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Los Alamos National Laboratory
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memorandum

TO: Distribution

DATE: August 16, 1991

FROM: John Krueger, Project Leader

MAIL STOP/TELEPHONE: K481/7-2191

SYMBOL: EM-13:91-634

SUBJECT: **INFORMAL REVIEW OF DRAFT CHAPTER 1 TO THE TA-51/54 RFI WORK PLAN**

2242
TA 51

Enclosed is a rough draft of Chapter 1, Introduction, to the TA-51/54 Resource Conservation and Recovery Act (RCRA) RCRA Facility Investigation (RFI) Work Plan for your review and comment. I am distributing this for review early in the work plan development process because of the many institutional issues it addresses and the wide audience it potentially effects.

As you know, TA-51/54 is one of the most complicated operable units that the Environmental Restoration (ER) Program will address. Among the challenges posed by TA-54 are the integration of closure and corrective action authorities and requirements, overlap of the ER Program mission with the performance assessment of Area G in accordance with Department of Energy (DOE) Order 5820.2A, and definition of the scope of work for ER based on projected future land uses. The Introduction addresses all of these issues by proposing the regulatory framework, philosophy, and technical approach behind site characterization at TAs-51 and 54.

External agencies have been provided copies of this memorandum with permission from Environmental Management, Environmental Protection (EM)-8 and the Los Alamos Area Office (LAO). Comments are welcome both from individuals on the distribution list and those that are copied. Please provide comments by September 20, 1991, to my Assistant Project Leader:

Bob Gilkeson
Los Alamos National Laboratory
EM-13, MS K481
Los Alamos, NM 87545

The earlier we resolve these institutional and regulatory issues, the more efficiently the sampling plans for the TA-51/54 operable unit can be focused. Thank you for your cooperation.



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Enclosures: Rough Draft to the TA-51/54 RCRA Facility
Investigation

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1.0 INTRODUCTION

This document is a site characterization work plan for assessing the nature and extent of any contamination associated with hazardous and radioactive waste sites within Technical Areas (TAs) 51 and 54 at Los Alamos National Laboratory (LANL, or the Laboratory). In regulatory terminology, it serves as a work plan for conduct of the Resource, Conservation, and Recovery Act (RCRA) Facility Investigation (RFI) for releases of hazardous waste and constituents from solid waste management units (SWMUs) at TAs 51 and 54. An RFI for these areas was mandated by the Environmental Protection Agency (EPA) in Module VIII of the Laboratory's RCRA permit, which became effective May 23, 1990.

This document also serves as a closure plan modification for those units within TAs 51 and 54 that were operated under interim status but are no longer active (e.g., units that last received hazardous waste between November 19, 1980, the effective date of the hazardous waste management regulations, and November 8, 1989, when the Laboratory received its RCRA permit), and as a closure plan modification for permitted (or soon to be permitted) hazardous or mixed waste management units that are still active but are expected to close within a time frame addressed by the LANL ER Program (e.g., prior to the year 2000, see section 1.2). Closure activities are under the jurisdiction of the State of New Mexico Environment Department (NMED).

This chapter of the work plan provides introductory material necessary to understand the framework, philosophy, and technical approach behind site characterization at TAs 51 and 54. Section 1.1 provides background information, section 1.2 discusses the purpose and scope of the plan, section 1.3 defines the regulatory framework for conduct of the proposed work, section 1.4 defines the areas to be investigated and relates them to the governing regulations, section 1.5 presents the philosophy and general approach to site characterization, and section 1.6 provides the overall plan organization to assist the reader.

1.1 BACKGROUND

Since the early 1970s, LANL has conducted a comprehensive environmental surveillance program designed to measure and document any effects that Laboratory operations may have had on the surrounding environment. The focus of this effort has been (and continues to be) on monitoring of environmental pathways available for the transport of contaminants to sensitive ecosystems and potential human receptors (people living and working in the vicinity of Los Alamos). Thus, the LANL Environmental Protection Program is best suited to the detection of present-day environmental problems so that mitigation efforts can be taken before any releases pose health hazards or threaten the environment. Although impacts on the environment due to Laboratory operations have been measurable in some cases (e.g., elevated radionuclide concentrations in surface soils in a few areas), contaminant levels are usually indistinguishable from background and no human health effects due to Laboratory operational releases are plausible (*).

In the mid 1980s, however, the U.S. Department of Energy (DOE), owner of the Laboratory, and the University of California (UC), LANL operator, recognized a need to be pro-active by identifying waste management units and other areas of concern that could pose environmental problems in the *future*. Consequently, a major effort to identify all past waste management sites, dumping grounds, spills, and other potential sources of *future* contamination to environmental pathways was undertaken. The goal of the effort was to establish a baseline for conduct of a pro-active remediation program, designed to compliment the real-time efforts of the Environmental Surveillance Program by preventing possible *future* releases of hazardous substances to the environment. The program was patterned after the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund) cleanup process defined in the National Contingency Plan (NCP), and DOE titled it the Comprehensive Environmental Assessment and Response Program (CEARP).

The compendium of these potential sources of future environmental problems at LANL, titled the CEARP Phase I Installation Assessment, was published in December, 1986 (*). The document was a first cut at the identification of all potential sources at the Laboratory and provided references for the gathering of additional information. It also documented the results of aggregate Hazard Ranking System (HRS) scoring for the purpose of determining if LANL should be ranked on the CERCLA National Priorities List (NPL), and thus remain subject to the CERCLA cleanup process in the NCP. Because no individual sites or site groupings scored 28.5 or higher on the HRS, LANL was not listed on the NPL. This early prioritization removed LANL from a category of facilities requiring immediate attention from EPA under CERCLA (Superfund). Consequently, the regulatory driving force that had to this point provided justification for LANL's CEARP program temporarily evaporated.

Meanwhile, LANL was preparing a RCRA Part B Permit application for hazardous waste management operations. Section 3004(u) of RCRA states that facilities seeking a permit must correct releases of hazardous waste or constituents from solid waste management units. Consequently, the Laboratory began revising the Installation Assessment, putting it into a RCRA context by calling its potential release sites SWMUs. The result of this effort was the Solid Waste Management Units Report, published in December, 1988 (*). For purposes of establishing RCRA permit requirements, EPA used a draft version of this document to identify a list of SWMUs potentially subject to the corrective action provisions of RCRA 3004(u). Module VIII of LANL's RCRA permit lists these solid waste management units and mandates that a RCRA Facility Investigation (RFI) be conducted to determine if they require corrective action for releases of hazardous waste or constituents. Thus, the desire to operate LANL as a permitted hazardous waste treatment and storage facility has resulted in the generation of a new regulatory driver (RCRA, as opposed to CERCLA) for the pro-active cleanup program that LANL initiated in the mid 1980s. The potential release sites identified in the 1986 Installation Assessment and formerly subject to the CERCLA cleanup process are now called SWMUs in the 1990 [revised] SWMU Report and will be taken through the RCRA corrective action process, which is technically similar to the CERCLA NCP.

In March of 1987, DOE established the current Environmental Restoration (ER) Program, replacing the CEARP at LANL. For reasons outlined above, the ER Program at LANL has now been patterned after RCRA corrective action guidance published by EPA, but it is designed to simultaneously address any CERCLA requirements that may still be considered technically appropriate (even though LANL is not on the NPL) and other requirements governing cleanup activities (see section 1.3). The first two years of the LANL ER Program were focused on establishment of a framework through negotiations with EPA, and the building of an internal infrastructure capable of effectively implementing the program. This included the development of a SWMU Database (*), which expanded the original list of potential release sites to over 2,000 solid waste management units potentially subject to corrective action, and many other activities designed to facilitate implementation of the ER Program. A comprehensive description of the ER Program at LANL, including strategies for compliance with Module VIII of the LANL RCRA Permit, can be found in the ER Program Installation Work Plan (IWP), submitted to EPA in November, 1990 (as required by Module VIII of the RCRA permit). The IWP is a blueprint for conduct of the ER Program at LANL. (*)

1.2 PURPOSE, SCOPE, AND OBJECTIVES OF THIS RFI WORK PLAN/CLOSURE PLAN

MODIFICATION

Solid waste management units at LANL have been organized into 24 geographically and operationally related groups called "operable units". The primary purpose of this document is to provide a work plan for conduct of the second step in the RCRA corrective action process, the RCRA Facility Investigation, for one of these 24 units: The TA 51/54 Operable Unit (Activity Data Sheet [ADS] #1148). Section P of Module VIII of the LANL RCRA permit, Scope of Work for an RFI at LANL, defines the tasks that must be satisfied during the RFI phase of the ER Program. This work plan satisfies Tasks I and II for the TA-51/54 operable unit, Description of Current Conditions and RFI Work Plan, respectively, and provides plans for completing the remaining RFI tasks.

As stated above, and for reasons detailed in section 1.3, this document also serves as a closure plan modification for certain units within TA-54 that are subject to RCRA interim status closure regulations. The technical scope of the RFI will provide the foundation for an alternatives analysis (the Corrective Measures Study) that will lead to selection of a permanent corrective measure(s) which will simultaneously serve as a closure/post-closure technology for the inactive interim status units (see Section 1.4, below). Similarly, for units within TA-54 that are still operating, but will cease operations before the ER Program begins implementing corrective measures (e.g. hazardous waste staging areas in Area L that are RCRA permitted, but will cease being used prior to the year 2000), the ER Program will seek to implement permanent cleanup alternatives. Thus, this document is a closure plan modification for these active, but short-lived units as well.

However, for SWMUs that will operate beyond 2000 (like the active portions of Area G, or RCRA-permitted long-term storage units), the ER Program will focus only on the detection and mitigation (if necessary) of releases; permanent environmental restoration of these sites, which may include source controls, will not occur until their useful lives have expired. Table 1-3, section 1.4, assists in defining the SWMU-specific scope of work for ER by providing a list of SWMUs highlighted according to their closure status (interim status or permitted), and by indicating the expected lifetime of units that are still operating (see Operational Status column).

