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DRAFT REPORT  
LOIS COMPLIANCE SCREENING  
DEPARTMENT OF ENERGY  
LOS ALAMOS NATIONAL LABORATORY  
LOS ALAMOS, NEW MEXICO

III

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY  
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## EXECUTIVE SUMMARY

The RCRA Hazardous and Solid Waste Amendments of 1984 contained a loss of interim status (LOIS) provision that applied to hazardous waste land disposal facilities. PRC was tasked by EPA Region 6 to determine the LOIS compliance of certain RCRA facilities. This report addresses the requirements for the Department of Energy (DOE), Los Alamos National Laboratory facility. The facility is located in north central New Mexico and is operated by the University of California under contract to DOE. The facility is involved in weapons development, energy supply, and energy conservation programs. The facility covers 27,500 square acres and includes 31 technical areas (TA). Although DOE handles hazardous wastes throughout the facility, PRC identified only four areas which are subject to the LOIS provision: (1) Area L disposal area, (2) Area G disposal area, (3) Area P landfill, and (4) TA-16 surface impoundment.

The LOIS provision requires each land disposal facility to submit by November 8, 1985 (1) a part B (or state equivalent) operating permit application, and (2) a certification of compliance with all applicable ground-water and financial assurance requirements. DOE submitted a revised Part B permit application before November 8, 1985, which was a good faith effort to supply the New Mexico Environmental Improvement Division (EID) with the information it requested. However, DOE did not submit a LOIS compliance certification statement because: (1) it is a federal facility and, therefore, not required to comply with the financial requirements, and (2) a ground-water monitoring waiver was pending (which was later approved) for the L and G disposal areas.

DOE did not submit a certification statement for the Area P landfill; however, to comply with the LOIS provision, DOE stopped adding waste to this unit before November 8, 1985 and submitted a closure plan on November 25, 1985. Although this closure plan contained most of the information required for an adequate closure plan, it did not include specific engineering details necessary to evaluate the proposed actions for a closure. Nevertheless, PRC determined that DOE made a good faith effort to supply EID with the necessary information. The Area P landfill never had a ground-water monitoring system, but because DOE stopped adding waste to the unit and submitted a closure plan, the facility is in compliance with the

LOIS provision. However, the lack of a ground-water monitoring system is a significant RCRA violation.

The facility did not certify LOIS compliance for the TA-16 surface impoundment, or cease operation after November 8, 1985. In addition, DOE did not submit a closure plan by November 23, 1985. DOE claims that due to unforeseen circumstances, the liquid waste in this unit became concentrated and exceeded EP toxicity limits for barium. This situation persisted from August 1985 through January 1986. DOE then precipitated the barium, excavated the sediment, and discharged the fluid out an NPDES outfall. Because this unit stored hazardous waste after November 8, 1985, and DOE has not demonstrated clean closure, this unit is subject to 40 CFR subpart F ground-water monitoring requirements. The TA-16 surface impoundment does not have a ground-water monitoring system (a LOIS violation). However, DOE submitted a closure plan on November 13, 1986, which addresses sampling of the impoundment and ground-water monitoring.

Based on our review of available state and EPA documents, it appears that the TA-16 surface impoundment is not in compliance with the LOIS requirements. DOE did not submit a LOIS certification statement for the unit, but continued to operate it after November 8, 1985 without a ground-water monitoring system. Furthermore, the Area P landfill is in significant violation of RCRA for not having a ground-water monitoring system.

