratory ER Program. Project Leaders, who report to the Program Manager, are responsible for managing Laboratory ER tasks and ensuring that regulatory compliance requirements are achieved during all phases of the ER Program.

The LANL ER Program Office will use the Laboratory-wide resources, in a matrix fashion, to implement program activities. Outside contractors will be used for program activities when limitations in Laboratory resources would compromise meeting requirements of the Laboratory's RCRA operating permit.

The ER Program Office will work closely with the Laboratory's Environmental Research Applications (ERA) Office to ensure that basic research and development needs of the ER Program are identified and implemented in a timely fashion on a Laboratory-wide basis. The ERA basic research effort will provide technologies that will assist in implementing RFI/CMS activities (for example, geophysical investigative techniques). ERA will also provide innovative remedial technologies, which will be implemented through the Laboratory's RFI/CMS process (that is, bench-scale and pilot-scale studies) on a task/site-specific basis as required by the Laboratory's RCRA permit.

The Facilities Engineering (ENG) Division will play a major role in implementing the remedial design/remedial action aspects of the ER Program at the Laboratory. The ER Program Office will look to ENG Division and the Laboratory's Waste Management Group (HSE-7) to ensure effective implementation of these remedial activities. The Laboratory's Environmental Protection Group (HSE-8) will provide regulatory compliance oversight for the ER Program.

Decontamination and Decommissioning (D&D) projects will be managed by HSE-7 and will be reported through the ER Program reporting process.

3.3. Waste Management Organization/Management

The Waste Management Group (HSE-7) reports directly to the Deputy Division Leader of HSE Division and is responsible for ensuring effective Laboratory-wide implementation of the Waste Management Program and for ensuring that requirements for regulatory compliance are achieved expeditiously. Waste Management personnel work directly with the ER Program Manager and HSE-8. Waste Management coordinates its activities with the HSE Division Office, which in turn interfaces with DOE/AL and the Area Office on an official basis. Informal and direct interaction with DOE/ALO and the Area Office by Waste Management personnel does occur.

The Laboratory's Waste Management Program is a large multidisciplinary program that will involve a comprehensive Laboratory-wide effort for decades. The management structure within HSE-7 is typical of the Laboratory in general. There is a Group Leader (program manager) who has ultimate responsibility for all waste management activities within the Laboratory, as well as the Site Specific Plan, related RDDT&E, and the Five-Year Plan. Furthermore, the Group Leader is responsible for resource management,

setting priorities, determining resource needs, tracking program activity, and quality assurance activities associated with all aspects of Waste Management. The group has one Deputy Group Leader and six Section Leaders. The sections within the group are divided up by the type of waste that they manage. The Section Leaders are the first line managers and implement their respective areas within this document.

Activities in Waste Management include

- treating radioactive and nonradioactive liquid and solid wastes;
- packaging, transporting, storing, treating, and disposing of hazardous chemical wastes; and
- operating the disposal and storage sites for radioactive and hazardous chemical wastes.

Waste Management uses resources throughout the Laboratory, including the Facilities Engineering Division, the Environmental Protection Group, and offsite contractors when limitations in resources would compromise meeting the requirements of the Laboratory's RCRA operating permit. In addition, Waste Management activities receive support from numerous Health, Safety and Environment Groups with expertise in analytical chemistry, industrial hygiene, medical surveillance, safety, and environmental compliance. Furthermore, Pan Am World Services, Inc., supplies janitorial support as well as personnel to transport waste onsite under the guidelines established by the Laboratory's chemical waste management and radiation protection groups. Also, the Facilities Engineering Division supplies construction management and cost estimates for all Waste Management General Plant Project (GPP) and Line Item projects.

4.0. CORRECTIVE ACTIVITIES FIVE-YEAR PLAN PROGRAM

4.1. Task Descriptions

Corrective activities for FY90 in solid waste and water releases are summarized below and are based, in part, on the following changing conditions:

NPDES Permitting:	new effluent limitations biomonitoring requirements
Drinking Water:	cross-connection control needs
Air Quality:	new radioactivity limits
Hazardous Waste:	new requirements for USTs new requirements for high explosive operations new treatment system new requirements for mixed waste
Ground Water:	geothermal site work

Task Descriptions for Solid Waste Corrective Activities

ADS 42: Hazardous Waste Treatment Facility. A 10,000-ft² hazardous waste treatment facility, a 3,500-ft² waste management office, and two covered hazardous waste storage pads at TA-50, Area C, at or near the solar collector field, are required. This location is near waste generators and adjacent to the hazardous/mixed waste incinerator in the TDF. The facility would include sections allocated for lead recycling, waste oil recycling, D38/reactive compounds treatment, solidification operations, neutralization/plating waste treatment, PCB storage, sampling, and drum recycling.

The facilities are needed to replace facilities at TA-54, Area L, that will no longer be available due to expansion of the TA-54, Area G, disposal facility; to improve hazardous waste handling facilities by reducing worker exposure to hazardous wastes; to improve waste handling safety; and to provide a treatment process for mixed wastes that must be treated onsite. Activities scheduled for FY90 include completion of Title I of the design process.

ADS 49: Replace PCB Transformers and Capacitors. The purpose of this project is to replace, in a coordinated change-out, electrical systems now containing PCBs at the Laboratory in order to comply with EPA regulations (40 CFR part 761). Approximately 118 substations (transformers) containing PCB insulating liquids and associated switchgears, and approximately 500 PCB-filled indoor capacitors will be replaced. Replacement is also required for approximately 500 additional PCB capacitors, and retro-filling is required for 61 PCB-contaminated transformers. This project will also fund spill clean-ups and decontamination of spill areas. Many of LANL's PCB electrical units are leaking as identified by DOE Headquarters environmental survey of the site. Replacement will ensure that the adverse effects of fire will not occur. Additionally, because many of these units have exceeded their useful life expectancies, the potential for a failure, PCB spill, or PCB contamination exists. Engineering designs will be prepared during FY90, and specific PCB transformers will be replaced or retrofilled. PCB capacitors will be replaced in specific technical areas.

ADS 55: Underground Storage Tanks. Beginning in FY90, a five-year rotating schedule of underground storage tank (UST) tightness testing and general system upgrading must begin for the 88 in-service tanks. This schedule allows for existing tank replacement with the new underground tank vault system having secondary containment for all piping, and an automatic leak detection capability. Removal of abandoned tanks (including any cleanup of contaminated soil) will be funded by the Environmental Restoration Program. This project will continue to ensure compliance with state and federal Underground Storage Tank regulations. During FY90 two major tasks are scheduled: 1) an inventory control and record keeping system will be established, and 2) 15 tank modifications for inventory control and leak detection will be performed.

Task Descriptions for Water Release Corrective Activities

ADS 46: NPDES Projects. All of the sewage treatment lagoons at LANL are classified as sanitary wastewater treatment facilities. By law, the effluent discharged from these lagoons is not subject to RCRA regulation; however, if the upstream collection, storage, and treatment components to the wastewater treatment process contain a RCRA-listed hazardous waste or a characteristic waste (40 CFR 261), then these upstream components are subject to RCRA regulation. LANL is required to ensure that such facilities contain no such wastes. The DOE May 1987 environmental survey and the NMEID 8/30/89 RCRA compliance order are regulatory drivers. Therefore, a sampling program must be initiated to determine if any of these sewage lagoons may be found to be subject to

RCRA monitoring, closure, and postclosure permitting standards as required under 40 CFR 264. If RCRA waste is found in these sanitary systems, possible closure may ensue. Any corrective actions required under RCRA would be addressed by the ER Program.

Industrial wastewater discharges currently either go directly to the environment through a permitted discharge or are discharged to the sanitary wastewater treatment plants. DOE Orders, the FFCA, NPDES permit restrictions, and RCRA require these outfalls to be upgraded. The project is designed to eliminate outfalls by installing total retention systems, recycling systems, and silver recovery units, and by using chemical substitution. During FY90 the sampling plan will be prepared.

ADS 47: NPDES Upgrades. Improvements will be made to existing sanitary and industrial treatment plants to meet conditions of the NPDES Permit and the EPA/DOE Federal Facilities Compliance Agreement. Areas impacted include but are not limited to the TA-35 Oxidation Ponds, TA-18, TA-9, and TA-21 Package Plant. During FY90, conceptual designs for each of the projects will be prepared.

ADS 51: Sanitary Wastewater Consolidation System. Many of the existing wastewater treatment facilities at the Laboratory are more than 30 years old, and some of their discharge periodically is in violation of federal and state regulations. This project will provide for the construction of a sanitary wastewater treatment facility which will replace seven existing wastewater plants and thirty individual septic tanks Laboratory-wide. The new consolidated treatment plant will include area-wide collection and treatment and will meet all federal and state regulations, as well as the requirements of Executive Order 12088. The treatment plant will consist of flow equalization, primary and secondary treatment, disinfection, recycling for water conservation, and analytical Laboratory facilities. A Federal Facility Compliance Agreement requires construction of sanitary treatment plant facilities. Title II design activities will occur in FY90.

ADS 52: Septic Tank Repair. Approximately 76 septic tank systems are used for disposal of sanitary wastewater at the Laboratory. Many of these systems have inadequate storage and absorption bed capacity, and require frequent maintenance and pumping. This project will replace existing septic tanks, seepage pits, and absorption trenches which are inadequate and do not consistently meet New Mexico Liquid Waste Regulations. This project is needed in order to eliminate wastewater backups and overflows which can result in violations of the Clean Water Act. This project is also needed in order to meet the New Mexico Liquid Waste Disposal Regulations which specify septic tank construction standards. FY90 activities include preparation of system design.

ADS 54: Spill Prevention Control and Countermeasures. The federal Clean Water Act requires that the provisions of a facilities Spill Prevention Control and Countermeasures (SPCC) Plan be implemented. The SPCC improvements are intended to prevent and control spills of oil, chemicals, and other liquids from storage tanks, drums and other containers into the environment and specified watercourses. An SPCC Plan has been completed for the Laboratory, and improvements are recommended for 26 sites. The SPCC Plan requires annual updating, with a triennial update required by regulation also. During FY90, Titles I and II engineering design in Phase II spill control construction will be prepared.

4.2. Resources

Personnel from the Environmental Protection Group will initiate corrective activities. These personnel will work with the Facilities Engineering Division and other Laboratory organizations involved in the specific corrective activity. Resources for initiation of projects and oversight in environmental compliance are provided from the base environmental program and are not included in the costs specified for corrective activities. Occasionally, consulting engineering or similar assistance will be required when available Laboratory personnel lack expertise in a specific technical area or work loads exceed the resources of the Environmental Protection Group.

4.3. Schedules

Specific schedules for each individual task will be developed based upon available funding for that corrective activity. Many of the corrective activities involve relatively small actions that will be applied to many Laboratory facilities, rather than a major action that will be undertaken at a single facility. The schedules for these tasks strongly depend on available funding in a given fiscal year. Project Team Leaders assigned to specific corrective activities are responsible for developing detailed work schedules, the contents of which are beyond the detail level necessary for this report.

4.4. Costs

Table 4.4.1, below, presents the total program funding for FY90-95. The program funding totals for FY91 through FY95 are the first approximation of program funding requirements for this planning period and are consistent with funding information presented in the DOE Headquarters Five-Year Plan issued August 1989. Table 4.4.2 summarizes costs of corrective activities for FY90. The total FY90 funding for this program represents the current planning for this fiscal year and is consistent with the latest funding allocation from DOE Headquarters.

TABLE 4.4.1
CORRECTIVE ACTIVITIES FUNDING LEVELS, FY90-FY95
(Dollars in Thousands)

<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
\$7,224	\$12,181	\$11,854	\$10,923	\$12,037	\$5,249

FY90: Current funding guidance, less Gramm-Rudman-Hollings, and RDDT&E.
FY91-95: Direct from DOE Headquarters ER/WM FYP Funding Requests subsection.