Where appropriate, this work plan will also guide the collection of data in support of the Laboratory effort to comply with the requirements for solid, low-level radioactive waste landfills (and buried transuranic waste, as appropriate) specified in DOE Order 5820.2A. For example, performance assessment modeling of Material Disposal Area G, the results of which will be used to evaluate present-day disposal practices and help determine landfill closure and monitoring requirements, will be integrated with conduct of ER Program activities (like the RFI) which are designed to lead to implementation of a permanent corrective action. The ER Program should not, however, be construed as the primary compliance vehicle for DOE Order 5820.2A. Requirements of the order have been taken into account in this work plan simply as a cost savings measure for the Laboratory (see Section 1.3.3.2). EM-7 (Waste Management) and EM-8 (Environmental Protection) have the primary responsibility for compliance with DOE Order 5820.2A and will use data generated by the ER Program Office (EM-13) to facilitate their efforts.

Thus, the objective of this RFI work plan is to provide a framework for conduct of site characterization at TAs 51 and 54 which ensures that maximum scientific value is attained for the investment, and which satisfies the needs of both the RCRA corrective action and closure processes. Section 1.5 describes in greater detail the philosophy and general approach to site characterization presented in this work plan, and provides a strategy for achieving the objectives of site characterization at TAs 51 and 54.

1.3 REGULATORY FRAMEWORK FOR ENVIRONMENTAL RESTORATION AT TECHNICAL

AREAS 51 AND 54

The LANL ER Program utilizes the RCRA corrective action process as a regulatory framework, but expands the scope in order to reduce liability under other laws and to achieve the comprehensive goals of environmental restoration at TAs 51 and 54 which are discussed in section 1.5. This section of Chapter 1 explains how this is done by first discussing the relationship between RCRA corrective action and closure, and then explaining how CERCLA, NEPA, and DOE Order 5820.2A fit into the overall picture. It should be noted that upon joint approval, all components of this plan, including any schedules provided herein, will become EPA-enforceable parts of the LANL RCRA permit under their corrective action authority, and will be simultaneously enforceable by NMED under their RCRA closure authority.

1.3.1 RCRA Corrective Action

Because LANL is a hazardous waste management facility with a RCRA operating permit, section 3004(u) of RCRA, which requires the correction of hazardous waste and constituent releases from solid waste management units, specifically applies. Consequently, the RCRA corrective action process, as mandated in the LANL RCRA permit and discussed in the ER Program Installation Work Plan (*), serves as the most appropriate regulatory framework for the LANL ER Program.

Briefly, RCRA corrective action guidance dictates a three-phase cleanup process analogous to the CERCLA process described in the National Contingency Plan (40 CFR Part 300). The three phases, and their CERCLA counterparts, are shown below:

<u>ER Program Activity</u>	<u>RCRA Corrective Action Phase</u>	<u>CERCLA Remedial Action Phase</u>
Identify all sites with the potential release hazardous substances to the environment	RCRA Facility Assessment (RFA)	Preliminary Assessment/Site Inspection (PA/SI)
Determine the nature and extent of contamination, and propose the most effective means of cleanup	RCRA Facility Investigation/ Corrective Measures Study (RFI/CMS)	Remedial Investigation/Feasibility Study (RI/FS)
Design and implement the selected cleanup alternative	Corrective Measures Design/ Corrective Measures Implementation (CMD/CMI)	Remedial Design/Remedial Action (RD/RA)

Because of the nature of this particular operable unit, it is necessary to utilize other regulations to broaden the scope of the ER Program beyond the RCRA corrective action process to achieve the overall goals (see section 1.5) of the program at TA 51/54. The nature of the RCRA law limits the applicability of the corrective action process specifically to releases of hazardous waste or constituents from solid waste management units. Letter-of-the-law application of this requirement would necessitate that releases meet the legal definition of hazardous waste or constituent, and likewise, come from units that meet the regulatory definition of a SWMU. Thus, if the ER Program were to exclusively utilize the RCRA corrective action process as a regulatory framework, a large subset of potential future problems could be neglected.

To illustrate this point, it is appropriate to examine two examples posed by TA-54: 1) Overlap of corrective action requirements with RCRA closure regulations (section 1.3.2, below); and 2) releases of source, by-product, or special nuclear material (see section 1.3.3.1).

1.3.2 RCRA Closure

Several discrete pits, trenches, and shafts within material disposal areas L, H, and G at TA-54 last received hazardous waste after November 19, 1980, the effective date of the RCRA hazardous waste regulations (see Table 1-3, section 1.4). Consequently, they became subject to the RCRA interim status treatment, storage, and disposal regulations, which include provisions governing their closure. Since the Laboratory made a decision to discontinue use of these units prior to receiving a permit, the interim status closure process applies. Because authority to enforce these RCRA closure provisions has been

delegated to the NMED, whereas enforcement authority for the RCRA corrective action requirements for SWMUs remains with EPA, NMED has indicated their intent to request that EPA remove these sites from the list of SWMUs in the LANL RCRA Permit that must be taken through the corrective action process. The purpose of the State request will be to eliminate dual authority over a subset of disposal units within TA-54, and to guarantee that NMED remain the lead regulatory agency for sites subject to the delegated closure provisions of RCRA.

However, the result is that cleanup of individual pits, shafts, and trenches located adjacent to each other (less than 10 feet away) in some cases is under the authority of two different regulatory agencies that may impose different technical requirements according to inconsistent schedules. Since September of 1990, LANL has cooperated with NMED and EPA to ensure that the cleanup approach taken within TA-54 is integrated, consistent, and sensible, despite overlapping authorities. As a result, this RFI work plan simultaneously serves as a closure plan modification for those units within TA-54 that are subject to the interim status closure regulations (see Table 1-3, Section 1.4).

The reason this document is considered a closure plan *modification*, rather than an initial submittal is because LANL has already submitted closure plans for the hazardous waste management units identified in Table 1-3 (*italicized and bolded*) as subject to closure under interim status (see section 1.4). The closure plan for the interim status units within Area G was first submitted in September, 1985, and the closure plan for such units within Areas H and L was submitted in November, 1986. These early closure plans were submitted to satisfy a RCRA compliance deadline, and are technically inadequate to achieve the goals of the current ER Program. Thus, this document serves to modify those old closure plans by providing a work plan for site characterization and a schedule for completion of closure activities which will be based on the results of the field investigation.

Similar to the interim status units, there are several hazardous and mixed waste management units within Areas L and G that are still operating and are currently permitted or soon will be (Table 1-3, *italicized only*). Since the LANL waste management group (EM-7) plans to consolidate and move these operations elsewhere in the near future (5 years), these units will become subject to RCRA closure under permitted status within a timeframe amenable to the ER Program. Thus, this document also serves as a closure plan modification for permitted units that will cease operations prior to the year 2000, when the ER Program is expected to begin implementing corrective measures. Original closure plans for these units were submitted with the two RCRA Part B Permit applications (hazardous and mixed waste). Below is a list of ER Program documentation which will be prepared in accordance with the RCRA corrective action process, but will simultaneously serve as closure plan modifications.

RCRA Corrective Action Phase

Documents

RCRA Facility Investigation/
Corrective Measures Study
(RFI/CMS)

RFI Work Plan
RFI Technical Memoranda
RFI Report
CMS Work Plan
Bench or Pilot Scale Study Reports
CMS Report

Corrective Measures Design/
Corrective Measures Implementation
(CMD/CMI)

Corrective Measures Design Report

As appropriate, the Corrective Measures Design Report will also serve as a post-closure care plan. A Corrective Measures Verification Report which will document the effectiveness of the various corrective actions will also be submitted. This final report will serve as a closure report/certification, and as a status report on the post-closure monitoring program for units where waste will remain in place. Additional periodic reports concerning post-closure care are likely to be required by NMED.

The NMED uses a checklist to evaluate the adequacy of closure plans prepared in the State of New Mexico. To assist their auditors, Table 1-1 lists the State's minimum requirements for closure plans and indicates in which section(s) of this work plan they are satisfied, or alternatively discusses why the element can not be found in this closure plan modification and where to find it now or in the future.

TABLE 1-1: NMED CLOSURE PLAN CHECKLIST

<u>Checklist of Minimum Requirements</u>	<u>Work Plan Section/Compliance Description</u>
A Description of how and when each hazardous waste management unit will be partially, then finally closed	In most cases, the method of closure will not be specified and scheduled until the Corrective Measures Study (CMS) is completed
An up-to-date estimate of the maximum inventory of wastes in storage and treatment at any time during the active life of the facility	Each geographic area within the operable unit is divided into fundamental investigation units called Corrective Action Management Units (CAMUs, see section 1.4), and each CAMU has a section called Existing Information which provides this information on a SWMU-by-SWMU basis
A description of the steps needed to remove or decontaminate all hazardous waste residues, contaminated containment system structures, equipment structures, and spills	This will be done in the CMS
A schedule for closure of each hazardous waste management unit	See section 7.2
An estimate of the expected year of closure	See section 7.2
A schedule for final closure, including time estimates for each phase of closure and a total time estimate	See section 7.2
Plan must address all areas of hazardous waste management, reflect changes in facility operations or design, and provide up-to-date cost estimates	Existing Information sections describe each hazardous or mixed waste management unit, cost estimates are provided in Section 7.3

1.3.3 CERCLA, DOE Order 5820.2A, NEPA, and Other Laws and Orders

1.3.3.1 CERCLA

Many of the potential release sites within TA-54 (especially Area G) contain wastes contaminated with radionuclides that meet the Atomic Energy Act (AEA) definition of source, by-product, or special nuclear materials, which are specifically exempt from the RCRA definition of solid waste. The presence of these wastes does not (currently), therefore, qualify the disposal unit as a RCRA-regulated SWMU. This means that a program based on RCRA alone would have a loophole large enough to omit one of the primary sources of potential future risk at TA-54: major sections of the low-level solid radioactive waste landfill

(Material Disposal Area G). To solve this problem, the LANL ER Program Office will treat all radionuclides (as well as other hazardous substances not regulated by RCRA) as if they are RCRA hazardous constituents. In this manner, LANL will satisfy the technically appropriate provisions of CERCLA simultaneously with RCRA. (Appropriate administrative aspects of CERCLA, like the community relations requirements, will also be followed. See the IWP.)