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## 1.0 INTRODUCTION

PRC Environmental Management, Inc., has been tasked under TES III Work Assignment No. 468 to perform evaluations of RCRA-regulated treatment, storage, and disposal facilities for EPA Region 6. These evaluations are to address the facilities' efforts to comply with the LOIS provision of the 1984 Hazardous and Solid Waste Amendments (HSWA). As directed by EPA, PRC is to:

- o Review LOIS certification statements
- o Review ground-water monitoring systems for units continuing to operate after November 8, 1985
- o Summarize the findings of a previously conducted financial review to determine the facilities' compliance with financial regulations
- o Determine if a Part B application was submitted by November 8, 1985, and if a good faith effort was made to supply the necessary information
- o Review closure plans that were submitted in lieu of a Part B application to determine if they were submitted by November 23, 1985, and if a good faith effort was made to submit an adequate closure plan

PRC is to review the ground-water monitoring system that was in place on the date of certification for units that continued to operate after November 8, 1985. When reviewing the ground-water monitoring systems, PRC is to identify gross inadequacies such as no wells, insufficient number of wells, inadequate well construction, inadequate well placement, and failure to collect and analyze the required monitoring data.

Since each facility is different, all of the above tasks will not apply to every facility. Whether PRC performed a specific task is discussed in the remaining sections of this report.

To complete this work assignment, PRC traveled to the state environmental offices and to the EPA Region 6 office in Dallas, Texas, to collect documents. PRC then reviewed these documents, conducted interviews with knowledgeable state and EPA officials, and wrote a report for each of the facilities summarizing our

findings. The following discussion presents the findings of our review of the Department of Energy (DOE) Los Alamos National Laboratory facility located in Los Alamos, New Mexico (NM 0890010515).

## 1.1 FACILITY BACKGROUND

Los Alamos National Laboratory is located in north central New Mexico, approximately 60 miles north of Albuquerque. The facility is owned by the U.S. Department of Energy (DOE) and operated under contract by the University of California (Rhea, 1984). The Los Alamos National Laboratory is a research center which is involved in solving national problems such as weapons development, and energy supply and conservation. The facility covers 27,500 acres and includes 31 technical areas (TA) (Valencia, 1984). This facility has been the subject of regulatory controversy since at least early 1984 when the New Mexico Environmental Improvement Division (EID) began trying to bring DOE into compliance with New Mexico's Hazardous Waste Management Regulations (HWMR). The state agency has characterized the facility as being uncooperative at times with their efforts to regulate this facility (Ellvinger, 1986).

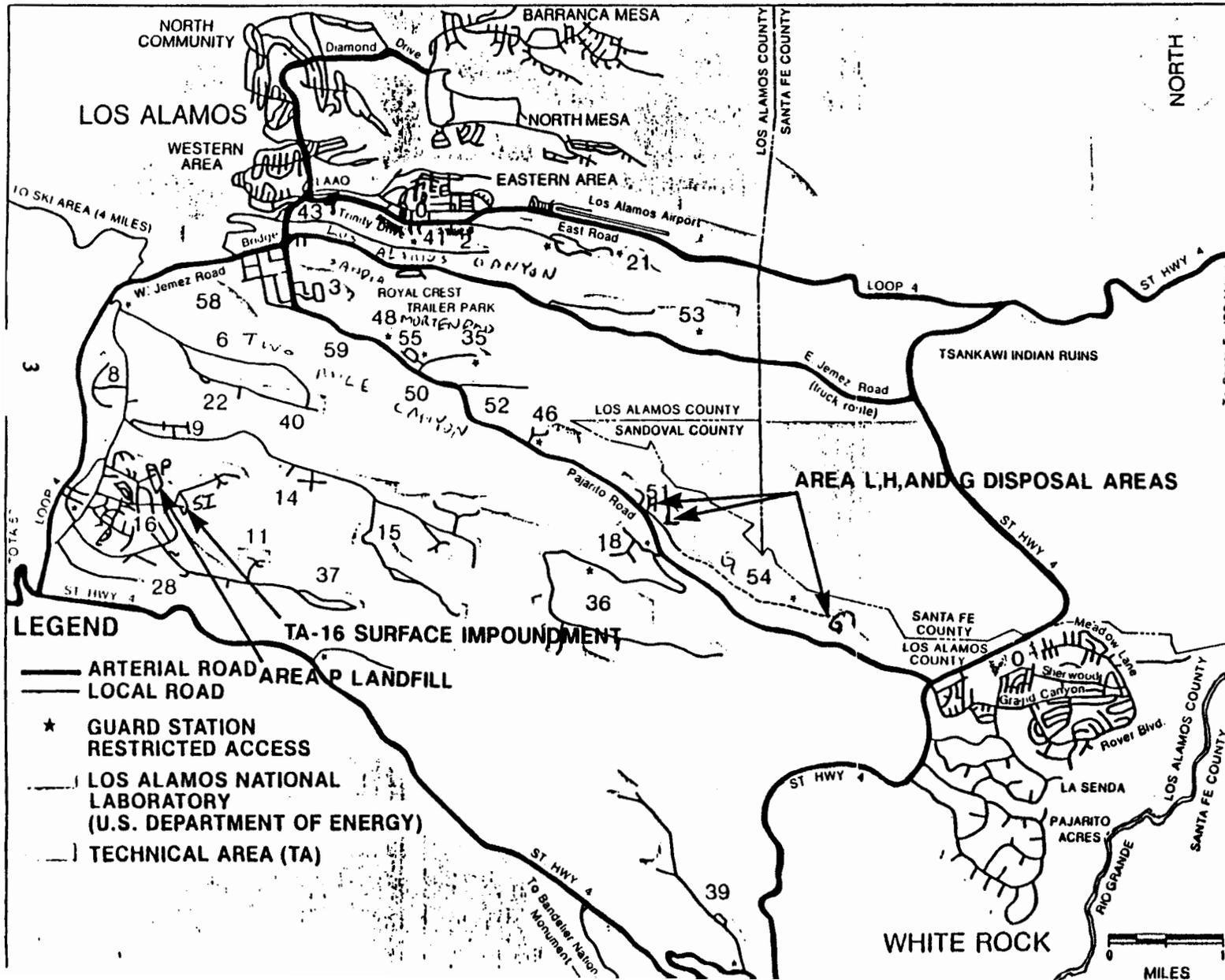
The facility is extremely large and manages hazardous waste in several areas. The state has not inspected the entire facility, nor do they have a comprehensive understanding of all the waste management activities at the facility (Crossman, 1987a). Five of the waste management areas are discussed in this report (Figure 1).