TABLE 4.4.2
CORRECTIVE ACTIVITIES FY90 BUDGET FUNDING
(Dollars in Thousands)

<u>ADS#</u>	<u>ACTIVITY TITLE</u>	<u>TOTAL (\$K)</u>
SOLID WASTE		
42	Haz/mixed waste storage & treatment facility LANL	985
49	Replace PCB transformers and capacitors	1,969
55	Underground storage tanks	<u>279</u>
	Subtotal media	3,233
WATER RELEASES		
46	NPDES projects	279
47	NPDES upgrades	98
51	Sanitary waste water consolidation system	3,054
52	Septic tank repair	280
54	Spill prevention control and countermeasures	<u>280</u>
	Subtotal media	<u>3,991</u>
	Total category	7,224

5.0. ENVIRONMENTAL RESTORATION FIVE-YEAR PLAN PROGRAM

The scope of the Laboratory ER Program is presented in DOE/AL Section 4.

5.1. Task Descriptions

Items identified in Subsection 1.2.2. of this plan as environmental concerns and issues are addressed in the Five-Year Plan. The tasks with potential release sites of highest concern are addressed in FY90. FY90 activities include completing the Laboratory Installation Work Plan and RFI work plans addressing 10% of the Solid Waste Management Units (SWMUs) at the Laboratory as required by the Laboratory's RCRA permit. Work will also be initiated on several other work plans during FY90 and will be completed in future FYs as required by the RCRA permit. Interim remedial measures for potential release sites will be taken as required. It is anticipated that most interim measures will not be risk-based but driven by Laboratory operations (for example, installation of sanitary waste lines requires removing a SWMU prior to underground pipe installation). Preliminary activities associated with permitting the Laboratory's RCRA mixed waste disposal facility will also be conducted, and NEPA activities will be initiated.

Task Descriptions for Assessments

ADS 1049: Canyons Assessment. The canyon effort addresses the impact to the watershed and to the Rio Grande as well as the shallow alluvial aquifers in each canyon. Facilities on top of the mesas may impact the canyons from outfalls along the canyon rims. Some facilities and firing sites are located in the canyons. There are potential release sites (mainly effluent receiving areas) with radioactive, beryllium, unexploded ordnance, heavy metals, and high explosive contaminants. Most contamination is expected to be very low level, and therefore, limited removal and institutional controls would be sufficient remediation. It is unlikely that soils and alluvium would be removed and disposed of offsite as mixed or hazardous wastes. This activity constitutes the RFI/CMS for this task. Canyon assessment activities during FY90 include installation of ground water monitoring wells into the alluvial aquifers in Pueblo, Los Alamos, Sandia, Mortandad, Potrillo, Fence, and Water canyons. Water samples from these wells will be analyzed for hazardous and radioactive constituents as specified in the RCRA permit. Additionally, the extent of alluvial aquifer vertical saturation in Mortandad Canyon is being investigated.

ADS 1062: Interim Remedial Measures. In the past, remedial actions have been carried out by the interim waste management program addressing old radioactive waste disposal sites. There will be a continuing need for such actions at the other radioactive/mixed waste/hazardous waste sites. Several old underground tanks also require removal. This activity may also include verification sampling at potential sites. The activity constitutes the RFI/CMS for this task. Activities currently anticipated under this task during FY90 include verification sampling at the Los Alamos Central School property to verify that historical cleanup was adequate, review of sites potentially impacted by the new sanitary waste treatment plant and associated sanitary waste lines, continued action on underground storage tank removal, and activities associated with the PCB-contaminated area along East Jemez Road.

ADS 1066: NEPA Documentation. One EIS is anticipated for NEPA compliance at LANL during the RFI/CMS process to support ER Program CMI and closures. Activities will be initiated during FY90 as appropriate. As previously indicated, the Laboratory anticipates that an environmental impact statement may be required to address ER Program cumulative impacts as required under NEPA. The EIS would also address the RCRA mixed-waste disposal facility.

ADS 1071: TA-O Areas, Firing Ranges, Etc. This task consists of buried gunmounts (North Mesa), Tank Mesa disposal area, Townsite firing range, airport incinerator buildings and canyon debris area, impact areas from Army ordnance, concrete covered pits, and contaminated structures. About six acres are associated with these structures and areas. Possible contaminants are uranium, heavy metals, unexploded ordnance and organic chemicals. Potential remedial actions may range from selected removal of small volumes to the less likely alternative of removal and disposal for larger volumes. This activity constitutes the RFI/CMS for this task. Activities anticipated under this task for FY90 include initiation of the RFI Work Plan.

ADS 1072: TA-0 Townsite Areas, etc. This task consists of sanitary sewer plants, airport bunkers, buildings, incinerator, waste lines and associated structures, and tank farm contaminated areas. Townsite areas are mostly isolated sites now belonging to the private sector, Forest Service, or Los Alamos County. Many structures are only known from early aerial surveys. About eight acres are associated with these structures and areas. Contaminants may be radionuclides, organic chemicals, and heavy metals. Possible remedial action includes selected removal of small volumes, or less likely, removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. During FY90 the RFI Work Plan will be initiated.

ADS 1073: TA-0 Townsite Areas, etc. This task consists of Mortandad Canyon material disposal area, and the airport landfill and burning area. Townsite areas are mostly isolated sites now belonging to the private sector, Forest Service, or Los Alamos County. About 2.6 acres are associated with these areas. Possible contaminants are uranium, organic chemicals, and high explosives. Potential remedial actions range from selected removal followed by institutional controls to the less likely alternative of removal and disposal for larger volumes. This activity constitutes the RFI/CMS for this task. Activities in FY90 include preliminary drafting of the RFI Work Plan.

ADS 1078: TA-1, Contaminated Structures Townsite. This task consists of potential surface and subsurface contaminated areas, which include hillside surface contamination, disposal areas, acid sewer lines, manholes, septic tanks, storm drains, and outfalls. TA-1 was the original uranium and plutonium processing area where the first atomic weapons were fabricated during WWII at the current Los Alamos Townsite. Most of the structures have been removed and extensive decommissioning and decontamination have been done throughout the sites. Some underground structures and contaminated soil may remain in the Townsite, even after extensive and thorough decommissioning and decontamination efforts were done. About 80 acres (owned by DOE, Los Alamos County, and private owners) may still contain residual plutonium, uranium, fission products, and organic chemical contamination. Remediation is expected to be possible; these measures might include selected removal of small volumes followed by institutional controls, and less likely, removal and disposal of small volumes associated with deep underground structures. This activity constitutes the RFI/CMS for this task. During FY90 a draft RFI Work Plan will be prepared.

ADS 1079: TA-10 Firing Sites, Structures Townsite. This task consists of firing sites, detonation sites, tanks, disposal pit, landfill, and decommissioned building areas. TA-10 contained a series of firing sites, radiochemistry lab, and fission product burial sites. It has been decontaminated and decommissioned and transferred to Los Alamos County with restricted use agreements. TA-10 is located in Bayo Canyon. About 5 acres with potential contaminants including uranium, strontium-90, high explosives, acids, heavy metals, beryllium, and organic chemicals will be investigated. Possible remediation ranges from limited removal followed by institutional controls to the less likely case of removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. Activities anticipated in FY90 include initiation of the RFI Work Plan.

ADS 1082: TA-11, 13, 16, 24, 25 Outfalls, Etc. This task consists of outfalls, sumps, sump pits, septic tanks, drain lines, and waste tanks. TA-11 was originally used for weapon mockup testing at various firing sites and now is used for high explosives drop tests. TA-13 was originally used for X-ray work with explosive testing and is currently part of TA-16. TA-16 produces, tests, and assembles high explosive components for weapons R&D. There are about 200 structures at TA-16. TA-24 (T-site) was originally a service area for X-ray examination of high explosives and for high explosive storage; it is now nonoperational and part of TA-16. Outfall areas cover about 5 acres at these tech

areas with potential contaminants of high explosives, organic chemicals, and heavy metals. Most sites are expected to require selected removal of small volumes and are less likely to be remediated by removal and disposal of larger volumes. The remaining potentially contaminated structures cover about 1 acre and are expected to be remediated using selected removal followed by institutional controls, with removal and disposal of large volumes less likely. This activity constitutes the RFI/CMS for this task. Activities expected to be undertaken in FY90 include beginning the RFI Work Plan.

ADS 1089: TA-15, Firing Sites A, B, G, DAHRT. This task consists of firing sites A, B, and G; firing site disposal areas; active sumps, drains, outfalls, and septic tanks; and decommissioned building areas. TA-15 (R-Site) is a series of firing sites for hydrodynamic studies. Two main x-ray machine firing sites, PHERMEX and ECTOR, are used by the operating groups. About 68 acres contain the active and inactive firing sites and associated structures. Possible contaminants include uranium, beryllium, heavy metals, and high explosives. Possible remedial actions include selected removal followed by institutional controls, with removal and disposal of larger volumes less likely. This activity constitutes the RFI/CMS for this task. Expected activities in FY90 include initiation of the RFI Work Plan.

ADS 1096: TA-19 Contaminated Structures. This task consists of potential release sites comprising approximately 1.5 acres. The sites include a septic tank and building debris. TA-19 (East Gate Laboratory) consisted of a laboratory storage hutment where spontaneous fission experiments were conducted. A septic tank remains at the decommissioned site. Possible contaminants include radionuclides, solvents, and hazardous chemicals. Possible remedial alternatives vary from selected removal of small volumes to the less likely alternative of removal and disposal of larger volumes. This activity constitutes RFI/CMS for this task. FY90 activities include preliminary drafting of the RFI Work Plan.

ADS 1106: TA-21, Subsurface Structures. This task consists of storage tanks, seepage pits, drain lines, septic tanks, sumps, pits, and manholes. TA-21 was partially decommissioned and decontaminated (D&D) in 1977-1980. Most of the contaminated buildings, exterior duct work, and underground structures still remain at TA-21. About 5 acres are associated with these structures with potential contaminants being acids, organic chemicals, uranium, americium, and plutonium. Remediation is expected to consist of partial removal followed by institutional controls, with removal and disposal possible in small subsurface areas near the industrial waste line. This activity constitutes the RFI/CMS for this task. In FY90, a draft RFI Work Plan will be completed for TA-21 tasks.

ADS 1107: TA-21, Material Disposal Areas A, B, T, U, and V. This task consists of Material Disposal Areas A, B, T, U, V, landfills, and surface disposal areas. TA-21 was the plutonium processing, recovery, and fabrication facility at Los Alamos until 1978, when operations were transferred to TA-55. The Material Disposal Areas at TA-21 contain debris, TRU-mixed waste, and plutonium-processing equipment from the 1940s to the 1970s. Area T received approximately 10 curies of plutonium in a liquid waste stream from the 1940s through 1965. Plutonium and americium have been found below Area T to 100 feet. The Material Disposal Areas cover about 12 acres with remediation likely to be limited to removal followed by capping due to the great distance (~800 ft) to the deep aquifer. Removal and disposal are less likely. Possible contaminants include plutonium, americium, fission products, uranium, organic chemicals, and heavy metals. This activity constitutes the RFI/CMS for this task. Material Disposal Area B has been used since 1984 to study alternative cover designs potentially applicable for remediation of LANL sites. The objective is to study trench cover system design to maximize waste

site integrity by minimizing erosion and infiltration, and maximizing waste storage capacity. In FY90, a draft RFI Work Plan will be completed for TA-21 tasks.

ADS 1109: TA-21, Surface Contamination. This task consists of outfalls, spills, and contaminated areas. TA-21 was partially decommissioned and decontaminated (D&D) in 1977-1980. About 80 acres are associated with old decontaminated spills and outfalls surrounding the TA-21 area. Remediation of these potential release sites for radionuclides and organic chemicals ranges from selected removal of small volumes to the less likely removal and disposal of structures and associated larger contaminated volumes. This activity constitutes the RFI/CMS for this task. In FY90, a draft RFI Work Plan will be completed in tasks at TA-21.

ADS 1112: TA-26 Contaminated Areas. This task consists of potential release sites comprising approximately 1.5 acres. The sites include a canyon site disposal area, outfall areas, and septic tank south of the vault area. TA-26 (D-site) at East Gate consisted of a concrete storage vault, security buildings, and gun towers. These buildings were demolished in 1965 or 1966. Potential contaminants include tritium and other radionuclides. Possible remedial alternatives vary from selected removal followed by institutional controls to the less likely alternative of removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. FY90 activities include preparation of the draft RFI Work Plan.