For example, action levels for radionuclides and other hazardous substances will be proposed to EPA and NMED, and contaminant levels found during the field investigation will be compared to these action levels in the RFI report for this operable unit. A Corrective Measures Study will be conducted for sites contaminated above acceptable action levels, but where action levels are not exceeded and the site is stable, no further action is likely to be proposed.

1.3.3.2 DOE Order 5820.2A

DOE Order 5820.2A, Radioactive Waste Management, was established in 1988 (replacing its 1984 predecessor) to provide policies, guidelines, and minimum requirements for the management of radioactive and mixed waste. As such, it is primarily associated with on-going waste management operations. For example, the Order mandates that the design of new waste management units achieve the following performance objectives:

- 1) No member of the public should receive exposures greater than 25 mrem/yr due to routine operations, and the radionuclide standards in the National Emission Standards for Hazardous Air Pollutants (NESHAPs) must be complied with; and
- 2) 100 years after the site closes, no intruder (member of the public encroaching on the site) should receive a continuous dose of greater than 100 mrem/yr, and the disposal site should be designed such that an intruder will never receive an acute (accidental, one-time) exposure greater than 500 mrem/yr.

5820.2A mandates a "performance assessment" to prove that radioactive waste management unit designs currently in use can achieve these two performance objectives. The Environmental Protection Group (EM-8) at the Laboratory is currently engaged in a computer modeling effort that will facilitate a performance assessment of the Area G solid, low-level radioactive waste landfill at TA-54. As previously mentioned, this RFI work plan has been designed to assist EM-8's effort by supplying critical information (like source-term data and information concerning environmental pathways for contaminant transport) needed for the computer model. For cases where critical data is lacking, the sampling plans in this document plan for the collection of this information.

The result of EM-8's performance assessment of Area G will be a determination of how effective the current waste packages and landfill cells are at isolating the waste from the environment. Their evaluation will be limited to present-day operations and landfill cells that were active on the effective date of the Order, September 26, 1988. As a consequence of their study, process modifications or changes in future landfill cell design or capping techniques may be proposed.

Aside from these provisions governing current operations, Section III(3)(j)(4), specifically applies to environmental restoration of inactive radioactive and mixed waste units. This paragraph states:

Inactive disposal facilities, disposal sites, and disposal units shall be managed in conformance with the Resource, Conservation, and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act, or, if mixed waste is involved, may be included in permit applications for operation of contiguous disposal facilities.

It will be the sole responsibility of the ER Program Office (EM-13) to comply with this paragraph of 5820.2A; all other provisions of the Order will be the responsibility of EM-8 and EM-7 (Waste Management). There are other aspects of the Order, however, that provide useful guidelines for environmental restoration of Area G. For example, the Order states that residual radioactivity levels in soils should comply with existing DOE decommissioning guidance, and that corrective measures should be taken if conditions occur, or are forecasted, that jeopardize attainment of the performance objectives. These provisions of the Order, although not specifically applicable to units that operated only prior to the existence of 5820.2A, help establish the technical approach to ER at Area G (see section 1.5.2.6).

1.3.3.3 NEPA Compliance

The ER Program NEPA compliance strategy is designed to comply with Secretary of Energy Notice No. 15, which dictates the Department's NEPA policies. Because each ER Program field activity possesses a unique potential to impact the environment, NEPA compliance for the ER Program is being approached on an activity-specific basis. For the RFI, a Department of Energy Checklist (DEC) is being prepared for submittal to DOE-Headquarters for a determination of whether the proposed activities fall within a categorical exclusion for field investigations. If the RFI is determined to be categorically excluded, the field investigation will be considered in compliance with applicable NEPA requirements. If not, an Environmental Assessment (EA) will be prepared.

It should be noted that if an EA is required by DOE-Headquarters, significant delays (associated with document preparation, public review, and publication of a Finding of No Significant Impact [FONSI]) in implementation of the field investigation could be realized. This would potentially conflict with Section D of Module VIII of the LANL RCRA Permit, which states, "All work required by this module (the corrective action requirements) will be deemed as 'functionally equivalent' of an Environmental Impact Statement (EIS). Therefore, the requirements of the National Environmental Policy Act will not apply to work required by Module VIII." The intent of this permit clause was to prevent any delays in implementing the corrective action program at LANL (e.g., the RFI) due to Energy Department policies and strategies governing NEPA compliance.

1.3.3.4 Other Relevant Laws, Orders, and Requirements

Table 1-2 (a-c) in Appendix A provides a comprehensive list of additional statutes, regulations, and DOE orders that help guide environmental restoration. This work plan is designed to comply only with those requirements that apply to the site characterization phase of the RCRA corrective action and closure processes.

1.4 DEFINITION OF SWMUS, CAMUS, AND UNITS SUBJECT TO RCRA CLOSURE

REQUIREMENTS

The current SWMU Report (November, 1990), and its electronic counterpart, the SWMU Database, are updated versions of the 1988 document (see section 1.1, Background) that EPA used to complete their RCRA Facility Assessment and as a foundation for the corrective action program they mandated in the LANL RCRA permit. It is organized by technical area; TAs 51 and 54 can both be found in Volume IV.

As is evident from the SWMU Report, the Laboratory has chosen to aggregate certain individual potential release sites into single SWMUs (e.g., Material Disposal Area H, SWMU No. 54-004, contains nine individual shafts). To efficiently organize this work plan, the LANL ER Program Office has organized these SWMUs into geographically-related groups which are covered within discrete sections of the document (e.g., Chapters 3 and 4, CAMU Descriptions and Identification of Data Needs, and Sampling

TABLE 1-3: ORGANIZATION OF SWMUS INTO GEOGRAPHIC AREAS (WORK PLAN SECTIONS)^{1,4}

<u>Work Plan Sections</u>	<u>EPA (Permit) SWMUs²</u>	<u>Database SWMUs³</u>	<u>Potential Release Sites</u>	<u>Operational Status⁵</u>
Material Disposal Area (MDA) G (Section 3.4)	Drum Storage Area in Building TA-54-8 (54-003(b))	Drum Storage Area in Building TA-54-8 (54-015(a))	1 Drum Storage Area	This building will be used during retrieval of stored TRU wastes beyond 2000; it will eventually be removed by the D&D program
	Septic System Leach Field, TA-54-16 (54-007(a))	Septic System Leach Field, TA-54-16 (54-007(a))	1 Leach Field	This septic system will continue to serve buildings 2 and 11 beyond 2000
	Septic System Seepage Pit, TA-54-28 (54-007(b))	Septic System Seepage Pit, TA-54-28 (54-007(b))	1 Underground Tank	To be removed by EM-7 in FY92, this tank is currently serving the gas cylinder project
		Empty Drum Storage Area East of TRU Storage (54-001(f))	1 Drum Storage Pad	Will be used for storage beyond 2000 to support TRU waste retrieval operations
		Septic System Leach Field TA-54-4 (54-007(d))		THIS SWMU WAS INADVERTENTLY LOCATED IN TA-54. IT IS ACTUALLY IN TA-51, AND HAS BEEN REORGANIZED INTO THE TA-51 GEOGRAPHIC AREA (SEE BELOW)
		Septic System Leach Field TA-54-9 (54-007(e))		THIS SWMU WAS INADVERTENTLY LOCATED IN TA-54. IT IS ACTUALLY IN TA-51, AND HAS BEEN REORGANIZED INTO THE TA-51 GEOGRAPHIC AREA (SEE BELOW)

Underground Tank (54-010)	1 Underground Tank	Inactive
Compactor, TA-54-2 (54-012(a))	1 Compactor	Will be operational indefinitely (beyond 2000)
Truck Washing Pit (54-013(b))	1 Decon Pit	Inactive
Radioactive Waste Storage Shafts and Pits, Storage Pit 9 (54-014(b))	1 Storage Pit	TRU Waste will be retrieved from this pit starting in 1999; retrieval will continue for several years
Radioactive Waste Storage Shafts and Pits, TRU Shafts 200-233 (54-014(c)), [plus up to 60 new Retrievable Storage Shafts]	34 existing Storage Shafts, [and up to 60 planned Storage Shafts]	TRU Waste will be retrieved from shafts 200-233 starting in 1999; retrieval will continue for several years
Radioactive Waste Storage Shafts and Pits, TRU Trenches A-D (54-014(d))	4 Storage Trenches	TRU Waste will be retrieved from these units starting in 1999, retrieval will continue for several years
Surface Storage of TRU Waste Near TA-54-11 (54-015(b))	1 Storage Area	Inactive
TRU Waste Storage Pad 1 (54-015(c))	1 Storage Pad	TRU Waste will be retrieved from this unit starting in 1999, retrieval will continue for several years past 2000

TRU Waste Storage Pad 2 (54-015(d))	1 Storage Pad	TRU Waste will be retrieved from this unit starting in 1999; retrieval will continue for several years past 2000
TRU Waste Storage Pad 3 (54-015(e))	1 Storage Dome	WIPP-certified waste will be stored here until the new long term storage facility is operational (after 2000)
TRU Waste Storage Pad 4 (54-015(f))	1 Storage Pad	TRU Waste will be retrieved from this unit starting in 1999; retrieval will continue for several years past 2000
Mixed Waste Dome, TA-54-49 (54-015(j))	1 Storage Facility	Low-level mixed waste storage operations will be relocated to TA-63 in 1995-1996
TRU Waste Mound (54-015(k))	1 Storage Mound	TRU Waste will be retrieved from this mound starting in 1999, and retrieval operations will continue for several years beyond 2000
Sump in TA-54-33 (54-016(b))	1 Sump [plus container storage]	This sump will collect retrieved TRU waste drum washwater long after the TRU waste