- 1) Area H landfill
- 2) Area L disposal area
- 3) Area G disposal area
- 4) Area P landfill
- 5) Area 16 surface impoundment

The activities of each area were discussed with C. Kelly Crossman (Crossman, 1987b) of EID; a brief summary is presented below along with other appropriate references.

FIGURE 1: LOS ALAMOS NATIONAL LABORATORIES

Technical sites



TA	Nomenclature
0	Unassigned Land Reserve
2	Omega Site
3	South Mesa Site
6	Two-Mile Mesa Site
8	Anchor Site West
9	Anchor Site East
11	K-Site
14	Q-Site
15	R-Site
16	S-Site
18	Pajarito Laboratory
21	DP-Site
22	TD-Site
28	Magazine Area A
33	HP-Site
35	Ten Site
36	Kappa Site
37	Magazine Area C
39	Ancho Canyon Site
40	DF-Site
41	W-Site
43	Health Research Laboratory
46	WA-Site
48	Radiochemistry Site
50	Waste Management Site
51	Radiation Exposure Facility
52	Reactor Development Site
53	Meson Physics Facility
54	Waste Disposal Site
55	PF-Site
57	Fenton Hill Site
58	Two-Mile North Site
59	OH-Site

Source: EID Files

#### Area H Landfill

*Area H landfill was*  
a disposal area for hazardous waste prior to 1980.

#### Area L Disposal Area

Area L was used for waste disposal from 1964 to November 1985. From 1964 to 1975 wastes were disposed in one pit. From 1975 to 1985 organic and inorganic wastes were stored in vertical shafts (DOE, 1986c). Burial of waste was discontinued prior to November 8, 1985 (EID, 1986a). This area contains an active interim status drum storage area. The EID granted DOE a waiver from the interim status ground-water monitoring requirements for this area.