ADS 1117: TA-31 Contaminated Areas. This task consists of a contaminated area associated with buildings approximately 1 acre in size. TA-31 (East Receiving Yard) had six warehouses, a receiving dock, and drum storage area. These structures were removed in 1954 and most of the land subsequently became a private housing area (Eastern Area near Los Alamos airport). An abandoned septic tank remains on a portion of the land owned by Los Alamos County. Potential contaminants include chemical and petroleum products. Possible remedial alternatives vary from selected removal of small volumes to the less likely alternative of removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. Activities to be undertaken in FY90 include drafting the RFI Work Plan.

ADS 1119: TA-32 Contaminated Areas and Structures. This task consists of several potential release sites which comprise approximately 7 acres. The sites include an old lab area, septic tanks and associated structures, and an incinerator. TA-32 was the medical research lab facility before 1953. The facility consisted of labs, offices, and an incinerator. TA-32 was removed as part of routine operations; no records are available on the decommissioning and decontamination of this facility. Potential contaminants include radionuclides and hazardous wastes. Potential remedial alternatives for these sites vary from selected removal followed by institutional controls to the less likely alternative of removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. FY90 activities include preliminary work on the RFI Work Plan.

ADS 1122: TA-33 Buildings and Outfalls. This task consists of buildings, outfalls, sumps, drains, septic tanks, magazines, firing sites and shafts, gunfiring areas, and drain lines. These structures are associated with the now-abandoned TA-33 gun firing and tower/firing site areas where munitions and weapons components were tested. The structures, debris areas, and associated outfalls may contain depleted uranium, beryllium, organic chemicals, heavy metals, high explosives residues, and in one old decontaminated spill site, plutonium. These potential release site areas covering about 140 acres are all expected to have low levels of contamination and would probably need

limited removal of contaminants and institutional controls. Removal and disposal could be possible at a few debris areas. This activity constitutes the RFI/CMS for this task. Activities in FY90 include preparation of the draft RFI Work Plan.

ADS 1125: TA-33 Subsurface Structures. This task consists of waste tanks, septic tanks, drain lines, and trenches. These underground structures are associated with TA-33 gun firing and tower/firing site areas where munitions and weapons components were tested. About 2 acres containing underground structures may be associated with these firing sites. The potential contaminants are organic chemicals, mercury, beryllium, tritium, and depleted uranium. Remedial actions will probably consist of limited removal followed by leaving these structures in place in most cases due to low contamination levels. Removal and disposal offsite is unlikely due to the expected low concentration and hazard potential of the contaminants. This activity constitutes the RFI/CMS for this task. FY90 activities include work on the draft RFI Work Plan.

ADS 1126: Material Disposal Areas. This task consists of Material Disposal Areas D, E, and K and a burning pit covering about 10 acres. The materials in D and E are debris from gun firing and tower/firing site areas at TA-33 where munitions and weapons components were tested. TA-33 has an operating tritium-handling facility as part of the weapons program which discharges effluents into an area called Material Disposal Area K. Remedial actions for D & E are expected to be possibly limited removal followed by institutional controls due to the low hazard potential of buried depleted uranium and small amounts of beryllium contamination. Area K is expected to contain a subsurface tritium plume (which would decay quickly [half-life is 12 yrs]) and possibly acids and organic chemicals requiring only institutional controls with limited removal and disposal after the tritium facility is decommissioned. This activity constitutes the RFI/CMS for this task. Anticipated activities in FY90 include preparation of the draft RFI Work Plan.

ADS 1129: TA-35, 42, 48, 55. This task consists of contaminated areas, debris areas, storage tanks, storm drains, outfalls, underground structures, drum storage, and septic tanks. TA-35 had many early sites where tritium and strontium-90 were processed. Several small experimental nuclear reactors were also developed and tested at TA-35. TA-42 was an incinerator for contaminated solid waste (now decommissioned and removed). TA-55 is the current plutonium production and fabrication facility for LANL. TA-48 processes medical and Nevada Test Site radioisotopes. These areas contain about 11 acres of potential surface and subsurface release sites with a variety of contaminants including mercury, plutonium, fission products, and organic chemicals. Remediation is expected to consist of limited removal followed by institutional controls, with removal and disposal of larger volumes less likely. This activity constitutes the RFI/CMS for this task. FY90 activities include preliminary work on the RFI Work Plan.

ADS 1134: TA-4, 5, 35, 52. This task consists of firing pits, firing sites, decommissioned buildings, outfalls, oil spills, septic tanks, petroleum and waste storage tanks, waste oil lagoons, and an abandoned reactor building. TA-4 and 5 were used as firing sites in the 1940s. Both sites have been decommissioned and structures removed. At TA-35 numerous outfalls to the canyons are visible from the current (laser fusion) and earlier operations. The fusion work requires large volumes of oil which have occasionally overflowed the sumps to the canyons. TA-52 was an experimental nuclear reactor which only operated a few months; therefore, the fission product inventory was very low with little residual contamination. TA-52 will be decontaminated before the RFI/CMS is completed. At TA-4 and 5 abandoned firing sites cover about 20 acres with potential contaminants including depleted uranium, beryllium, high explosives, and heavy metals. Remediation is expected to consist of possible limited removal followed by institutional controls with removal and disposal of larger volumes less likely. The

remaining surface and subsurface structures and outfalls at TA-35 and TA-52, covering 35 acres, have potential contaminants including fission products, organic chemicals, and PCBs. Remediation could consist of possibly limited removal followed by institutional controls, with expanded removal and disposal less likely. This activity constitutes the RFI/CMS for this task. FY90 activities include initiation of the RFI Work Plan.

ADS 1138: TA-45 Industrial Liquid Waste Treatment Plant. This task consists of an area of approximately 5 acres. The site resulted from the former industrial liquid waste treatment plant effluent released to Acid Canyon. TA-45 received industrial and radioactive liquid wastes from TA-1 (Main Technical Area during WWII). Until 1951 raw waste was discharged into Acid Canyon. By 1951 the TA-45 waste treatment plant was operating and most of the contaminants were removed before discharge. The plant was decontaminated and decommissioned in 1966. Extensive sampling and surveillance was done under the Formerly Utilized Sites: Remedial Action Program (FUSRAP) program. Possible remedial alternatives vary from selected removal for small volumes to removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. Drafting of the RFI Work Plan will be initiated in FY90.

ADS 1144: TA-49, Deep Subsurface Contamination. This task consists of several sites within an area of approximately 3 acres and consists of Material Disposal Area AB. At TA-49 underground hydronuclear experiments were conducted in 1960-61. The experiments involved high explosives, plutonium, beryllium, and lead in nuclear weapon configurations to test weapon safety. To support the experiments a small radiochemistry facility was also built at the site. Most aboveground structures have been removed and the surface decommissioned and decontaminated. Potential remedial alternatives for these mixed wastes vary from selected removal followed by capping to removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. FY90 activities include initiation of the RFI Work Plan.

ADS 1145: TA-49 Subsurface Structures. This task consists of several potential release sites comprising an area of approximately 4 acres. The sites include a leach field, surface radioactive contamination at TA-12 and -5, a landfill/trash-burning area, and surface contamination associated with Material Disposal Area AB. At TA-49 underground hydronuclear experiments were conducted in 1960-61. The experiments involved high explosives, plutonium, beryllium, and lead in nuclear weapon configurations to test weapon safety. To support the experiments a small radiochemistry facility was also built at the site. Historically, most above-ground structures were removed and the surface decommissioned and decontaminated. Possible remedial alternatives vary from selected removal of low-level surface contaminants followed by institutional controls to removal and disposal of larger volumes. This activity constitutes the RFI/CMS for this task. The RFI Work Plan will be initiated in FY90.

ADS 1147: TA-50, Material Disposal Area C. This task consists of TA-50 and Material Disposal Area C. TA-50 is the radioactive and industrial liquid waste treatment facility. Contaminated liquid is treated, contaminants precipitated, and solids drummed for disposal at TA-54. The treated effluent is released into Mortandad Canyon. The surface and subsurface structures near TA-50 encompass about 31 acres. Remediation ranges from no action, capping, and removal/disposal depending on the levels of uranium, plutonium, fission products, heavy metals, and organic chemicals found during the RFI. Area C is about 10 acres and contains TRU-mixed wastes in shafts, pits, and trenches. Remediation of Area C could be capping or possibly removal and disposal, although the latter is less likely. This activity constitutes the RFI/CMS for this task. FY90 activities include drafting the RFI Work Plan.

ADS 1153: TA-54, Material Disposal Areas L, G, H, and J. This task consists of potential release sites comprising an area of approximately 70 acres. The sites include Material Disposal Areas L, H, G, and J. TA-54 is a currently active, solid waste disposal area at Los Alamos. Radioactive (low-level and stored transuranic) wastes are handled at Area G. Area G also has buried pre-1973 transuranic mixed waste (6 trenches). Area L currently stores hazardous chemicals before shipment for treatment. Area L has many old shafts augured into the tuff where hazardous chemicals were disposed. Area H consists of shafts with classified waste. Area J consists of three trenches where flashed high-explosives-contaminated waste from TA-15 as well as other nonhazardous wastes are disposed. Potential contaminants include radionuclides, solvents and hazardous wastes. Potential remedial alternatives vary in scope from selected removal followed by institutional controls to removal and disposal of larger volumes. RCRA Closures are proposed for parts of Material Disposal Areas L, H, and G. Area G will be used to demonstrate a landfill cover design and determine a cost-effective optimized design for Los Alamos across the elevational and climatic gradient present at LANL. During FY90, pore gas sampling and vadose zone plume delineation will continue in preparation for the RFI/CMS at TA-54. This activity satisfies a Special Permit Condition of Module VIII of the HSWA permit for LANL.

ADS 2105: Installation Work Plan. The Laboratory's RCRA permit requires the preparation and annual updating of an Installation Work Plan (IWP) which will be approved by the Administrative Authority. The IWP will contain schedules for implementing the ER Program; general standard operating procedures for sampling, analysis, and quality assurance; a technical data management program; a health and safety program; and a community relations program. The first draft of the IWP will be prepared in FY90.

ADS 2107: Management Activities. This task consists of ER Program assessment-related activities, including task management/tracking, monthly reporting, preparing the ER Program Five-Year Plan, and other activities as appropriate. This is an ongoing task.

Task Descriptions for Remediations

ADS 1063: Interim Remedial Measures. This task includes remedial activities which have historically been implemented by the interim waste management program addressing old radioactive waste disposal sites. There is a continuing need for such activities at other radioactive/mixed waste/hazardous waste sites. Several old underground tanks also require removal. This activity may also include verification sampling at potential sites. The activity constitutes the CMI for this task. Activities under this task during FY90 will focus on underground storage tank removal and other interim remedial measures as needed.

ADS 1067: RCRA Mixed Waste Disposal Facility. The Laboratory intends to dispose of RCRA waste generated during RCRA closures, RCRA corrective actions, interim remedial actions, and CERCLA remedial actions in an onsite RCRA-permitted facility. This facility will be phased in as needed depending on the waste volumes generated. This task includes preliminary design and development of the RCRA Mixed Waste Disposal Facility in FY90.

ADS 1090: TA-16, Area P Landfill. The TA-16, Area P Landfill, which was used to dispose of residues from burning high-explosive-contaminated equipment and trash, is to be closed. A Closure Plan has been submitted to the New Mexico Environmental Improvement Division (NMEID). Anticipated closure will entail stabilization and capping of the "active" portion; run-on control; leachate collection; and ground water,

surface water, and subsurface moisture monitoring. It is possible that extensive deep ground water monitoring and vadose zone monitoring could be required. Implementing closure activities for this task in FY90 is contingent upon approval of the Closure Plan from the State of New Mexico. It is anticipated that the Closure Plan will be modified prior to approval.