		<i>treatment facility is operational in 1999</i>
MDA G Disposal Pits Active Before 11/19/80 (54-017)	19 Disposal Pits	Inactive
MDA G Disposal Pits Active After 11/19/80 (54-018)	6 pits used prior to May, 1985 , 5 pits used only after May 1985 (when LANL ceased disposing hazardous wastes in Area G)	10 pits are inactive, one pit (37) is still active, but will be filled by 2/92 [plus 3 more planned pits that will be full prior to 2000]
MDA G Disposal Shafts Active Before 11/19/80 (54-019)	91 Disposal Shafts	Inactive
MDA G Disposal Shafts Active After 11/19/80 (54-020)	37 shafts active prior to May, 1985 , 35 shafts active only after May 1985, 13 shafts used for PCB contaminated waste oil (C1-C13), and 5 shafts for retrievable TRU waste storage (145-149)	All disposal shafts within this SWMU, except 21-23, are capped and inactive. The waste stored in shafts 145-149 will be retrieved after 2000 for treatment in the new TRU waste treatment facility
Waste Oil Storage Tanks (54-021)	6 Storage Tanks	Inactive
PCB Transformer Leak at TA-54-75 (54-022)	1 Spill	Inactive
<i>[Mixed Waste Container Storage Areas, Above Pit 30 (TBD)]</i>	<i>[1 Storage Area]</i>	<i>[To be used beyond 2000]</i>

		<i>[Mixed Waste Container Storage Areas, Above Pit 33 (TBD)]</i>	<i>[1 Storage Area]</i>	<i>[To be used beyond 2000]</i>
Material Disposal Area (MDA) L (Section 3.3)	<i>Bermed Hazardous Waste Storage Area for Pails and Drums (54-001(a))</i>	<i>Bermed Hazardous Waste Storage Area for Pails and Drums (54-001(a))</i>	1 Storage Area	All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996
	Bermed Asphalt Pad for Storage of Waste Oil and Hazardous Materials (54-001(c))	Bermed Asphalt Pad for Storage of Waste Oil and Hazardous Materials (54-001(c))	1 Storage Pad	Inactive
	Material Disposal Area L (54-006)	Material Disposal Area L (54-006)	12 Disposal Shafts operated prior to 11/19/80, 22 Disposal Shafts operated after 11/19/80, 3 Surface Impoundments , and 1 Pit	Inactive
		<i>Container Accumulation, Packaging, and Storage Area at TA-54-31 (54-001(b))</i>	1 Storage Area	All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996
		PCB Storage Building (54-001(d))	1 Storage Building	All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996
		<i>Sheltered, Six-celled Concrete Storage Pad, TA-54-32 (54-001(e))</i>	1 Storage Pad	All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996

		<i>Compressed Gas Storage Area (54-002)</i>	<i>1 Storage Area</i>	<i>All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996</i>
		<i>Sewage Tank (54-008)</i>	<i>1 Sewage Tank [plus 2 additional sewage tanks]</i>	<i>To be used indefinitely for administrative support buildings</i>
		<i>Treatment Tanks (54-009)</i>	<i>4 Treatment Tanks</i>	<i>All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996</i>
		<i>Drum Compactor (54-012(b))</i>	<i>1 Compactor</i>	<i>All active, surficial treatment and storage units at Area L will be relocated to TA-63 by approximately 1996</i>
		<i>Radioactive Waste Storage Shafts and Pits, Lead Stringer Shafts (54-014(a))</i>	<i>2 Storage Shafts [plus 1 planned]</i>	<i>These shafts will actively store the lead stringers until they decay to the point that they can be packaged for long-term storage</i>
		<i>Lead Casks Near Shaft 4 (54-015(g))</i>	<i>1 Storage Area</i>	<i>Inactive</i>
		<i>Rad-Contaminated Forklift Battery (54-015(i))</i>	<i>1 Storage Area</i>	<i>Inactive</i>
Material Disposal Area (MDA) H (Section 3.2)	Shafts 1-8 at MDA H (54-004)	Shafts 1-8, and <i>Shaft 9</i> at MDA H (54-004)	8 Disposal Shafts operated prior to 11/19/80, <i>One Disposal Shaft operated after 11/19/80</i>	Inactive

Material Disposal Area (MDA) J (Section 3.1)	Three Pits at MDA J (54-005)	Four Pits and Two Shafts at MDA J (54-005) [plus 2 new disposal pits and a landfarming unit]	4 Disposal Pits and 2 Disposal Shafts [plus 2 new disposal pits and a landfarming unit]	The 4 pits are inactive, the 2 shafts are active [the 2 new shafts are active, and the landfarming unit will be inactive in 1993]
TA-54 West (Section 3.5)	Septic System and Evapotranspiration Bed (54-007(c))	Septic System and Evapotranspiration Bed (54-007(c))	1 Septic System	To be replaced by SWSC in 1992-1993
	Truck Washing Pit (54-013)	Truck Washing Pit (54-013(a))	1 Decon Pit	Will remain in operation in support of the new TRU waste treatment facility beyond 2000
		TRU Waste Staging Area, TA-54-38 (54-015(h))	1 Staging Area	Will remain active in support of the new TRU Waste Treatment Facility beyond 2000
		Sump in TA-54-38 (54-016(a))	1 Sump	Will remain active indefinitely
TA-51 (Section 3.6)		Septic System (51-001)	1 Septic System	To be replaced by SWSC in 1992-1993
		Environmental Research Site, Caisson TA-51-38 (51-002(a))	1 Subsurface Caisson	Will remain active indefinitely
		Environmental Research Site, Caisson TA-51-39 (51-002(b))	1 Subsurface Caisson	Will remain active indefinitely
		Septic System Leach Field TA-54-4 (54-007(d))	1 Leach Field	To be replaced by SWSC in 1992-1993

Septic System Leach Field
TA-54-9 (54-007(e))

1 Leach Field

To be replaced by
SWSC in 1992-1993

¹Potential release sites that are ***bold and italicized*** are subject to RCRA closure under interim status.

²This list of SWMUs, currently found in the LANL RCRA permit, may be revised based on EPA review of the updated LANL SWMU Report, and/or in response to the NMED's request to remove individual units subject to closure from the permit module requiring corrective action (Module VIII). SWMU numbers in this column refer to numbers in the 1988 (original) SWMU Report.

³SWMU numbers in this column refer to numbers found in the current SWMU Report, November, 1990.

⁴Potential release sites that are *italicized* are operating under permitted status and will eventually be subject to closure regulations. This work plan is a closure plan modification for those units in this category that are intended to close prior to the year 2000 (see Year of Final Use column). For all SWMUs that will operate beyond the year 2000 (including some of the permitted units that will eventually be subject to RCRA closure regulations), the ER Program will only perform interim corrective measures designed to address releases of hazardous substances in a manner that facilitates continued operation.

⁵Many of the predictions concerning the future operational status of the potential release sites are based on plans to construct a new Hazardous Waste Treatment Facility and Low-level Mixed Waste Storage and Treatment Facility at TA-63 in 1994 and 1996, respectively, and a TRU Waste Treatment Facility at Area G that will be operational by 1999 (it is an FY95 line item).

DO I NEED TO ADD AREAS OF CONCERN IN THE SWMU REPORT APPENDIX?

Plans, respectively, are organized into sections based on these geographical groupings). As can be seen from Table 1-3, all of the individual potential release sites have been accounted for in SWMUs listed in the LANL SWMU Report (1990), and all of these SWMUs have been covered in work plan sections.

Within each of these work plan sections, fundamental field investigation units, called Corrective Action Management Units (CAMUs) will be explicitly defined. CAMUs will be defined logically (in a manner that will facilitate release investigations and eventual corrective action) by examining geographical relationships, applicable regulations, operating histories, waste types, methods of disposal, and transport pathways. CAMUs can consist of one or more SWMUs. The definition (e.g., boundaries) of CAMUs will evolve throughout the corrective action process as it becomes necessary to reorganize SWMUs to facilitate the various program phases. The final CAMU definitions will be those that facilitate corrective action (e.g., by the end of the program, a CAMU will consist of SWMUs that can be remediated together).

It is worth noting from Table 1-3 that EPA has not listed in the LANL RCRA permit all of the SWMUs identified by the Laboratory and listed in the SWMU Report. There are two reasons for this discrepancy: 1) EPA feels there is no potential for releases of hazardous waste or constituents from some of these units; and 2) EPA chose not to list some of them in the permit because they are subject to RCRA closure and thus under State jurisdiction.

For SWMUs that EPA has apparently not listed in the permit because there is no potential for hazardous constituent releases, LANL will confirm this observation and then examine the possibility that other hazardous substances, not regulated by RCRA (e.g., source, by-product, and special nuclear material), could migrate from the site. If there exists a potential for a release of hazardous substances that could threaten human health or the environment, LANL will pursue an RFI even though it is not required by the LANL RCRA permit. Similarly, for SWMUs subject to closure regulations, an RFI will be conducted despite the fact that they are not specifically listed (in some cases) in the permit. The RFI for these units will assist in their permanent closure under NMED oversight. This policy is consistent with the scope and goals of the ER Program, and will assist in minimizing any future liabilities that could be incurred if the scope of the LANL ER Program is too narrow.

MAPS WILL BE PROVIDED

1.5 PHILOSOPHY AND TECHNICAL APPROACH

1.5.1 General Technical Approach

The philosophy behind the technical approach to environmental restoration at TAs 51 and 54 was presented to the NMED in a meeting held February 8, 1991, and is documented in a non-technical paper that was presented in April, 1991, to the first annual Waste Management and Environmental Research Consortium (WERC) conference on Waste Management: Technology, Technology Transfer, and Training (*).

As indicated in subsequent chapters of this work plan, the SWMUs at TAs 51 and 54 present environmental restoration challenges that can be organized into two distinct categories: 1) Known releases of hazardous substances that are either easily cleaned up or that present a minimal threat to human health but may significantly impede existing or planned facility operations; and 2) sources of future threats to public health or the environment. These are essentially short-term and long-term problems, respectively, and will be treated as such.