#### Area G Disposal Area

Area G is mainly a radioactive disposal site. Low level radioactive waste is disposed in vertical shafts (EPA, 1986a). This area was also used to dispose of "mixed waste" until May 1985 (EID, 1986a). However, K. Crossman noted that several cells still receive waste. This area is included under the ground-water monitoring waiver granted for disposal in Area L.

#### Area P Landfill

Area P landfill began operations in the 1950s and disposed of residue that resulted from the burning of high explosives and HE-contaminated materials. This residue included D005 designated wastes. Area P landfill is divided into two sections: an inactive section, and an eastern active section (Jacobs, 1987). This landfill was used to dispose of hazardous waste after November 18, 1980, and was never listed on any Part A notification; therefore, it violated NMITWMR-2 Section 302.C (Fort, 1985a). Area P landfill did not receive hazardous waste after May 1985 (EID 1986a). DOE submitted a closure plan for the landfill on November 11, 1985. Information concerning the activities at this waste disposal area were not well documented in EPA or EID files.

## Area 16 Surface Impoundment

This impoundment was constructed to consolidate and contain the effluent from two NPDES outfalls until chemical analysis could be conducted prior to final discharge out NPDES outfall 055 (DOE, 1986a). DOE reports that hazardous wastes are not discharged to the TA-16 surface impoundment. However, as a result of an extended period of accumulation and evaporation between August 1985 and January 1986, the barium concentration in the impoundment fluids exceeded the EP toxicity concentration limit. Fluids in the impoundment were reported to have been treated with a flocculent, and the precipitate and sediments <sup>were</sup> removed from the impoundment and moved to TA-54, Area L.

### 1.2 PERMITTING HISTORY

This section briefly describes the RCRA permitting history of DOE. DOE submitted a notification of hazardous waste activity to EPA in August 1980 and listed 118 EPA identified wastes (Braziel, 1980). A RCRA Part A permit application was submitted to EPA on November 19, 1980 (DOE, 1980). This application listed three methods of waste processing: disposal in a landfill, disposal in a surface impoundment, and the burning of discrete pieces of high explosive wastes. DOE later added storage in containers and tanks, and an incinerator in a 1983 revised Part A application. The most recent Part A application found in the state's files (DOE, 1985) lists the following methods of hazardous waste management storage in containers, disposal in landfills, treatment in tanks, incineration, and the burning of discrete pieces of high explosive wastes. Between 1980 and 1985, DOE eliminated the disposal through a surface impoundment waste management process. No closure plan for this surface impoundment was found in state or EPA files. The waste originally listed as being disposed of in a surface impoundment was later reported as being stored in containers and landfilled.

Neither the landfill in area P nor the surface impoundment in TA-16 appeared on any of the Part A applications submitted prior to August 1985 (Fort, 1985a). When cited for this violation, DOE did not adequately respond (Parkins, 1985).

EPA Region 6 called in DOE's part B permit application on February 22, 1984. The requested submittal date was September 1, 1984 (Rhca, 1984). DOE submitted a

Part B application on May 1, 1985, to the EID (Valencia, 1985a). Information concerning the Part B application will be addressed in more detail in Section 5.0.

## 2.0 LOIS CERTIFICATION

DOE did not submit a LOIS certification statement for any of its land based units. Because DOE is a federal facility it is not required to certify compliance with the financial requirements. DOE also did not certify compliance regarding the ground-water monitoring requirements because of the unresolved ground-water monitoring waiver for areas L and G (Valencia, 1985b).

Besides areas L and G, DOE has two other units that are subject to the LOIS requirements: Area P Landfill, and TA-16 surface impoundments. Neither unit had a ground-water monitoring system as required by 40CFR 265.90.

DOE stopped introducing waste to the Area P landfill in May 1985 (EID, 1986a) and submitted a closure plan on November 25, 1985 (Jacobs, 1987).

The TA-16 surface impoundment reportedly stored hazardous waste between August 1985 and January 1986 (DOE, 1986a). A site inspection performed by EID and EPA on January 27 and 28, 1986, also noted that hazardous waste was still being stored in the TA-16 surface impoundment (EID, 1986b). Although EID informed DOE that if no sludges are directed to the TA-16 surface impoundment it is not subject to RCRA regulations (EID, 1986c), the complete regulatory status of the impoundment has not been fully resolved (Crossman, 1987b).