ADS 1091: TA-16, Burning Ground Surface Impoundment. The TA-16 Burning Ground Surface Impoundment, which received effluent from sand filters used to separate and burn sludge from high explosive processing wastes, is to be closed. A Closure Plan was submitted to the New Mexico Environmental Improvement Division (NMEID) in 1987. The plan is to decontaminate and remove the liner and remove contaminated soil, if any, found beneath the impoundment. Provided approval to proceed is received from the State of New Mexico, the excavated surface impoundment area will be backfilled and reseeded in FY90.

ADS 1127: TA-35, Waste Oil Storage Pits. Two surface impoundments at TA-35 which were used to collect spilled or leaked oil from associated buildings are to be closed. Closure Plans were submitted to New Mexico Environmental Improvement Division (NMEID) in FY89. Closure is expected to remove contaminated liquid, residues, and contaminated soil. Provided that the State of New Mexico approves the final (revised) Closure Plan for this task, closure activities will be completed in FY90, and a closure certification report will be submitted.

ADS 1135: TA-40, Scrap Detonation Site. The TA-40 Scrap Detonation Site, an inactive site used to detonate scrap high explosives, is to be closed. A Closure Plan was submitted to the New Mexico Environmental Improvement Division (NMEID) in September 1985. The plan anticipates determining the extent of soil contamination, or lack thereof, by sampling the site itself as well as the canyon below the site. Contaminated soil, if any is found, may need to be removed and treated or disposed of as hazardous waste. Closure activities for this task in FY90 are contingent upon approval of the Closure Plan from the State of New Mexico.

ADS 1150: TA 54, Area L Waste Oil Storage Tanks. Six tanks used to store waste oil contaminated with metals and possibly PCBs, are to be closed. A Closure Plan was submitted to the New Mexico Environmental Improvement Division (NMEID) in 1988. Planned closure is to decontaminate the tanks. Initiation of closure activities for this task in FY90 is contingent upon approval of the Closure Plan from the State of New Mexico. It is anticipated that some modification of the plan will be necessary.

ADS 1152: TA-54, Areas L and H. TA-54, Area L, including inactive disposal shafts, surface impoundments, and storage facilities, and Area H, including inactive disposal shafts, are to be closed. A Closure Plan involving capping has been submitted to the New Mexico Environmental Improvement Division (NMEID). It is possible that removal of some wastes could be required. Existing organic vapor contamination is being investigated; additional study will be needed to determine if any treatment may be required. Contamination may lead to the need for extensive vadose zone and ground water monitoring. Closure activities for this task in FY90 are contingent upon approval of the Closure Plan from the State of New Mexico. It is anticipated that the Closure Plan will be modified prior to approval.

ADS 2106: Management Activities. This task consists of ER Program remediation-related activities, including task management/tracking, monthly reporting, preparing the ER Program Five-Year plan, and other activities as appropriate. This an ongoing activity.

Task Descriptions for Decontamination and Decommissioning

ADS 1052 B: CMR Wing 9 Decommissioning. This task involves the removal of contaminated alpha containment boxes and decontamination of the building for reuse. Removal of the contaminated boxes is scheduled for FY90.

5.2. Resources

The Laboratory ER Program Office staffing will be increased on an as-needed basis to implement the ER Program. The Laboratory will use existing internal resources to the extent possible. However, it is anticipated that external contracting (for example, for sampling and sample analysis) will be required to meet schedules and deliverables required by the Laboratory's RCRA operating permit.

5.3. Schedules

The time frame for completing the RFI/CMS (Assessment Tasks) is assumed to be six years: the RFI Work Plan is scheduled for one year, completion of the RFI is assumed to require three years, and completion of the CMS is scheduled for two years. The ER Program has sequenced its work tasks to meet RCRA schedule requirements. Remediation tasks are scheduled to meet the requirements of the Laboratory's RCRA operating permit.

The level of confidence in the task budgets and schedules for the ER Program is very low because most tasks consist of multiple potential release sites that may or may not exist and because standard unit cost factors are used rather than site-specific cost estimates. Cost estimates could be off significantly because of increased or decreased levels of contamination. Cost estimates and schedules will be updated on task- and site-specific bases as additional information becomes available during field investigation. Updated task scopes and schedules will be negotiated with the appropriate regulating agency under the Laboratory's RCRA permit.

5.4. Costs

The LANL ER Program tasks for purposes of cost estimating are classified as (1) very large (Work Plan [\$1000K], RFI [\$24000K], CMS [\$4000K]); (2) large (Work Plan [\$500K], RFI [\$12000K], CMS [\$2000K]); (3) medium (Work Plan [\$350K], RFI [\$8000K], CMS [\$1500K]); (4) small (Work Plan [\$250K], RFI [\$6000K], CMS [\$1000K]); and (5) very small (Work Plan [\$200K], RFI [\$3000K], CMS [\$750K]). The size classification is based on the number of potential release sites, including sampling sites and number of samples. Additionally, the tasks are sequenced to meet RCRA schedule requirements for submitting Work Plans. The Laboratory will enhance task cost estimates as investigations proceed.

Table 5.4.1, below, presents the total program (Environmental Restoration and Decontamination and Decommissioning) funding for FY90-95. The program funding totals for FY91 through FY95 are the first approximation of program funding requirements for this planning period and are consistent with funding information presented in the DOE Headquarters Five-Year Plan issued August 1989. Table 5.4.2 summarizes costs of Environmental Restoration activities in FY90. The total FY90 funding for this program represents the current planning for this fiscal year and is consistent with the latest funding allocation from DOE Headquarters.

TABLE 5.4.1
ENVIRONMENTAL RESTORATION FUNDING LEVELS, FY90-FY95
(Dollars in Thousands)
(including Decontamination & Decommissioning)

<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
\$16,143	\$18,192	\$31,756	\$37,616	\$37,062	\$39,692

FY90: Current funding guidance, less Gramm-Rudman-Hollings, and RDDDT&E.
FY91-95: Direct from DOE Headquarters ER/WM FYP Funding Requests subsection.

TABLE 5.4.2
ENVIRONMENTAL RESTORATION FY90 BUDGET FUNDING
(Dollars in Thousands)

<u>ADS#</u>	<u>ACTIVITY TITLE</u>	<u>TOTAL (\$K)</u>
CERCLA/RCRA		
1049	Canyons (AL-LA-1) assessment	666
1062	Interim remedial measures-assess. (AL-LA-57)	297
1063	Interim remedial measures-remed. (AL-LA-57)	515
1066	NEPA documentation assessment (AL-LA-59)	799
1067	RCRA mixed waste disposal facility (AL-LA-RC-9)	1,243
1071	TA-0, Areas, fir. ranges etc. assess. (AL-LA-25)	100
1072	TA-0, Townsite areas etc. assess. (AL-LA-26)	100
1073	TA-0, Townsite areas etc. assess. (AL-LA-26)	249
1078	TA-1, Contam. structures townsite assess (AL-LA-11)	100
1079	TA-10, Firing sites, str townsite assess. (AL-LA-15)	100
1082	TA-11, 13, 16, 24, 25 outfalls, etc., assess (AL-LA-12)	80
1089	TA-15, Firing pts A, B, G, DAHRT assess. (AL-LA-22)	150
1096	TA-19, Contam struc. assessment (AL-LA-45)	361
1106	TA-21, Subsurface structures assess. (AL-LA-9)	970
1107	TA-21, Mat'ls disp areas A, B, U, V assess (AL-LA-8)	361
1109	TA-21, Outfalls, bldgs & spills-assess (AL-LA-10)	150
1112	TA-26, Contam areas assess (AL-LA-43)	210
1117	TA-31, Contam areas assessment (AL-LA-49)	100

TABLE 5.4.2 (CONT.)
ENVIRONMENTAL RESTORATION FY90 BUDGET FUNDING
(Dollars in Thousands)

<u>ADS#</u>	<u>ACTIVITY TITLE</u>	<u>TOTAL (\$K)</u>
CERCLA/RCRA (Cont.)		
1119	TA-32, Contam areas & struc etc. assess (AL-LA-40)	250
1122	TA-33, Bldgs and outfalls assess. (AL-LA-3)	250
1125	TA-33, Subsurface structures assess. (AL-LA-4)	350
1126	TA-33, Material disposal areas-assess. (AL-LA-2)	100
1129	TA-35, 42, 48, 55-assess. (AL-LA-6)	100
1134	TA-4, 5, 35, 52-assess. (AL-LA-7)	200
1138	TA-45 Indus. liq. waste tr. plt. assess (AL-LA-53)	280
1144	TA-49, Deep subsurface contam. assess. (AL-LA-51)	150
1145	TA-49, Surface structures assessment (AL-LA-52)	100
1147	TA-50, Material disposal area C-assess	100
1153	TA-54, Mat'l displ. areas L, H, G, J assess (AL-LA-46)	200
2105	Installation work plan assess. (AL-LA-60)	1,608
2106	Management activities (AL-LA-61) remediation	636
2107	Management activities (AL-LA-61) assessment	2,414
	Subtotal media	13,289
RCRA		
1090	TA-16, Area P landfill closure rem. (AL-LA-RC-4)	50
1091	TA-16, Burning Gnd surface etc. remed. (AL-LA-RC-1)	175
1127	TA-35, Waste oil storage pit etc. rem. (AL-LA-RC-3)	788
1135	TA-40, Scrap detona, site closure rem (AL-LA-RC-5)	187
1150	TA-54, Area L waste oil etc. remed. (AL-LA-RC-2)	147
1152	TA-54, Areas L & H closure remediation (AL-LA-RC-6)	<u>524</u>
	Subtotal media	1,871
DECONTAMINATE & DECOMMISSION		
1052	CMR wing 9 decommissioning	<u>983</u>
	Subtotal media	<u>983</u>
	Total category	16,143

6.0. WASTE MANAGEMENT FIVE-YEAR PLAN PROGRAM

6.1. Task Descriptions

Waste Minimization Task Descriptions

ADS 4124: Waste Minimization-Implementation. Waste minimization is a Laboratory-wide operation for the minimization of chemical, radioactive, industrial and sanitary wastes. The waste minimization implementation effort will provide for personnel, contractor support, and capitalization of equipment needed for minimization activities. The activity will provide technical support in material substitution, administrative procedures, recycling and reuse, and a dedicated education program. Activities to be initiated in FY90 include developing engineering applications research for replacing and recovering halogenated hydrocarbons; recycling paper; recycling depleted uranium-238; recirculating and recycling Laboratory chemicals; recovering and recycling strategic metals; and reviewing procedures and Standard Operating Procedures (SOPs).

ADS 4125: Waste Minimization-Planning. Waste minimization is a Laboratory-wide operation for the minimization of chemical, radioactive, industrial and sanitary wastes. The waste minimization planning effort will provide administrative direction and oversight of minimization activities. This activity will define the waste streams that can be minimized and how to most efficiently use available resources. Activities to be initiated in FY90 include prioritizing waste streams; upgrading the Waste Coordinator system; utilizing purchasing discipline; and beginning efforts at employee education, communication and training.

Task Descriptions for Treatment Operations

ADS 3075: Low-Level Waste Compactor System. An approximately 1,600-ft² metal building on a concrete slab to house a new compactor-baler (Waste Management capital equipment funded) will be constructed. Because low-level radioactive solid wastes will be processed, building ventilation will include High-Efficiency Particulate Air (HEPA) filtration. Utilities requirements include electricity, water, sanitary sewer, and telephone.

Compaction/baling of low-level solid radioactive waste has been accomplished in a facility at Area G since 1977 as a primary means of reducing waste volume and stabilizing waste form for burial. The current facility and equipment is rapidly approaching the end of its useful lifetime, and technological advances have resulted in far more capable and efficient equipment which is compatible with our existing small facility. In addition to obtaining even greater compaction, the new larger equipment will permit considerably greater quantities of waste to be processed. In FY90, construction of a 1,600-ft² metal building to house a new compactor-baler for waste compaction will be started.