It will be the policy of the ER Program Office to address any short-term problems in the most efficient, justifiable manner feasible. Principles of the "observational approach" described in the Installation Work Plan (*) will be utilized to focus the corrective action process on the earliest possible implementation of an acceptable alternative. Solutions to most short-term problems will take the form of "voluntary corrective actions" (see the IWP). Although expeditious implementation of voluntary corrective actions short circuits the normal, rigorous corrective action process, any such actions will be subject to the same degree of regulatory scrutiny, and will ultimately achieve the same standards as final corrective measures which are selected as a result of a detailed Corrective Measures Study (CMS).

For example, the known release of organic vapors from MDA L into the unsaturated zone is currently hindering the expansion of MDA G to the west to allow for additional disposal space for low-level, solid radioactive waste. While these vapors present no threat to human health or the environment (they are apparently isolated from groundwater by a layer of weathered basalt and an additional 300-400 feet of unsaturated zone), the expenditure of funds for a voluntary corrective action is justified on the basis of institutional need alone. In addition to addressing this institutional need, a voluntary corrective action (such as vapor extraction) will negate any debate concerning the likelihood that vapors will eventually reach groundwater in concentrations capable of harming human health. Thus, Chapter 5 presents a Voluntary Corrective Action Plan for the organic vapor plume at TA-54.

Solutions to potential long-term problems will be proposed and implemented only after the problems have been thoroughly defined and studied as a part of the rigorous corrective action process (e.g., RFI/CMS). For example, the potential for aqueous phase transport of radionuclides or other hazardous substances from MDA G through the unsaturated zone to the groundwater table must be thoroughly understood before any mitigation measures to prevent this migration can be proposed.

1.5.2 Specific Technical Approaches and Assumptions Concerning Future Land Use and Period of Interest

The identification and characterization of the potential for future problems requires a prediction of future land uses, and a definition of the period over which the predicted land uses will be assumed to remain constant. If areas are to be eventually released for unrestricted (e.g., public) use, they must be protected to a greater degree, and have different cleanup goals, than those areas where Laboratory operations are expected to continue indefinitely (e.g., some material disposal areas and permitted storage areas, see Table 1-3). Of even more immediate concern, selected cleanup remedies must clear the way for Laboratory operations planned in the near future.

To establish site-specific technical approaches and restoration goals, the issue of future land use must be examined both macroscopically (on an operable unit basis), and microscopically (based on individual geographic areas within the operable unit). Macroscopically, there appear to be two ways of approaching the issue: 1) Assume that the Laboratory will only operate for a finite amount of time and that loss of institutional control of TAs 51 and 54 occurs shortly thereafter; or 2) assume that government (independent of sociopolitical evolution) maintains control over TAs 51 and 54 (because of the recognized long-term potential hazards) regardless of the operational status of the Laboratory.

Option 1 (loss of institutional control) would involve computer modeling of contaminant behavior over very long (even geologic) timeframes to determine whether there is a potential for migration to environmental pathways that are connected to human or ecological receptors. It would also involve modeling "intruder scenarios", in which members of the public would live and work in what is now the TA 51/54 operable unit. Both types of modeling invariably result in ultra-conservative estimates of exposure, and could ultimately lead to the implementation of an unnecessary corrective action; it is impossible to accurately predict human behavior in the distant future, let alone the variability in climatic, hydrogeologic, and chemical parameters that are used as inputs to contaminant transport models.

The uncertainty in the first option makes the second inherently more attractive. The second option (indefinite institutional control) involves site stabilization with long-term access control and environmental monitoring, provided the results of the RFI confirm that the site poses no short-term hazards. Any corrective action proposed under this scenario would have to include some mechanism for ensuring a continuing government commitment to site control. However, if this scenario were applied generically across the entire operable unit, it would neglect the need for corrective measures based on institutional need, and it would ignore the opportunity to permanently clean-up some of the simpler SWMUs. The ER Program would simply propose any necessary site stabilization and continued, or upgraded, environmental surveillance of the area. Yet we know that the Area L plume requires remediation to make way for Area G expansion, and we also know that there are many SWMUs within this operable unit that can be easily, and permanently, addressed.

Thus, both of these scenarios have their technical drawbacks. However, a microscopic application of these scenarios, within geographic areas, will address institutional needs and reduce future liabilities, while simultaneously avoiding the uncertainty associated with modeling of the distant future. In general, option 2 (indefinite institutional control) will be applied to individual disposal units within the four material disposal areas (H, J, L, and G) at TA-54, and option 1 will be applied to all of the other SWMUs within the TA 51/54 operable unit. In RCRA language, a stabilization and post-closure care monitoring approach will be taken for disposal units, while a permanent corrective action/clean closure will be sought for all of the other inactive SWMUs. As previously mentioned, the ER Program will only address releases from SWMUs that are projected to still be active after the year 2000.

The following is a discussion of each geographic area and a justification for the dominant future land use assumptions that will govern the selection of appropriate corrective action/closure alternatives. The operational status of the units discussed below was provided in Table 1-3. In some cases, additional SWMU- or CAMU-specific assumptions will be provided in the individual sections of the work plan covering the geographic areas. The discussions below may evolve as more information becomes available on the SWMUs in TA 51/54 (e.g. after the RFI).

1.5.2.1 TA-54 West

TA-54 West contains just four SWMUs, two of which (the TRU waste handling areas) will still be operational after 2000. The nature of the other two (a septic system and a truck washing pit) is such that they can be permanently cleaned up should any contamination be found in the field. Thus, option 1 (loss of institutional control) can be practically applied to these two units. As discussed earlier, the scope of work for ER at the two indefinitely active units will be to look for and remediate, if necessary, releases from these units beyond their intended boundaries.

Furthermore, since TA-54 West is not co-located with the material disposal areas of TA-54, the Laboratory may eventually wish to release this area for unrestricted uses. Therefore, a conservative risk assessment scenario, consistent with clean closure guidance from the NMED, will be used to derive cleanup standards, both for releases from the operating units, and for the sources and associated contamination from the inactive units. More than likely, voluntary corrective actions (excavation) for these sites will be implemented during conduct of the RFI, with verification sampling results to be compared to the risk-based cleanup standards, and waste sampling to determine the proper disposition of excavated materials.

1.5.2.2 TA-51

TA-51 is also a very simple geographic area. It contains just five SWMUs (when the 2 leach fields mistakenly located in TA-54 are properly reorganized, see Table 1-3): Three septic systems and two environmental research caissons. None of these are expected to be contaminated with hazardous

substances. In fact, the two research caissons have never managed solid wastes at all, and consequently, these sites are "written off" in section 3.6.

Similar to TA-54 West, long-term institutional control cannot be assumed for this area since it is remote from the material disposal areas (option 1 is applicable). Fortunately, the septic systems at TA-51 can also be easily cleaned up to risk-based levels (if hazardous substances are detected) using a voluntary corrective action (excavation) during the RFI phase of the program. The risk-based levels will be calculated using exposure scenarios appropriate to unrestricted land use.

1.5.2.3 Material Disposal Area H

Material Disposal Area H consist of nine disposal shafts (shaft number nine is subject to RCRA closure regulations, see Table 1-3). It was designed as a permanent repository for uncontaminated classified wastes (see section 3.2.1.1). However, tritium is known to have been inadvertently disposed in the shafts, and materials contaminated with high explosives and radionuclides were allowed to be disposed as well. Although aqueous phase transport is unlikely, vapor phase transport of tritium is known to have occurred. (*)

Given these site conditions, and the clear intent to use Area H as a permanent repository, option 2 (indefinite site control) is the most appropriate future land use scenario. Since Shaft 9 and the other shafts are collocated, the same remedial alternative (site stabilization) will likely be applied simultaneously to all of the shafts. Occasional monitoring for an indefinite post-closure period will then be required to periodically confirm that the site was successfully stabilized. Remediation of the tritium plume will only be considered if it exceeds site-specific action levels that are calculated based on an exposure scenario consistent with option 2 (e.g., restricted, or industrial land uses).

1.5.2.4 Material Disposal Area J

Material Disposal Area J contains one land farming unit for petroleum contaminated soils associated with the underground storage tank removal program, four inactive pits, two active pits, two active shafts for classified waste disposal, and a couple of surface storage units (non-hazardous waste only). The six disposal units (the pits, or landfill cells, and the two shafts) were, and are, intended to receive only non-hazardous wastes. Thus, the RFI for this area will be designed to eliminate it from the list of ER Program concerns. A combination of source-term research and sampling of areas adjacent to MDA J (both surface and subsurface) will be used to delist the site.

In the unlikely event that hazardous constituent releases to the environment are detected, option 2 will apply to this area. Area J is a designated permanent disposal facility for the Laboratory, so any contamination will be cleaned up to standards based on industrial use. Unless a discrete portion of Area J (e.g., the land farming unit) can be identified as the primary source and remediated, long-term monitoring of the site with access control may also be required.

1.5.2.5 Material Disposal Area L

From the viewpoint of environmental restoration, Area L is primarily an inactive chemical waste disposal facility, although a number of active chemical and mixed waste handling and storage units are present on the surface. Area L was designed to act as a permanent repository for Lab-generated chemical (non-radioactive) wastes. Option 2 (indefinite institutional control), therefore, applies. The disposal units will be stabilized, if necessary, and further remediated if a discrete source of the known vadose zone organic vapor plume can be identified, and it is cheaper to excavate or treat the source in-situ than it is to perform vapor extraction for long periods of time. On-going vapor plume monitoring and modeling will assist in

this determination. Post-closure care monitoring for an indefinite period will also be required for the disposal units at Area L.

The vapor plume itself will be remediated in a manner that facilitates the expansion of Area G (using a voluntary corrective action), and simultaneously addresses any health concerns related to occupational exposure. Health-based cleanup levels will first be calculated using exposure scenarios that reflect a restricted [industrial] future land use. However, if these levels do not allow for the expansion of Area G (e.g., the presence of any organic vapors in the new pits causes them to become mixed waste disposal units), more conservative cleanup goals (e.g., below detection limits) may be utilized.