## 3.0 GROUND-WATER MONITORING

Hazardous waste is disposed of in four areas that may require DOE to perform ground-water monitoring: TA-54, disposal areas L and G, Area P landfill, and TA-16 surface impoundment. The ground-water monitoring system for each of these areas is discussed in this section.

Land disposal areas L and G were granted a ground-water waiver by EID, and EPA concurred with this decision (EPA, 1986). DOE is required to perform unsaturated zone monitoring. Since the LOIS requirements specify compliance with

applicable ground-water monitoring requirements, and 40 CFR 265 Subpart F does not include unsaturated zone monitoring, these areas <sup>are</sup> not subject to the LOIS provision.

Area P landfill began receiving hazardous waste in the 1950s and continued to operate until May 1985 (EID, 1986a). This unit did not appear on any Part A permit application (Fort, 1985), and never had a ground-water monitoring system. However, to comply with the LOIS requirements, DOE stopped adding waste to this unit and submitted a closure plan for the landfill on November 25, 1985. Therefore, although the closure plan was submitted 2 days late, DOE met its LOIS requirements for this unit (EPA, 1987a). It was, however, in significant RCRA violation due to the lack of an adequate ground-water monitoring system (40CFR 265 Subpart F).

The regulatory status of TA-16 surface impoundment is in question because it stored hazardous waste for a period of time. DOE reported that it never intended to store hazardous waste in the impoundment (DOE, 1986a). Between August 1985 and January 1986, the surface impoundment stored liquid waste that exceeded the EP toxicity limit for barium. DOE precipitated the barium in the fluid and excavated the sediments (Crossman, 1987). DOE submitted a closure plan on November 13, 1986, which addressed residual sediment sampling and a ground-water monitoring plan (DOE, 1986b). PRC was, however, unable to find any documentation in EID or EPA files stating that all hazardous wastes (D005 and K044) were removed. In addition, EID has not received certification of clean closure (Crossman, 1987b); therefore, until clean closure is demonstrated, this unit is subject to the ground-water monitoring requirements of 40 CFR 265 Subpart F.

#### 4.0 FINANCIAL ASSURANCE

DOE is a federal facility and <sup>is</sup> not subject to the RCRA financial requirements.

#### 5.0 PART B PERMIT APPLICATION REVIEW

DOE submitted a Part B permit application to EID on May 1, 1985 (DOE, 1985). Several Notices of Violation (NOV) and replies were exchanged between DOE and EID before the application was determined to be complete on January 30, 1987. Based on the size of the facility and the large number of hazardous waste

management areas, PRC determined that DOE made a good faith effort to submit the necessary information before the November 8, 1985, deadline (Crossman, 1987a).

## 6.0 CLOSURE PLAN REVIEW

A closure plan for the Area P landfill was submitted to EID on November 25, 1985 (EPA, 1987a), to fulfill the LOIS requirements for this unit. In addition, a closure plan for the TA-16 surface impoundment was submitted on November 13, 1986 (DOE, 1986a). Because the closure plan for the Area P landfill was the only closure plan submitted to comply with the LOIS provision, it is the only plan reviewed in this section. EID determined that the Area P landfill closure plan was adequate to meet the requirements for closure of a land disposal area as required by the NOV (Pache, 1985). EID scheduled this closure plan for technical review in fiscal year 1988.

Jacobs Engineering Group performed a closure plan review for the Area P landfill for U.S. EPA. Although this was not a stringent technical review of the adequacy of the closure plan, Jacobs did report that the major components of a closure plan were present, such as run-on control, stabilization of an active landfill, capping of an active landfill, leachate collection, and ground-water and surface water monitoring. However, the plan did not include engineering specifications concerning slope of cover, permeability of cap, compaction verification, and other information (Jacobs, 1987). Nevertheless, we believe that DOE made a good faith effort to adequately inform EID of its proposed actions.

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