ADS 3088: Treatment - Base Program. This activity focuses on three main waste types:

- **Chemical Waste Management:** The treatment of chemical waste includes bulk acid/base neutralization, incineration, chemical precipitation, and filtration. Waste

identified in RCRA Part 261 is either treated onsite or shipped offsite for treatment so that the waste is rendered nonhazardous and therefore exempt from RCRA. The major cost associated with chemical waste treatment is the shipping of waste offsite.

- **Hazardous Liquid Waste:** Hazardous chemical wastes are converted by chemical reactions to nonhazardous residues that can be disposed of onsite, stored, or shipped offsite in compliance with RCRA.
- **Gas Cylinders:** The treatment of gas cylinders is by detonation for unknown, reactive, and nontransportable cylinders. Also, some cylinders of known content (if they comply with DOT regulations) are sent offsite for treatment.

In FY90 offsite treatment of gas cylinders will begin. Hazardous wastes will continue to be treated offsite.

ADS 3098: Treatment/TA-55 to TA-50 Liquid Waste Line Replacement. This activity involves replacing the stainless steel lines which transfer liquid plutonium process waste from the plutonium facility (TA-55) to the treatment plant (TA-50). The secondary containment for these lines failed a vacuum leak test. Leaks in the stainless steel lines could result in undetected release of plutonium to the environment. The TA-55 liquid waste contains most of the radioactivity received at the TA-50 treatment plant. New double-encased lines, including manholes and state-of-the-art monitoring will be used. Title II design will be completed in FY90.

ADS 3099: Treatment/Thermal Destruction. This project funds the operation and upgrading of the Controlled-Air Incinerator (CAI). The modified CAI housed in the Treatment Development Facility (TDF) at TA-50-37 is being upgraded for routine treatment of newly generated TRU wastes and TRU mixed wastes. The facility was originally constructed as a development and demonstration project for volume reduction of defense TRU waste. The activity includes support needed through design and construction of the incinerator. The LLW/mixed-waste incinerator will burn combustible low-level wastes and low-level mixed waste. Startup of the CAI depends on the DOE's decision as to NEPA requirements for the upgrade. An EA would allow startup in FY91. An EIS would delay startup for two years. Startup is prohibited until 11/29/90 by the Richardson Amendment to the Defense Appropriation Bill. The amendment allows NMEID time to write air emissions regulations that will cover the CAI. During FY90, mechanical upgrades of the CAI will be completed.

ADS 3100: TRU Liquid Waste Treatment Facility. This activity involves retrofitting and reconfiguring the Corrugated Metal Pipe (CMP) Saw Facility to develop a facility for TRU waste sorting, processing, and immobilization operations during FY93-94. An FY94 startup for the processing operations is scheduled. Refitting will include accomplishing any upgrading needed to ensure that the facility meets all applicable design standards for a "Moderate Hazard Nuclear Facility." Gloveboxes will be installed for accomplishing waste package opening, waste sorting, and repackaging. An immobilization (cementing) system will be designed and installed to process any liquids, particulates, and other waste forms unacceptable at WIPP. Other treatment processes may be added as needed. Combustibles will be sorted for incineration.

This Defense Waste Management-funded project is the final step in implementing the Lab "Final TRU Waste Inventory Workoff Plan." This plan, developed per DOE directions and consistent with DOE-wide plans, provides the means for disposing at the WIPP essentially all TRU wastes accumulated at the Laboratory since 1970.

ADS 3104: Waste Management Treatment. Included treatment activities are TRU waste retrieval and certification, low-level waste compaction, and incineration of some mixed low-level wastes. Operating and planned facilities for contact-handled TRU waste include the following: Size Reduction Facility (SRF), Waste Preparation Facility (WPF), Nondestructive Examination and Nondestructive Analysis (NDE/NDA), and the CMP-Saw/Process Facility. Currently, approximately 7300 m³ of uncertified TRU waste remains accumulated in storage at Los Alamos awaiting these treatment operations.

Activities scheduled for FY90 include beginning operations at the WPF to sort, clean, and verify retrieved packages, and beginning operations at the NDE/NDA Facility to certify wastes that do not require processing.

ADS 3269: Geothermal Site Closing. This project entails cleaning out the earthen pond at the Fenton Hill Geothermal Site (pond EE-1 which is used for experimental water storage and storage of drilling fluids), installing a seepage detection system in the pond, and providing a pond liner to prevent migration of the pond contents into the underlying aquifer. These tasks are listed as DOE commitments in the Ground Water Discharge Plan (31) for Fenton Hill that has been approved by the State regulatory agency, NM Oil Conservation Division. This Discharge Plan is up for renewal and renegotiation in FY90 and will further underscore the commitment. The project also provides for site remedial work at the cessation of operations as required by the US Forest Service's land use permit. During FY90 conceptual engineering design will be completed.

ADS 4111: Thermal Destruction Base Program. The operating and capital equipment funding designated for this activity is partial support for the operation, engineering support, and maintenance of the Los Alamos TRU and LLW/MW incinerators located at TA-50-37. The objective of this activity includes volume reduction of both TRU and LLW wastes, destruction of chemical constituents of both TRU mixed and LLW mixed wastes to maintain compliance with RCRA mixed waste regulations, disposal of biological wastes, thermal treatment of some environmental restoration wastes, and disposal of mixed PCB wastes and selected RCRA hazardous wastes. Supported activities include preparation, incineration, residue retrieval, and final disposition. In FY90, this funding includes engineering support and maintenance of the Los Alamos TRU and LLW/MLW incinerators.

ADS 4114: Treatment of Radioactive Liquid Waste. This activity ensures the base treatment program for radioactive liquid wastes by funding salaries, overhead, materials, and services to treat those wastes in FY90. Low-level liquid radioactive wastes from throughout LANL are collected in a dedicated, continuously monitored pipeline system that discharges to a waste treatment facility at TA-50-1. Processing at this plant, consisting of chemical/physical separation and ion exchange, concentrates the radioactivity in a residue that is dewatered to a solids concentration of 30-40%. The liquid from which the radioactivity was removed is analyzed to determine that both the radioisotope and chemical content are below guideline limits before discharge to the environment.

Task Descriptions for Waste Storage Operations

ADS 3079: Mixed LLW Storage/TRU Waste Storage Operations. This activity provides for the sorting, stacking, inspecting of packaged wastes, and the purchase and erection of fabric structures and pads to store waste packages out of the direct environment. Mixed LLW included in this activity includes such streams as liquid

treatment plant sludge, uranium chips/turnings, and other miscellaneous organic, inorganic, and reactive materials contaminated or activated with radioactivity. Proper storage is mandated by RCRA. Since 1970, DOE has required storage of all solid wastes defined as TRU. Currently, approximately 7,600 m³ of WIPP-certified TRU waste is in such retrievable storage. This is an ongoing activity.

3084: Storage/Chemical Waste Management. This activity provides for the management of chemical waste storage. The storage of chemical waste requires extensive record keeping and management of hazardous waste inventory. This activity includes all RCRA and TSCA permitted storage at TA-54, Area L. Specific activities associated with storage are required under the RCRA and Laboratory administrative policy to ensure worker safety, the maximum protection of the environment, and regulatory compliance. In FY90, this project will fund activities associated with storage of chemical wastes that are required under the RCRA permit and the Laboratory's administrative policy to ensure worker safety and maximum protection of the environment.

Task Descriptions for Waste Disposal Operations

ADS 3056: Asbestos and PCB Disposal. Asbestos waste generated at the Laboratory from decommissioning activity is permitted through the State of New Mexico and disposed onsite. Asbestos wastes are packaged in plastic-lined cardboard boxes. They are collected and transported to Area G or J for disposal.

Oil is used throughout the Laboratory in equipment ranging in size from several-thousand-gallon transformers to several-liter-size pumps. Some of the oil is PCB contaminated. Depending on the level of PCBs present in waste oil, different disposal locations are used. Oil free of PCBs (<5ppm) is stored for offsite incineration as a waste fuel. Oil, equipment, and cleanup debris contaminated with PCB levels greater than 500 ppm are sent offsite for incineration. Oil with PCB levels greater than 500 ppm is stored at TA-54, Area L, until it can be shipped to an approved incineration facility. All soil, equipment, and other solid materials contaminated with PCB oil and radioactivity are disposed of at Area G. In FY90, funding includes the construction of a controlled landfill suitable for monofilling asbestos, which is required under recent State solid waste regulations.

ADS 3069: TA-54, Area G Expansion. This activity funds the expansion of the existing TA-54, Area G, the Laboratory's radioactive solid waste burial/storage site, and will include the installation of approximately 6,300 linear ft of 8-ft chainlink security fencing having double outriggers and concertina "razor" wire on top, the relocation and expansion of an existing transportable control facility, the purchase of an additional office facility, utilities modifications, and other modifications to accommodate operations within the expanded waste disposal area.

TA-54, Area G has been the primary LANL PCB and radioactive solid waste disposal/storage area since the late 1950s. The currently fenced portion of this area on Mesita del Buey has space remaining for burial of Laboratory-generated low-level waste to continue operations approximately 2 years. Thus expansion of Area G is required for support of overall LANL operations. This expansion will provide space for approximately 15 years of additional site operations. Further future expansion still is possible. This expansion provides for the remediation of one small Indian ruin. This expansion will be completed in FY90.

ADS 3074: Low Level Solid Disposal. This activity provides for the safe disposal of radioactive solid low-level wastes in accordance with DOE 5820.2A. The activity is in an active facility, TA-54, Area G.

The volume of low-level waste to be buried is estimated to range between 4,000 and 6,000 m³/yr. Several D&D projects are currently identified and additional projects could result in a significant increase in waste disposal volumes, although such increases could be substantially offset by waste treatment and minimization program efforts. Included in the Los Alamos waste burial operations are the physical excavation of burial pits and shafts, safe and proper disposal of waste into these facilities, and backfill operations. All low-level waste disposal by shallow land burial is conducted at the LANL Area G site. Only Los Alamos-generated wastes are disposed. This is an ongoing activity.

Task Descriptions for Continuity of Operations

ADS 3057: LLW Radiological Characterization Study. This activity funds the review of current characterization procedures to support DOE Order 5820.2A so that improvements in the methods used to determine radionuclide concentrations can be identified. If no suitable technology for determining radionuclide levels exists for certain waste streams, and if the radionuclide levels for those waste streams do not add significantly to overall source terms, the Laboratory will petition DOE for exemption of these waste streams from characterization. The work produced will support activity at TA-54, Area G, and at a number of waste-generation sites throughout the Laboratory. A study of alternatives to current radionuclide characterization procedures will be completed in FY 90.

ADS 3058: Base Program. General chemical waste management activities are planning, program development, record keeping, training, general permit maintenance, generator education, professional development, field sampling, contract management, and onsite waste transfer. The majority of this activity takes place at TA-54, Area L, the Laboratory-permitted treatment and storage area for RCRA waste and RMW. In FY90, this project will support the Laboratory's effort to come into compliance with DOT regulations of the draft of DOE Order 5480.3 and to evaluate and upgrade existing modes of waste transport.

ADS 3059: Continuation of Operations. In FY90, this project will support and maintain ongoing waste treatment, storage and disposal operations, which include safety analyses of disposal sites and other waste facilities; mixed waste regulatory compliance; RCRA and other required permitting of operating facilities; delisting of treated waste streams; WIPP certification verification; TRU workoff Environmental Assessment, environmental monitoring; records management; and TRU waste transportation to WIPP.

ADS 3060: LLW Certification Program. In FY90 a LLW certification program will be developed in order to comply with the requirements of DOE Order 5820.2A.

ADS 3061: LLW System Performance Assessment. This activity funds the preparation of a systems performance assessment for low-level waste that meets the requirements of DOE Order 5820.2A. The Laboratory is preparing a long-range plan addressing all waste-handling activities. The long-range plan will identify all regulations and orders applying to waste handling and will assess both technical and regulatory deficiencies. A systems performance assessment will be prepared as part of this plan. When the assessment is completed, it will be maintained on an ongoing basis. The systems performance assessment will be initiated in FY90.

ADS 3062: Low/Mixed Waste QA Program. This activity will develop and maintain a quality assurance program for low/mixed waste operations and disposal practices that meets DOE Order 5820.2A. The program will be developed in FY90.