Area L also contains a number of surface storage areas (see Table 1-3). Although the Laboratory plans to relocate many of the hazardous and mixed waste operations currently conducted within Area L to TA-63 by 1996, the entire fenced area of MDA L is permitted for hazardous waste storage, and LANL intends to reserve the space for this purpose indefinitely. Thus, it is inappropriate to seek clean-closure in the near future (before 2000), so the ER Program scope of work for these active units will be to look for, and correct if necessary, releases beyond the fence line.

1.5.2.6 Material Disposal Area G

Area G is the low-level radioactive waste landfill for the Laboratory, and will remain so indefinitely. It is also used for the storage of low-level and transuranic mixed wastes, and will continue to store such wastes in support of the new transuranic waste treatment facility at TA-54 East, which is scheduled to be operational in 1999.

To establish a technical approach for Area G, one must divide the SWMUS into four categories: 1) Disposal units that were inactive prior to the effective date of DOE Order 5820.2A, September, 1988; 2) disposal units active after September, 1988; 3) SWMUs that will be inactive prior to 2000; and 4) SWMUs that will remain active after 2000.

According to 5820.2A, category 1 disposal units at Area G must be addressed according to the requirements of RCRA and CERCLA (e.g., they must be addressed by the ER Program). For these kinds of units, the ER Program will adopt option 2; indefinite institutional control will be assumed. The first task will be to determine whether the existing pit, trench, and shaft caps adequately stabilize the site. To make this determination, the ER Program will model contaminant transport over a period of time consistent with DOE 5820.2A guidance, 100 years after the last projected receipt of waste at Area G. If modeling projections indicate a potential future health threat, existing caps and other stabilizations techniques will be enhanced by the ER Program. The only difference between this approach and the DOE 5820.2A requirements for new radioactive waste landfills is that intruder scenarios are ignored in the modeling since indefinite institutional control is assumed. Therefore, access control and long-term (post-closure) monitoring will be essential components of the ER Program solution for this category of Area G SWMUs.

As discussed previously, the disposal units at Area G that were active after the effective date of DOE Order 5820.2A are outside the scope of the ER Program (see section 1.3.3.2). However, to assist EM-8 in their "performance assessment" of these units, source-term data is provided in this work plan (section 3.4.1.1), and contaminant transport from these units will be modeled along with the disposal units from category 1.

Most of the SWMUs within Area G that were, or will be, inactive prior to 2000 can be easily remediated (e.g., inactive septic systems), and will be removed using a voluntary corrective action. Because they are collocated with the disposal units at Area G, option 2 still applies and the cleanup levels will be based on exposure scenarios for industrial workers, rather than unrestricted use (e.g., children eating dirt in the back yard).

SWMUs in Area G that fall into category 4, indefinitely active, will be handled analogously to the active SWMUs in Area L. The ER Program will focus on the detection of releases beyond the intended boundaries of these units, and propose corrective measures if the releases pose threats to human health and the environment. Because these sites are collocated with the Area G disposal units, option 2 still applies and releases will only be corrected if they exceed action levels that are calculated based on exposure scenarios for industrial land use.

1.5.3 Site Characterization Strategy and Development of This Work Plan

The RFI for TAs 51 and 54 will be conducted in a manner consistent with the Interim Final RFI Guidance published by EPA in May, 1989 (*), and using the framework for site investigations detailed in the LANL IWP (*). It will also satisfy the requirements of Module VIII, Section P, of the LANL RCRA permit called Scope of Work for an RFI at LANL.

The RFI will be conducted in 4 steps: 1) Preparation of the RFI Work Plan; 2) Phase I field investigation; 3) Phase II field investigation; and 4) Preparation of the RFI Report. Submittal of this document completes the first step in the RFI process. The second phase of the field investigation allows for the collection of additional data that the results of the first investigation indicate are necessary in order to facilitate the corrective measures study, or the implementation of voluntary corrective actions. At appropriate times in the RFI process, progress reports will be supplied to the EPA and NMED in the form of technical memorandums. These memorandums will document interim results of the investigation and field decisions that stray from the sampling plans in this document, and they may occasionally request guidance before proceeding with the next logical step in the RFI.

Consistent with the "Observational Approach" (see the IWP), site characterization will only be performed to the extent that it is required to assist in the definition of a logical remedial alternative (a voluntary corrective action) or to support the performance of a corrective measures study when a preferred alternative is not immediately obvious. Data collection requirements will be defined by analyzing a conceptual model of the site constructed from existing information, and an initial assessment of potential cleanup alternatives will focus the data collection effort. As appropriate, statistical analysis of existing data and decision analysis (as described in the IWP) will be utilized to justify additional data collection.

The specific goal of the RFI for this operable unit is to gather enough information concerning sources, releases, environmental pathways, and present and future receptors to support a CMS of alternatives designed to address long-term problems, and enough data to design any necessary voluntary corrective actions to address short-term problems. To ensure that the RFI maintains this focus, a rigorous work plan development process, which is reflected in the structure of this document (see section 1.6), was employed. First, all existing information concerning the SWMUs, their releases, and mechanisms for contaminant transport to receptors was gathered and documented. Next, this existing data was evaluated for potential use in decision-making. The result of these efforts was to provide a defined level of confidence in existing data sets so that important decisions regarding the scope of the RFI could have a strong technical foundation.

All of the existing data, with its associated levels of confidence, were then integrated into conceptual models of the geographic areas presented in discrete sections of this work plan (e.g., Section 3.1 Material Disposal Area J). If the conceptual model was sufficient to make conclusions with regard to the potential for long-term problems, no further data collection was planned in Chapter 4. On the other hand, if insufficient information was available to conduct a CMS or design a voluntary corrective action, data gaps in the conceptual model were identified, specific data needs (and data quality objectives) were listed, and a sampling plan to fill the data needs was prepared for Chapter 4.

Once the data has been collected, new conceptual models will be created and another determination of the need for additional data collection, similar to the analysis done for this work plan, will be conducted. If

the conceptual models are now complete, site-specific conclusions will be made concerning the need for further action. In many cases, these decisions will be based on a comparison of field data with action levels that are mutually acceptable to the Laboratory and the regulatory agencies. If action levels are exceeded, a CMS will be conducted; otherwise, a request for a permit modification to delist individual SWMUs will be submitted to EPA (or if the SWMU was never in the permit, no further action will be proposed in the RFI report).

1.6 PLAN ORGANIZATION

The content of this work plan is such that it incorporates all of the components of an RFI work plan as outlined in the EPA Interim Final RFI Guidance, (*) but the structure reflects the thought process used to define site characterization needs for the operable unit. Chapter 1, Introduction, provides the regulatory framework, defines the scope, and discusses the philosophy behind the technical approach to site characterization at TAs 51/54. It also puts the RFI at TAs 51/54 into the context of the overall ER Program at LANL.

Chapter 2, TA 51/54 Description and Identification of Generic Data Needs, provides the reader an historical overview of the operable unit as well as a discussion of the environmental setting. This discussion is important to understanding pathways for contaminant transport that are common to all of the geographic areas at TA 51/54. A well-written section on generic data needs will eliminate the need for repetitive, site-specific characterization of some of these common pathways.

Chapter 3, CAMU Descriptions and Identification of CAMU-specific Data Needs, is organized by geographic area (e.g., section 3.1 is Material Disposal Area J, section 3.2 is Material Disposal Area H, etc.). First, the CAMUs that will serve as fundamental investigation units are defined and justified. Then, existing information on source-term, pathways and releases, and potential health and environmental impacts is documented by CAMU, and all of the CAMUs are integrated into a conceptual model of the entire geographic area. Finally, gaps in the conceptual model are identified, and if CAMU-specific ER Program objectives are jeopardized by the data gap, it is listed as a data need. Chapter 4 attempts to integrate all of the information presented in Chapter 3 into an overall conceptual model of TA 51/54.

Chapter 5 presents a voluntary corrective action plan for the vapor plumes emanating from Areas L and G, based on an evaluation of the existing data for these sites presented in Chapter 3. Chapter 6 provides sampling plans, organized by geographic area, to fulfill the data needs identified in Chapter 3.

Chapter 7 is a project management plan which defines how the field investigation will be managed, and provides a schedule and cost estimate for the field program. Finally, Chapters 8-11 are ancillary plans that cover quality assurance, health and safety, records management, and community relations, respectively. These four plans are tiered to the IWP, which outlines the generic requirements in these areas.

APPENDIX A

TABLE 1-2

OTHER RELEVANT LAWS, ORDERS, AND REQUIREMENTS

TABLE 1-2a

IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
Solid Waste Disposal Act (SWDA), as amended by the Resource Conservation and Recovery Act (RCRA)	42 U.S.C. 6901 et seq.	Establishes the basic framework for federal regulation of hazardous waste. RCRA controls the generation, transportation, treatment, storage and disposal of hazardous waste through a comprehensive "cradle to grave" system of hazardous waste management techniques and requirements.	Hazardous waste generated by site remediation activities must meet RCRA generator and treatment, storage, or disposal (TSD) requirements.
Guidelines for the Land Disposal of Solid Wastes	40 CFR Part 241	Sets guidelines for land disposal of solid wastes.	Disturbance of site could require closure to follow state program requirements for solid waste landfills. See State ARARs for solid waste management.
Hazardous Waste Management System: General	40 CFR Part 260 (New Mexico Hazardous Waste Management Regulations (NMHWMR)-6, Part I) ^a	Definitions; rulemaking petitions; variances; recycling.	Definitions in 40 CFR 260.10 are important to interpretations. Rulemaking petitions and variances have potential applicability.

^a These are New Mexico regulatory citations which are equivalent of Title 40 Code of Federal Regulations, Parts 260,261,262,263,265,268, and 270 (July 1990) as stated in New Mexico Hazardous Waste Management Regulations-6 (NMHWMR-6).