ADS 3063: Mixed LLW Analysis. RCRA regulations and DOE Order 5820.2 require that the hazardous component of mixed LLW waste be characterized to allow treatment, storage, and disposal in accordance with RCRA regulations. DOE Order 5820.2 requires improved characterization of the radionuclide component of LLW. This activity will establish and maintain sampling and analytical programs and protocols to meet these requirements. This activity will be initiated in FY90.

ADS 3064: Mixed Waste Management Certification. This activity will establish and maintain a certification program to ensure proper and complete segregation of hazardous and mixed waste and mixed LLW from both noncontaminated waste and other LLW, and to ensure proper handling, sampling, packaging, and documentation of mixed LLW in accordance with RCRA regulations and DOE Order 5820.2A. The program will be initiated in FY90.

ADS 3071: Radiological Performance Assessment - LLW Disposal. This activity funds the preparation of a radiological performance assessment for the LLW disposal site. Preparing the performance assessment is divided into three phases: Phase 1, developing appropriate scenarios, data bases, and simulations models; Phase 2, performing the screening of the second- and third-level simulations; and Phase 3, completing the performance assessment. When the assessment is completed, the performance assessment will be maintained on an ongoing basis. In FY90, work will be initiated on appropriate scenarios, data bases, and simulation models to complete Phase I of the performance assessment for the disposal site.

ADS 3095: Treatment/Compacting, Reducing, and Stabilizing LLW. This project will undertake a study of alternative technologies for compaction, size reduction, and stabilization of wastes received in cardboard boxes and oversized wastes that cannot be incinerated. Based on the results of the study, the Laboratory will pursue a demonstrated technology that meets the requirements of DOE Order 5820.2A. This study will be initiated in FY90.

ADS 3105: Technical Oversight for Waste Management. The purpose of this activity is to provide continuing waste management oversight for activities such as the development, testing, and documentation of processes for the safe handling, storage, treatment and disposal of a variety of toxic, hazardous, and radioactive wastes. The many waste management facilities and processes scheduled for construction and installation require design criteria, conceptual design, engineering analysis and assessment, process design, oversight of installation, documentation, and equipment startup and check-out.

The activity is necessary so that the application of waste treatment and disposal technology is assessed in a timely manner to allow funding, design, and construction of process and regulations. The effort is ongoing because orders, regulations, and waste-handling economics will continue to change.

ADS 3267: Biomonitoring for NPDES Permit. This project consists of NPDES biomonitoring which will be done in FY 90 to support the NPDES permit, as required by the EPA, and implementation of corrective actions that will mediate chronic and acute toxicity problems with NPDES waste streams, which will be discovered during the monitoring process. Biomonitoring is performed using whole wastewater effluents samples from more than 100 wastewater discharges and test organisms (i.e., both invertebrate and vertebrate organisms). The organisms are placed in the effluent and toxicity levels are determined dependent on mortality. If significant mortality is evident, extensive effluent evaluations must be performed to determine the toxic agent(s). Once determined, wastewater treatment must be installed to mitigate toxicity. This project will hopefully eliminate the need for continuous biomonitoring requirements in future years (this effort would be beyond the normal base program). Both EPA and the State are developing stringent toxicity controls that will require biomonitoring and more extensive wastewater treatment to meet toxicity limits. This activity will be initiated in FY90.

ADS 4112: Decontamination. This activity includes decommissioning operations which meet the requirements of DOE Order 5220.2A such as:

- maintaining lists of contaminated facilities, including operational records, contamination levels, site characterization, and advanced decommissioning planning;
- management input to design of new facilities; and
- review of all construction jobs for compliance with NEPA, RCRA, CERCLA, and SARA requirements.

Decontamination activities are conducted throughout the Laboratory by trained decontamination personnel as part of a waste minimization effort. Equipment items are decontaminated for reuse, thus eliminating them from the waste stream. Work areas are decontaminated using techniques that will minimize the volume of radioactive or mixed wastes generated. Lead and mercury are processed to remove their radioactive contamination, eliminating a mixed waste. This is an ongoing activity.

ADS 4113: Radioactive Liquid Waste. This activity funds functions included in continuity of operations, i.e., those which do not involve direct handling of radioactive liquid wastes but which are essential supportive activities. Included are activities that ensure, verify, and document the acceptability and compliance of all waste management operations, from generating the waste to its ultimate disposal, with all environmental, health, and safety requirements/regulations. Planning and coordinating activities necessary to ensure effective and proper operations are also included. A primary assumption is that waste management functions of treatment, storage, disposal, and minimization cannot be properly completed without the supportive accomplishment of the continuity functions. Most functions identified under continuity of operations are specific regulatory requirements.

Specific activities include: low-level radioactive liquid effluent records management, mixed waste analysis, TRU waste records management, TRU waste certification, and low-level waste records management. Additional functions include inspection of waste management facilities to ensure continuing safe operations, TRU and LLW certification verification, long-range planning, RCRA and other required permitting of operating facilities, delisting of treated mixed-waste streams, and interactions with waste generators to minimize the quantity and toxicity of waste generated. This is an ongoing activity.

ADS 4123: Filter Test Facility Support. This project continues the support efforts of the DOE Filter Test Facilities (FTF) to ensure that their quality assurance tests of high-efficiency particulate air (HEPA) filters satisfy appropriate technical and environmental standards. Three overall objectives are: 1) provide technical assistance through several continuing scheduled activities, which are planned in conjunction with the FTF and required by DOE Nuclear Standards; 2) assist in solving special technical problems; and 3) provide technical input into decision-making and implementation processes relating to the Filter Test Facility Support Laboratory project recommendations.

By providing technical support to the FTF, DOE will significantly enhance each FTF's ability to maintain a consistently high level of technical performance, as required by the recently approved nuclear standards; enhance the comparability of results among FTFs; and support documentation and calibration procedures. This, in turn, will assist DOE in assuring that airborne particulate contaminants are controlled in a manner consistent with the DOE "As Low As Reasonable Achievable" philosophy and in compliance with environmental regulations. FY90 activities include support on flow plate RRT and completion of the flow plate implementation.

6.2. Resources

The Waste Management Program will use existing internal resources to the extent possible. It is anticipated that external contracting may be required to meet the schedules imposed by the RCRA operating permit.

6.3. Schedules

Specific schedules for individual tasks will be developed based upon available funding for waste management activities. Project Team Leaders assigned to specific tasks are responsible for developing detailed work schedules, the contents of which are beyond the detail level appropriate for this report.

6.4. Costs

Table 6.4.1 presents the total program funding for FY90-95. The program funding totals for FY91 through FY95 are the first approximation of program funding requirements for this planning period and are consistent with funding information presented in the DOE Headquarters Five-Year Plan issued August 1989. Table 6.4.2 summarizes costs of waste management activities in FY90. The total FY90 funding for this program represents the current planning for this fiscal year and is consistent with the latest funding allocation from DOE Headquarters.

TABLE 6.4.1
WASTE MANAGEMENT FUNDING LEVELS, FY90-FY95
(Dollars in Thousands)

<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
\$21,776	\$30,428	\$32,677	\$36,678	\$40,228	\$58,904

FY90: Current funding guidance, less Gramm-Rudman-Hollings, and RDDT&E.
FY91-95: Direct from DOE Headquarters ER/WM FYP Funding Requests subsection.

TABLE 6.4.2
WASTE MANAGEMENT FY90 BUDGET FUNDING
(Dollars in Thousands)

<u>ADS#</u>	<u>ACTIVITY TITLE</u>	<u>TOTAL (\$K)</u>
WASTE MINIMIZATION		
4124	Waste Minimization - Implementation	677
4125	Waste Minimization - Planning	<u>181</u>
	Subtotal media	858
TREATMENT		
3075	Low-level waste compactor system	367
3088	Treatment - base program	4,320
3098	Treatment/TA-55 to TA-50 liquid waste line	985
3099	Treatment/thermal destruction	1,253
3100	Treatment/TRU waste treatment facility	1,002
3104	Waste management treatment	1,210
3269	Geothermal site closing	70
4111	Treatment - thermal destruction base program	872
4114	Treatment - radioactive liquid waste	<u>1,623</u>
	Subtotal media	11,702

TABLE 6.4.2 (CONT.)
WASTE MANAGEMENT FY90 BUDGET FUNDING
(Dollars in Thousands)

<u>ADS#</u>	<u>ACTIVITY TITLE</u>	<u>TOTAL (\$K)</u>
STORAGE		
3079	Mixed LLW storage/TRU waste storage operations	339
3084	Storage/chemical waste management	<u>1,260</u>
	Subtotal media	1,599
DISPOSAL		
3056	Asbestos & PCB disposal	578
3069	Disposal: TA-54 Area G expansion	367
3074	Low-level solid disposal	<u>629</u>
	Subtotal media	1,574
CONTINUITY OF OPERATION		
3057	Cont. of operations/LLW rad. chara. study	104
3058	Cont. of operations - base program	751
3059	Cont. of operations	1,119
3060	Continuity of operations/LLW certification	343
3061	Cont. of operations/LLW sys perf assess	103
3062	Continuity of operations/low/mixed waste QA prog	70
3063	Continuity of operations/mixed LLW analysis	552
3064	Continuity of operations/mixed waste certif.	70
3071	Radiological performance assess-LLW disp	207
3095	Treatment/compacting reducing & stabilizing LLW	104
3105	Technical oversight for waste management	308
3267	Biomonitoring for NPDES permit	277
4112	Continuity of operations - decontamination	996
4113	Radioactive liquid waste	796
4123	Filter test facility support	<u>243</u>
	Subtotal media	<u>6,043</u>
	Total category	21,776

7.0. COMPLIANCE WITH NEPA

The actions proposed to be undertaken for Five-Year Plan to achieve compliance with the National Environmental Policy Act (NEPA) are not obvious now. The DOE has been the subject of a complaint filed by the Natural Resources Defense Council (June 17, 1989) requesting the preparation of a Programmatic Environmental Impact Statement (PEIS) on this Five-Year Plan and on the Modernization Study. The nature, contents, and timing of any PEIS will have a significant effect on the NEPA documentation that would be tiered from this programmatic document.

NEPA Program at the Laboratory. The NEPA program is managed by the Environmental Assessments and Resource Evaluations Section of the Environmental Protection Group in the Health, Safety, and Environment Division. DOE has established procedures for fulfilling its NEPA responsibilities that include an ADM, an environmental remark that is intended to be used for determining the appropriate level of NEPA documentation.

The staff responsible for NEPA compliance reviews the new projects for potential environmental impact and prepares ADMs on all projects that cannot be categorically excluded and on categorically excluded projects likely to engender public concern. The projects for which ADMs are prepared generally include:

- major new actions and line items with the potential for significant environmental impact involving processes not covered in the site-wide EIS, processes new to the Laboratory, and expanded activities that are of known environmental risk;
- actions and line items with a potential for negative public reaction involving perceived highly hazardous materials and disturbed areas viewed by large numbers of the public and adversely affecting critical habitats or cultural resources; and
- actions for which a categorical exclusion would be based on coverage in other NEPA documents (for example, the site-wide EIS) (DOE/AL decision in October 1989).

Secretary of Energy Notice (SEN-15-90, February 5, 1990) restructured NEPA compliance. Although the implementation procedures are not entirely clear, the following changes at a minimum will take place:

- all decision-making authority over NEPA which had been delegated to the field offices (and/or contractors) is withdrawn, effective February 2, 1990;
- information documents for all categorical exclusions will be forwarded to DOE/HQ (EH-25; NEPA Project Assistance Office) for approval;
- ADMs and the accompanying Memos to File (MTF) will no longer be acceptable after September 30, 1990. (An ADM is not a NEPA document, but is a DOE pre-NEPA creation.) A project information document will be prepared in order to provide adequate information for DOE/HQ-EH to determine the proper level of NEPA documentation (Environmental Assessment or Environmental Impact Statement); and
- implementing regulations will be published in the Federal Register.

DOE/HQ-EH is also placing increased emphasis on analysis and documentation of long-term and cumulative impacts of projects and on assuring the implementation of any mitigation measures included in a NEPA document. The NEPA program at LANL has not addressed characterization of the environmental resources of the Laboratory in a sufficiently rigorous way such that assessment of cumulative impacts will be feasible. In addition, follow-up to NEPA documents and tracking of the mitigation measures is not part of the current NEPA program at LANL. Characterization of potential impacts to the ecosystem and follow-up to mitigation proposals will be necessary to be in compliance with NEPA.

Project Identification and Review. The initial step in reviewing new projects or programs for appropriate environmental documentation is clearly identifying those new projects. Historically, the NEPA staff has relied on the following sources of information:

- lists of all line items and general plant projects (GPP) from the Facilities Engineering Division (ENG);
- lists of all projects, such as construction projects, office furniture installation, building modifications and installation of transportables, entered into the formal job number system; and
- lists of all projects for which a siting determination had been made by ENG. Because these projects involve groundbreaking, the review is undertaken as early in the project as possible to identify potential impacts on critical habitats or cultural resources. The NEPA staff reviews these projects when they become sufficiently defined to evaluate overall environmental impacts.

In June 1987, HSE Division integrated the process of project identification and review into the HSE Preliminary Project Review Process. Proposed new projects or modifications are identified using jobs numbers, line items, GPP funding, groundbreaking, etc., and any other means identified by HSE field personnel. A questionnaire is sent to the responsible operating entity, with follow-ups by both the HSE contact system and the Engineering Construction Project Management Group. The questionnaire is returned to HSE and reviewed by a team of HSE and ENG personnel to identify ES&H requirements for the project. The questionnaire addresses more than NEPA: industrial safety, industrial hygiene, radiation protection, criticality safety, fire protection, etc. A checklist identifying the potential compliance issues is returned to the project personnel and HSE/ENG staff for appropriate action. In the case of NEPA, the staff prepares the document.

The Laboratory Review Procedures. All ADMs and all NEPA documentation are reviewed internally within the Laboratory for technical accuracy. A final review for completeness and consistency with Laboratory mission and policies is made by the Laboratory Environmental Review Committee (LERC). This committee includes representatives from several divisions at the Laboratory, including Facilities Engineering, Legal, and Budget and Finance. LERC reports to the Associate Director for Operations, to whom the Laboratory Director has delegated responsibility for environmental documentation. After review and approval, the environmental document is transmitted by the Associate Director for Operations to the Manager of the Los Alamos Area Office.

DOE Review Procedures. NEPA documents are prepared for DOE. DOE/LAAO forwards documents to the Environment and Health Division of DOE/AL. Prior to issuance of SEN-15-90, DOE/AL could either determine that the project covered by an ADM is insignificant or adequately covered by other NEPA documentation and write a Memo to File with that conclusion, or decide that the level of NEPA documentation needed is unclear and transmit the ADM to the NEPA project staff at DOE/HQ.

Under the SEN order, all decision-making for NEPA is centralized in DOE/HQ. The assistant Secretarial Offices (e.g., Defense Programs) are now formally responsible for the review and initial approval of all categorical exclusions and NEPA documents. DOE/HQ-EH-25 must concur in the determination both of the appropriate level of NEPA documentation and in the acceptability of the final document. If DOE/HQ-EH determines that a given NEPA document is inadequate, the Secretary of Energy will be informed of this finding of deficiency.

If an Environmental Assessment (EA) is deemed appropriate, the information is communicated to the contractor for action. If an Environmental Impact Statement (EIS) is deemed appropriate, current DOE policies indicate that DOE/AL will take the action. Only DOE/HQ has the authority to approve an EA or an EIS.

Compliance with NEPA is a requirement for all federal agencies. The Laboratory, as a contractor, provides review of projects and prepares some levels of documentation. The final internal approval of any NEPA document is a DOE decision.

7.1. Corrective Activities Compliance With NEPA

The general approach to NEPA compliance as described above will be followed for all new projects that are proposed in the Corrective Activities Five-Year Plan. The Sanitary Wastewater Consolidation System, an FY88 line item, has already been covered by an ADM. DOE has proposed a Programmatic EIS for the entire Five-Year Plan. The level of documentation for any particular project will be determined by DOE.

7.2. Environmental Restoration Compliance With NEPA

The DOE has recently proposed that a Programmatic Environmental Impact Statement (PEIS) be prepared on the Five-Year Plan, which includes the Environmental Restoration Program. A Laboratory-wide EIS could tier to the DOE PEIS and address the entire ER program. The EIS would be initiated in FY90. The EIS would bracket the range of reasonable remedial actions and their potential impacts, including cumulative impacts. Remedial actions would include cleanup of most sites with the Laboratory RCRA-permitted mixed-waste disposal facility receiving the wastes and in situ stabilization coupled with appropriate long-term monitoring for some sites. The EIS process would not specify a remedial action decision for each potential release site. The DOE EIS record of decision (ROD) would indicate DOE's intent to meet applicable regulatory requirements. DOE will make the final decision on the level of environmental documentation for ER. The appropriate regulating agency would select the remedial alternative on a site-by-site basis over the next decade or more during the corrective action selection process.

7.3. Waste Management Compliance With NEPA

The general approach to NEPA compliance as described above will be followed for all new projects that are proposed in the Waste Management Five-Year Plan. Ongoing waste management operations were addressed in the Laboratory site-wide EIS. DOE has proposed a Programmatic EIS for the entire Five-Year Plan. Any determination of a future EIS on the Laboratory waste management operations will be made by DOE.

The Laboratory prepared an environmental assessment (EA) in 1986 to comply with NEPA requirements for the TRU waste work-off project. Since then, the Laboratory has responded to several sets of comments on the draft EA. However, final approval of a finding of no significant impact (FONSI) was never received. Recently, DOE/HQ-EH NEPA staff requested that the Laboratory revise the EA to make it current and to meet new guidance requirements. Included in the new requirements are the need to analyze worker impacts of accident scenarios, analyze the "bounding" case for accidents, and expand on alternatives. Because the Laboratory EA is not for a single facility, accident scenarios and bounding case accidents must be developed for each facility and operation. Because of current limitations on staff availability, an outside contractor must assume the lead responsibility for completing the EA. The effort is estimated to cost \$180K.

8.0. REPORTING AND DATA MANAGEMENT

8.1. Corrective Activities Reporting and Data Management

Required reports include: the NPDES monitoring reports submitted to EPA monthly; the annual PCB report prepared by July 1 every year and kept on file; the semiannual PCB reports prepared for EPA and EID every January and July; the spill reports as required to EPA and EID; the safe drinking water reports submitted to EID monthly or annually; the 30-day advance notice reports regarding the removal of a UST to EID; and the various hazardous waste management reports that may be required for generator, storage, treatment, and disposal facilities.

The Environmental Protection Group does all environmental compliance record-keeping for the Laboratory. All environmental sampling is conducted in accordance with the Quality Control/Quality Assurance Manual for Sampling prepared for the Environmental Protection Group. Any specific sampling requirements in permits or licenses are followed explicitly and are under the managerial control of personnel in the Environmental Protection Group.

8.2. Environmental Restoration Reporting and Data Management

Reporting and data management requirements for the Laboratory ER Program will be driven primarily by requirements of DOE and the Laboratory's RCRA permit, which is expected to be issued by EPA during early 1990. The reporting requirements include a monthly management report, including a year-end status report, as presented in Attachment 3. Additional reporting and data management requirements will be established in the Laboratory Installation Work Plan and implemented on a task-specific basis as required by the Laboratory's RCRA operating permit.

8.3. Waste Management Reporting and Data Management

Reports required are the following: biennial US EPA/NMEID Hazardous Waste Generation and Management Report; monthly activity report to DOE/LAAO; annual report of radionuclides discharged in liquid effluents; monthly progress report for the

Defense Operations Program; annual reports on Laboratory LLW and TRU operations; and ad hoc data requests from sources such as DOE/AL, the State of New Mexico, WIPP, other DOE facilities, and Congressional personnel.

The Laboratory maintains ongoing records for tracking RCRA and TSCA; nonregulated chemical wastes and mixed wastes; training records; various records to satisfy DOE Orders 5489.2A, 5480.5, and 5484.1 and to satisfy EPA regulations; radioactive Solid Waste Disposal Forms; and Certified Waste Storage Records for TRU waste.

9.0. QUALITY ASSURANCE

9.1. Corrective Activities Quality Assurance

Comprehensive quality assurance programs are in place at the Laboratory for all environmental sampling and analytical procedures regardless of environmental media. Most of these quality assurance programs are described in detail in various references, including but not limited to: "Quality Assurance/Quality Control Manual For Sampling," LANL, 1986; "Quality Assurance Plan for the Radiological Air Sampling Network," LANL, in the Environmental Surveillance Group Quality Assurance Project Plans, LANL, 1987; "Quality Assurance Plan for Water, Soil, Sediments, and Water Supply Sampling at LANL," in the Environmental Surveillance Group Quality Assurance Project Plans, LANL, 1987; and "Quality Assurance for Health and Environmental Chemistry: 1988," LANL, 1989; to name a few. The annual Environmental Surveillance Report contains detailed references to all quality assurance programs in place at the Laboratory. These annual reports are available to the public and may be obtained from the LANL Environmental Protection Group, Mail Stop K490, Los Alamos, New Mexico, 87545.

9.2. Environmental Restoration Quality Assurance

The ER Program quality assurance requirements for the Laboratory will be driven primarily by requirements of the HSWA portion of the Laboratory's RCRA permit, which is expected to be acted on by EPA in early 1990. DOE/AL ER Program requirements (see DOE/AL Section 8) must be integrated into the Laboratory ER Program. DOE/AL quality assurance activities will include document reviews, field audits, paper trail and traceability reviews, and regulatory compliance reviews by external parties. Internal quality assurance for the Laboratory ER Program will be done through the following mechanisms.

- The Laboratory will prepare, including annual updates, an Installation Work Plan containing a Quality Assurance Program, which will reference general standard operating procedures (SOPs) for all aspects of the LANL ER Program including sampling, analysis, and quality assurance; a technical data management program; a health and safety program; and a community relations program. The Installation Work Plan will be reviewed by appropriate parties, including DOE, EPA, and NMEID.
- Each task-specific work plan prepared for ER Program activities contains a quality assurance project plan, field sampling plan, technical data management plan, health and safety plan, and community relations plan as appropriate. The task-specific work plans will be reviewed by appropriate parties before initiating field site-characterization activities.

- The Laboratory will maintain sample archives as required by the Laboratory's RCRA operating permit and Quality Assurance Program. Sample taking and handling procedures and sample holding times will be specified in the Installation Work Plan and task-specific work plans.

The D&D projects follow established quality assurance procedures.

9.3. Waste Management Quality Assurance

Developed using the basic requirements of ANSI/ASME NQA-1, the Waste Management Quality Assurance Program Plan (QAPP) defines the responsibilities, authorities, and requirements for the five sections in Waste Management currently covered by the quality assurance (QA) program.

The TRU Waste Certification QA Plan was developed specifically to meet the requirements of WIPP/DOE-120, "QA Requirements for Certification of TRU Waste for Shipment to the Waste Isolation Pilot Plant." WIPP/DOE-120 is modeled after ANSI/ASME NQA-1-1986.

The TRU Waste Certification QA plan is described fully in Section 3.0 of the Los Alamos TRU Waste Certification Plan (WCP-HSE7-CP-01) and applies only to the Los Alamos TRU Waste Certification Program.

Reference to the requested quality-related procedures may be defined in the waste generator's attachment to the Certification Plan, the generator's QAPP, or operating procedures, or may be quoted directly from Section 3.0 of the Certification Plan.

10.0. FEDERAL, STATE, AND LOCAL INTERACTIONS

The Laboratory's Health, Safety, and Environment Division has established a Community Involvement Program to interact with the public on issues relating to environment, safety, and health (ES&H). Although the full extent of the program is not defined, its general purpose is to disseminate information on various ES&H issues, to address the concerns of the public, and to answer questions. Public and private meetings in the surrounding communities have been conducted, with participation from DOE/LAAO, and tours of LANL facilities have been given. Public input meetings on the ER/WM Site Specific Plan will be conducted by DOE.