TABLE 1-2a (Continued)

IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
Identification and Listing of Hazardous Waste	40 CFR Part 261 (NMHWMR-6, Part II)	Identifies by both listing and characterization those solid wastes subject to regulation as hazardous wastes under Parts 261-265, 268, and 270.	Applicable if remediation techniques result in generation of hazardous wastes.
Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262 (NMHWMR-6, Part III)	Describes regulatory requirements imposed on generators of hazardous wastes.	Applicable if remediation techniques result in generation of hazardous waste.
Standards Applicable to Transporters of Hazardous Waste	40 CFR Part 263 (NMHWMR-6, Part IV)	Transporters of hazardous waste must comply with both EPA and Department of Transportation (DOT) regulations.	Applicable only if remediation technique results in off-site transportation of hazardous waste. See also 49 CFR Parts 107 and 171 through 179 for DOT regulations pertaining to transportation of hazardous materials. Applicable DOE Orders appear in Table 3 of this document.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR Part 264 (NMHWMR-6, Part V)	All TSD facilities will have to comply with the standards of 40 CFR Part 264 or equivalent standards administered by the state.	Applies to facilities that were in operation by November 19, 1980, and which have submitted and received final approval on a Part B permit application.
Land Disposal Restrictions (LDR)	40 CFR Part 268 (NMHWMR-6, Part VIII)	Treatment to LDR Standards contained in 40 CFR Part 268, Subpart D.	Applies if (1) the waste is a RCRA waste, (2) the waste is restricted at time of placement, (3) the remedial

TABLE 1-2a (Continued)

IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
action could be defined as land	disposal.		
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by Superfund Amendments and Reauthorization Act of 1986 (SARA)	42 U.S.C. 9601 et seq.	Establishes reporting and response requirements for releases of hazardous substances, principally from uncontrolled hazardous waste sites and spills.	Provides procedures for containing and removing releases of hazardous substances, and for identifying and cleaning sites contaminated with hazardous substances.
Designation, Reportable Quantities (RQs), and Notification	40 CFR Part 302	Identifies RQs for hazardous substances, and sets forth the notification requirements for releases of these substances.	Superfund requires owners and operators of facilities who know of a release of hazardous substances to immediately report to the National Response Center all such releases which equal or exceed specified RQ established by EPA.
Reporting Hazardous Substance Activity When Selling or Transferring Federal Real Property	40 CFR Part 373	Requires notice in any contract for sale or other transfer of property owned by the United States of the type and quantity of hazardous substances released, or disposed of on the site to the extent such information is available.	Effective October 17, 1990. See 55 FR 14212 (4/16/90) for detail.
Clean Air Act (CAA), as amended	42 U.S.C. 7401 et seq.	A comprehensive environmental law designed to regulate any activities that affect air quality, providing the national framework for controlling air pollution.	CAA is of primary importance to those involved in hazardous materials and waste issues, since these activities often affect air quality.

TABLE 1-2a (Continued)

**IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

DESCRIPTION	CITATION	EXPLANATION	REMARKS
National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	40 CFR Part 61	Establishes numerical standards for hazardous air pollutants.	Remediation activities could result in the emissions of regulated hazardous air pollutants.
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Sets National Ambient Air Quality Standards (NAAQS) for ambient pollutants which are regulated within a region. Strategies to control emissions are implemented when a region exceeds the NAAQS for the ambient pollutants as defined under the CAA.	Applicable if remedial activities result in violation of attainment standards.
Safe Drinking Water Act (SDWA), as amended	42 U.S.C. 300f et seq.	Creates a comprehensive national framework designed to ensure the quality and safety of drinking water supplies.	Applicable to public water systems.
National Primary Drinking Water Regulations	40 CFR Part 141	Establishes maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs).	Applicable to public water systems.

TABLE 1-2a (Continued)

**IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

DESCRIPTION	CITATION	EXPLANATION	REMARKS
National Secondary Drinking Water Regulations	40 CFR Part 143	Establishes regulations that control contaminants in drinking water.	Applicable to public water systems.
Federal Water Pollution Control Act (FWPCA), as amended by the Clean Water Act of 1977 (CWA)	33 U.S.C. 1251 et seq.	Creates the basic national framework for water pollution control and water quality management in the United States.	Applicable to discharges of pollutants to navigable waters.
Designation of Hazardous Substances	40 CFR Part 116	Designated hazardous substances are in Tables 116.4A and 116.4B of 40 CFR Part 116.	Designates hazardous substances in accordance with requirements of CWA Section 311(b)(2)(A). These are included in the CERCLA list of hazardous substances.
n Determination of Reportable Quantities for Hazardous Substances	40 CFR Part 117	Establishes reportable quantities of approximately 300 substances, that when discharged into or upon navigable waters of the United States, adjoining shorelines or upon contiguous zone at or above the established quantity.	Applicable if a release exceeds quantities listed in 40 CFR Part 117, Table 117.3.
The National Pollutant Discharge Elimination System (NPDES)	40 CFR Parts 122 and 124	Part 122 covers basic EPA permitting requirements, establishing technology based limitations and standards, control of toxic pollutants, and monitoring of effluent to assure permit conditions and limits are not exceeded.	Part 124 contains EPA procedures for issuing, modifying, revoking and reissuing, or terminating permits.

TABLE 1-2a (Continued)

**IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

DESCRIPTION	CITATION	EXPLANATION	REMARKS
EPA manages the NPDES program in New Mexico although the State has its own water discharge	requirements (see State ARARs). Applicable if remediation includes wastewater discharge; also applies	to storm water runoff associated with industrial activities. Effluent	limitations established by EPA and included in NPDES permit.
Pretreatment Standards for Existing and New Sources of Pollution	40 CFR 403	Pretreatment standards; prohibited discharges and categorical standards; development of program by POTW; variances from categorical standards.	Requires implementation of national pretreatment standards to control pollutants which pass through or interfere with treatment processes of Publicly Owned Treatment Works (POTW). Applicable if remediation includes discharge of wastewater to a POTW.
Discharge of Oil	40 CFR Part 110	1) Applicable water quality standards 2) Sheen of oil on water surface.	Runoff from site will need control for oily waste discharge to waters of the United States.
Section 404 Dredge and Fill Regulatory Programs	33 CFR Parts 320, 323, and 325 and 40 CFR Parts 230-232	Establishes that a special permit must be obtained from the Army Corps of Engineers prior to the discharge of dredge and fill material into navigable waters.	Applicable where dredge and fill material may or will be discharged to navigable waters of the United States.
National Environmental Policy Act of 1969 (NEPA), as amended	42 U.S.C. 4341 et seq.	Requires agencies of the Federal government to the fullest extent possible to utilize the policies, regulations, and public laws of the United States to preserve important historic, cultural, and natural aspects of our natural heritage.	

TABLE 1-2a (Continued)

IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
Applicable when remediation activities constitute, or may constitute, a major federal action	significantly affecting the quality of the human environment. In such cases, a "detailed statement" must	be prepared which may take the form of an Environmental	Assessment (EA) and/or an Environmental Impact Statement.
Implementation of NEPA Requirements	40 CFR Parts 1500-1508; 10 CFR Part 1021; DOE Order 5440.1D	Requirements for Compliance with National Environmental Policy Act (NEPA).	The NEPA implementing agency is the Council on Environmental Quality (CEQ). DOE NEPA Guidelines of 12/15/87 (52 FR 47662) are being revised and incorporated in a revision of 10 CFR Part 1021 (55 FR 46444, 11/2/90).
The National Historic Preservation Act of 1966 (NHPA), as amended	16 U.S.C. 470 et seq.	Requirements for preservation of cultural resources (archeological and historic sites).	An act to establish a program for the preservation of additional historic properties throughout the United States, and for other purposes.
Executive Order 11593		Direction to federal agencies to preserve, restore, and maintain cultural resources.	Applies to sites, structures, and objects of historical, archaeological, or architectural significance.
The Fish and Wildlife Coordination Act of 1934, as amended	16 U.S.C. 661 et seq.	An Act to promote the conservation of wildlife, fish, and game, for water resource development, and to provide uniform policies with respect to recreation fish and wildlife benefits and costs to federal government multiple-purpose water resource projects.	Applicable to any remediation activity that would impound or modify any stream or water body 10 acres or greater in surface area.

TABLE 1-2a (Continued)

**IDENTIFICATION OF OTHER RELEVANT FEDERAL STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

DESCRIPTION	CITATION	EXPLANATION	REMARKS
Endangered Species Act of 1973 (ESA), as amended	16 U.S.C. 1531, et seq.	Establishes listing and protection of threatened and endangered species of plants and animals, and their critical habitat.	Applicable only if remediation activities may disturb threatened and endangered species or their critical habitat. See also state ARARs.
Fish and Wildlife Services List of Endangered and Threatened Wildlife and Plants	50 CFR Parts 17, 222, 225, 226, 227, 402, 424	Must consult with Fish and Wildlife Service to determine if threatened or endangered species could be impacted by activity.	Applicable only if remediation activities may disturb threatened and endangered species or their critical habitat. See also state ARARs.
Occupational Safety and Health Act (OSHA), as amended	29 U.S.C. 651 et seq.	Establishes the framework to identify and ameliorate workplace hazards, train workers in safe practices, and to inform workers of the risks inherent in their workplaces.	Provides for the development and promulgation of occupational safety and health standards.
Standards for Hazardous Waste Operations and Emergency Response	29 CFR Part 1910.120	Establishes specific requirements for worker training and safety at a variety of facilities and locations, including hazardous/toxic waste remediation sites.	Also see DOE 5480.1B, 5484.1, 5480.4, 5482.1B and other orders.

TABLE 1-2b

**IDENTIFICATION OF RELEVANT DOE ORDERS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

ORDER NUMBER	DATE	TITLE	REMARKS
DOE 1324.2A	09/13/88	Records Disposition	Establishes policies and procedures for records disposition.
DOE 1540.1 Chg 4	07/02/90	Materials Transportation and Traffic Management	Establishes policies and procedures for materials transportation activities.
DOE 1540.2	09/30/86	Hazardous Material Packaging for Transport - Administrative Procedures	Establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by the DOE.
DOE 3790.1A	10/22/84	Federal Employee Occupational Safety and Health Program	Establishes policy for the implementation and administration of the Federal Employee Occupational Safety and Health Program for the DOE.
DOE 5400.1 Chg 1	06/29/90	General Environmental Protection Program	Establishes environmental protection program requirements, authorities, and responsibilities for DOE operations for assuring compliance with federal and state environmental protection laws and regulations, federal executive orders, and internal department policies.
DOE 5400.2A	01/31/89	Environmental Compliance Issue Coordination	Establishes DOE requirements for coordination of significant environmental compliance issues.

TABLE 1-2b, Continued

**IDENTIFICATION OF RELEVANT DOE ORDERS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

ORDER NUMBER	DATE	TITLE	REMARKS
DOE 5400.3	02/22/89	Hazardous and Radioactive Mixed Waste Program	Establishes DOE hazardous and radioactive mixed waste policies and requirements and procedures to implement RCRA.
DOE 5400.4	10/06/89	Comprehensive Environmental Response, Compensation, and Liability Act Program (CERCLA)	Establishes basic requirements for implementation of the Superfund at DOE facilities.
DOE 5400.5 Chg 1	06/05/90	Radiation Protection of the Public and the Environment	Establishes standards and requirements for operations of DOE and DOE contractors respecting protection of the public and the environment against undue risk of radiation.
DOE 5440.1C	04/09/85	National Environmental Policy Act	Establishes DOE policy for implementation of the National Environmental Policy Act of 1969 (NEPA).
DOE 5480.1B	09/23/86	Environmental Protection, Safety, and Health Protection Program for DOE Operations	Establishes an overall framework of program requirements for safety, environmental, and health protection, including criteria for radiation exposure and radioactive releases for operating facilities and sites.
DOE 5480.11 Chg 1	07/20/89	Radiation Protection for Occupational Workers.	Establishes radiation protection standards and program requirements to protect workers from ionizing radiation.

TABLE 1-2b, Continued

IDENTIFICATION OF RELEVANT DOE ORDERS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

ORDER NUMBER	DATE	TITLE	REMARKS
DOE 5480.3	09/23/86	Safety Requirements for the Packaging of Fissile and Other Radioactive Materials	Establishes requirements for packaging and transportation of radioactive materials for DOE facilities.
DOE 5480.4	05/15/84	Environmental Protection, Safety and Health Protection Standards	Specifies and provides requirements for the application of the mandatory environmental protection, safety, and health (ES&H) standards applicable to all DOE and DOE contractor operations; provides a listing of reference ES&H standards; identifies the sources of the mandatory and reference ES&H standards.
DOE 5481.1B	09/23/86	Safety Analysis and Review System	Establishes uniform requirements for the preparation and review of safety analyses of DOE operations which include: identification of hazards; their elimination or control; assessment of the risk; and documented management authorization of the operation.
DOE 5482.1B	09/23/86	Environmental, Safety, and Health Appraisal Program	Establishes the Environmental Protection, Safety, and Health (ES&H) appraisal program for the DOE.

TABLE 1-2b, Continued

IDENTIFICATION OF RELEVANT DOE ORDERS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

ORDER NUMBER	DATE	TITLE	REMARKS
DOE 5483.1A	06/22/83	Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities.	Establishes requirements and procedures to provide occupational safety and health protection for DOE contractor employees consistent with the protection afforded private industry employees by the Occupational Safety and Health Act (OSHA) of 1970.
DOE 5484.1 Chg 6	06/29/90	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	Establishes requirements and procedures for reporting information having environmental protection, safety, or health significance for DOE operations.
DOE 5500.3	08/13/81	Emergency Planning, Preparedness, and Response for Operations	Establishes requirements for the development of DOE site-specific emergency plans and procedures for radiological emergencies occurring in existing or planned DOE reactors and nonreactor nuclear facilities; requires that comprehensive emergency actions are planned, coordinated, and implemented to respond effectively to the on-site and off-site consequences of a radiological emergency at these facilities; and provides for appropriate coordination between DOE and off-site officials to assure the protection of on-site personnel, public health and safety, and the environment.

TABLE 1-2b, Continued

**IDENTIFICATION OF RELEVANT DOE ORDERS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

ORDER NUMBER	DATE	TITLE	REMARKS
DOE 5500.4	08/13/81	Public Affairs Policy and Planning Requirements for Emergencies	Establishes requirements for DOE public affairs actions for emergency situations, and provides guidelines for development of a public information plan.
DOE 5700.6B	09/23/86	Quality Assurance	Provides DOE policy, sets forth principles, and assigns responsibilities for establishing, implementing, and maintaining programs of plans and actions to assure quality achievement in DOE programs.
DOE 5820.2A	09/26/88	Radioactive Waste Management	Establishes policies and guidelines by which DOE manages radioactive waste, waste by-products, and radioactive contaminated surplus facilities.

TABLE 1-2c

IDENTIFICATION OF RELEVANT STATE STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
New Mexico Solid Waste Act	74-9-1 through 74-9-42, 74-9-72 and 74-9-73	Establishes state-wide and regional solid waste planning and permit requirements.	Solid wastes include discarded materials not regulated by Subtitle C of RCRA, substances regulated by the Federal Toxic Substances Control Act (TSCA), or low-level radioactive waste.
New Mexico Solid Waste Management Regulations	NM/SWMR-2 Parts I through V	Establishes requirements to prevent pollution and public health hazards from solid waste management practices.	Applicable if remediation includes management of solid wastes not regulated under RCRA, subtitle C; TSCA; or low-level radioactive waste.
New Mexico Hazardous Waste Act	74-4-1 through 74-4-13 NMSA 1978	This state statute incorporates the standards and provisions of the federal Resource Conservation and Recovery Act into state law.	Hazardous waste generated by site remediation activities must meet RCRA generator and TSD requirements.
New Mexico Hazardous Waste Management Regulations	NMHWMR-6 Parts I through X	These state regulations adopt, by reference, the federal regulations (i.e., RCRA) from 40 CFR Part 260 through 266 and 268 and 270.	Hazardous waste generated by site remediation activities must meet RCRA generator and TSD requirements.
New Mexico Underground Storage Tank (UST) Regulations	EIB/UST Parts I through XV	Establishes regulations for UST systems to protect the public health and welfare and lands and waters of the state.	Applicable if underground storage tanks (USTs) exist at TA-1 or will be installed as part of remedial activity.

TABLE 1-2c (Continued)

IDENTIFICATION OF RELEVANT STATE STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
New Mexico Radiation Protection Act	74-3-1 through 74-3-16, NMSA 1978	Regulates the health and environmental aspects of radioactive material and radiation equipment.	Remediation may involve management of radioactive materials.
New Mexico Radiation Protection Regulations	EIB RPR Parts 1, 3, 4, 10, and 13	Establishes requirements for those who receive, possess, use, transfer, or acquire any radioactive source material.	Remedial activity at TA-1 may be exempt if it is determined that TA-1 is "controlled" by LANL (1-110.D.1) or if the state and the U.S. Nuclear Regulatory Commission jointly determine that work can be accomplished without undue risk (1-110.D.4(a)).
New Mexico Air Quality Control Act	74-2-1 through 74-2-17 NMSA 1978	Authorizes the promulgation of regulations and issuance of permits to secure for the state the benefit of all federal acts related to air pollution.	Remediation activities could result in emissions of regulated hazardous air pollutants.
New Mexico Air Quality Standards and Regulations	100 through 1301	Prescribes standards of performance for sources and emissions which are "...no more stringent than but at least as stringent as required by federal standards."	Remediation activities could result in emissions of regulated hazardous air pollutants.

TABLE 1-2c (Continued)

**IDENTIFICATION OF RELEVANT STATE STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS**

DESCRIPTION	CITATION	EXPLANATION	REMARKS
New Mexico Water Quality Act	74-6-1 through 74-6-13 NMSA 1978	Creates a state Water Quality Control Commission to serve as the state water pollution control agency. Defines the permit process, adoption of regulations, and duties of constituent agencies.	Provides remedies to prevent, abate and control water pollution.
Water Quality Control Regulations: General Provisions and Procedures	Part 1	Establishes definitions and procedures used in the Water Quality Control Commission Regulations	
Water Quality Control: Regarding Discharges to a Surface Watercourse	Part 2	Not applicable to any discharge subject to a permit under the National Pollutant Discharge Elimination System (NPDES) unless the discharger violates those discharge limits.	Applicable only if remediation includes wastewater discharge not subject to NPDES.
Water Quality Control: Regarding Discharges Onto or Below the Ground Surface	Part 3	Controls discharges onto or below the surface of the ground to protect all groundwater of the state of New Mexico.	Applicable to groundwater which has 10,000 mg/L total dissolved solids (TDS) or less.
New Mexico Cultural Properties Act	18-6-1 through 18-6-17 NMSA, 1978	State requirements for preservation of cultural resources (archeological and historic).	Applicable if remediation activities disturb archeological or historic cultural resources.

TABLE 1-2c (Continued)

IDENTIFICATION OF RELEVANT STATE STANDARDS,
REQUIREMENTS, CRITERIA, OR LIMITATIONS

DESCRIPTION	CITATION	EXPLANATION	REMARKS
New Mexico Endangered Species Act	17-2-41 NMSA 1988	Establishes a listing of Endangered Animal Species and Subspecies in New Mexico. Must consult with New Mexico Department of Game and Fish if endangered animal species could be impacted by activity.	Applicable only if remediation activities may disturb endangered animal species as listed by the State Game and Fish Department.
New Mexico Endangered Plant Species Act	9-10-5 and 9-10-10 NMSA 1978	Establishes a listing of endangered plant species in New Mexico. Must consult with New Mexico Department of Mining, Energy, and Natural Resources, Forestry Division if endangered plant species could be impacted by activity.	Applicable only if remediation activities may disturb endangered plant species as listed by the State Forestry Division.