10.1. Corrective Activities Federal, State, and Local Interactions

Regarding corrective activities, only one agreement is now in place. The Federal Facilities Compliance Agreement (FFCA) negotiated between EPA and DOE lists a schedule of compliance for ensuring compliance with the Laboratory's NPDES permit. This agreement was adopted pursuant to the requirements of Executive Order 12088. The Laboratory will continue to interact with EPA, EID, the public, and other agencies to assure that corrective activities are implemented with full confidence in meeting applicable regulations and fulfilling public participation requirements.

10.2. Environmental Restoration Federal, State, and Local Interactions

The Laboratory's federal, state, and local interactions are based on CERCLA/SARA requirements or HSWA Corrective Action and Closure requirements of the Laboratory's RCRA permit. The regulatory interfaces for the ER Program will be established with the EPA and NMEID when the Laboratory's RCRA permit is issued. Regulatory interfaces were established for SWMU closure activities with NMEID during interim status under RCRA. The Laboratory and DOE/LAAO are in the process of establishing CERCLA/SARA requirements for the ER Program. The Laboratory and DOE/LAAO will ensure compliance with CERCLA while implementing RCRA permit requirements.

The Laboratory's ER Program Community Relations Program, which is also driven by the Laboratory's RCRA operating permit, will include:

- establishing and maintaining an active mailing list of interested parties;
- holding informal meetings, including briefings and workshops as appropriate, with the interested public and local and tribal officials before and during RCRA Facility Investigation (RFI) and Corrective Measures Study (CMS) activities;
- disseminating news releases, fact sheets, and publicly available quarterly progress reports that explain the progress and conclusions of RFI and CMS activities;
- providing updates of materials in the information repository and public reading rooms; and
- providing public tours and briefings to inform, to listen informally to public concerns, and to answer individual questions.

The ER Program Community Relations Program will participate in meetings for public review of the Five-Year Plan. (See also Section 9.2. Environmental Restoration Quality Assurance.)

10.3. Waste Management Federal, State, and Local Interactions

The Laboratory will work with the Environmental Protection Agency and the New Mexico Environmental Improvement Division to assure compliance with the following laws and regulations; RCRA and HSWA (Subtitled C and I) and the New Mexico Hazardous Waste Act and accompanying hazardous waste and UST regulations.

This interaction is initiated by HSE-7 within the HSE Division. Official contact is made through DOE/LAAO. The Laboratory has initiated a Community Involvement Program that highlights all ES&H related activity. Recently, the program has made presentations in a number of towns in northern New Mexico specific to waste management and incineration at the Laboratory.

11.0. UNBUDGETED/UNFUNDED NEEDS ASSESSMENT

11.1. Corrective Activities Unbudgeted/Unfunded Needs Assessment

All of the corrective activities are required for the Laboratory to achieve full compliance with applicable regulations (including regulations that are currently expected during the five-year period), permit requirements, regulatory agreements, and DOE Orders. Recent DOE policy directives reaffirm the DOE's commitment to place compliance with environment, safety, and health requirements above goals related to programmatic objectives or production requirements. FY90 funding allocations for corrective activities are adequate to accomplish this commitment.

11.2. Environmental Restoration Unbudgeted/Unfunded Needs Assessment

The Environmental Restoration Program tasks are based on the draft HSWA or closure requirements of the Laboratory's RCRA operating permit. Funding of these needs is required during FY90 to comply with schedules and deliverables in the draft RCRA operating permit and is currently adequate to address these needs.

The ER D&D has no unbudgeted/unfunded needs for FY90.

11.3. Waste Management Unbudgeted/Unfunded Needs Assessment

Current funding levels are inadequate to support the activities listed below which are required by Waste Management in FY90. A shortfall of \$4.637M is projected, which is expected to affect all waste management programs and will create numerous regulatory liabilities. More specifically, regulatory liabilities will occur in treatment, storage, disposal, and waste minimization programs that support the overall waste management programs and related permits.

Activities which are not funded at adequate levels include:

- support for the Filter Test Facility, a program which supports DOE quality assurance tests of HEPA filters to satisfy appropriate technical and environmental standards;
- asbestos and PCB disposal operations which ensure regulatory compliance;
- continuity of operations activities to support and maintain ongoing waste management operations;
- low-level solid waste disposal operations which ensure regulatory compliance;
- mixed LLW and TRU waste storage operations to ensure regulatory compliance; and
- waste management treatment, including the Nondestructive Examination and Nondestructive Analysis Facility operation and the incineration of mixed low-level wastes.

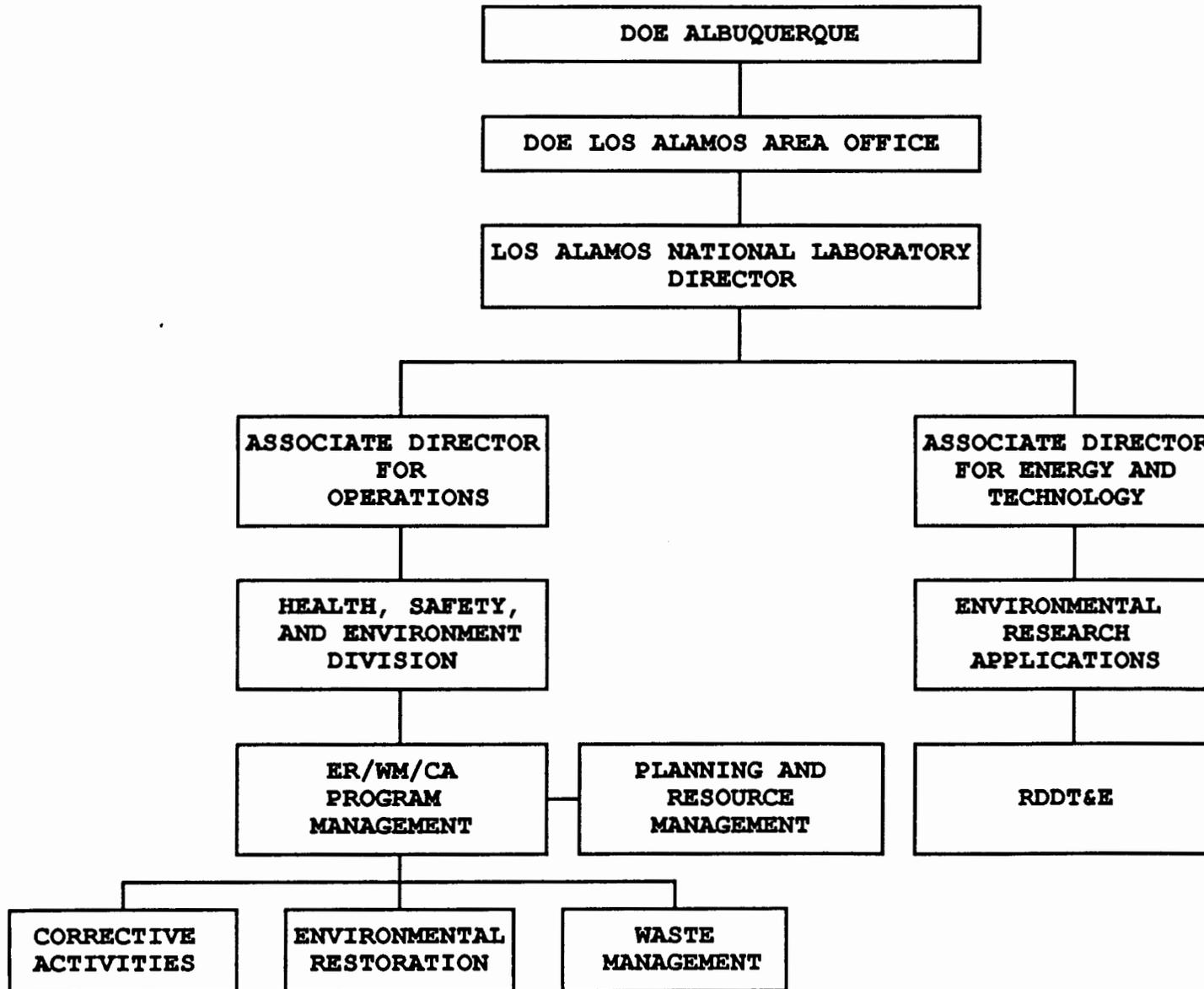
Activities for which funds are not allocated include:

- support for the upcoming DOE/State of New Mexico ES&H Cooperative Agreement, specifically preparation of required reports on low-level/mixed-waste generation and site assessment studies at waste management units;

- remote-handled TRU waste close-out, a project which is required for compliance with DOE Order 5820.2A and DOE planning documents;
- Safety Analysis Reports for 10 new waste treatment, storage, and handling facilities, as required before operations can be initiated; and
- waste management NEPA documentation including a comprehensive EIS covering new operations and facilities, significant changes in existing operations and facilities, and numerous EAs for specific activities.

ATTACHMENTS

LANL FIVE-YEAR PLAN MANAGEMENT STRUCTURE



**PERMITS UNDER WHICH THE LABORATORY
OPERATED IN 1989**

TYPE	PERMITTED ACTIVITY	ISSUE DATE	EXPIRATION DATE	ADMINISTERING AGENCY
RCRA Hazardous Waste Facility	Hazardous Waste Handling	11/8/89	11/1994	NMEID ^a
PCB	Disposal of PCBs	6/5/80	---	EPA ^b
PCB Oil	Incineration of PCB Oils	5/21/84	---	EPA
NPDES - Los Alamos	Discharge of Industrial and Sanitary Liquid Effluents	Modified Permit 5/29/87	3/1/91	EPA
⊗ NPDES - Fenton Hill	Discharge of Industrial and Sanitary Liquid Effluents	10/15/83 ^c	---	EPA
Ground Water Discharge Plan-Fenton Hill	Discharge to Ground Water	6/5/85	6/1990	NMOCD ^d
NESHAPS	Construction and Operation of Four Beryllium Facilities	12/26/85 and 3/19/86	---	NMEID
Open Burning	Burning at TA-16-412	5/26/87	5/26/88	NMEID

^aNew Mexico Environmental Improvement Division.

^bUS Environmental Protection Agency.

^cRenewal pending.

^dNew Mexico Oil Conservation Division.

LANL ER PROGRAM DOCUMENTATION REQUIREMENTS

	<u>TYPE</u>	<u>FREQUENCY</u>	<u>DUE DATE TO DOE AL</u>	<u>LANL</u>	<u>LAAO</u>	<u>DOE AL</u>	<u>REGULATORY AGENCY</u>
I.	DOE Planning Documents						
	DOE AL Field Office Management Plan	O	NA	IN	IN	P/MA	NA
	DOE AL Field Office Program and Implementation Plan	A	Sept 15	IN	IN	P/MA	NA
	DOE AL Field Office Budget Request Summary	A	NA	IN	IN	P	NA
	DOE AL Five-Year Plan	A	2nd Qtr FY	IN	IN	P	R
	DOE AL Site Specific Plan	A	1st Qtr FY	P	AP	AP	R
	DOE AL Current Year Work Plan	A	Sept.	P	AP	AP	R
II.	DOE Status Reports						
	Installation Monthly Status Report	M	10th	P	R	AP	NA
	DOE AL Monthly Field Office Status Report	M	13th	IN	IN	P	NA
III.	Primary Regulatory Agency Documents						
	LANL Installation Work Plan	A	NA	P	R	R	AP
	RFI Task-Specific Work Plans	NA	NA	P	R	R	AP
	RCRA Closure Plans	NA	NA	P	R	R	AP
	RFI Reports	NA	NA	P	R	R	AP
	CMS Reports	NA	NA	P	R	R	AP
	Interim Measures Plans	NA	NA	P	R	R	AP
	Monthly Management Reports	M	10th	P	R	R	R
Quarterly Technical Progress Reports	NA	NA	P	R	R	R	

Key: O - one-time or as required, NA - not applicable, IN - input, P - prepare, MA - DOE AL manager approval, A - annual, M - monthly, R - review, AP - approve.

RCRA CORRECTIVE ACTION PLAN

