Sandia National Laboratories / New Mexico

PROPOSAL FOR NO FURTHER ACTION ENVIRONMENTAL RESTORATION PROJECT SITE 142, BUILDING 9970 SEPTIC SYSTEM OPERABLE UNIT 1295

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PROPOSAL FOR
NO FURTHER ACTION
Environmental Restoration Project

Site 142, Building 9970 Septic System
OU 1295

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1. Introduction

1.1 ER Site 142, Building 9970 Septic System

Sandia National Laboratories/New Mexico (SNL/NM) is proposing a no further action (NFA) decision based on confirmatory sampling for Environmental Restoration (ER) Site 142, Building 9970 Septic System, Operable Unit (OU) 1295. ER Site 142 is listed in the Hazardous and Solid Waste Amendment (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (EPA August 1992).

1.2 SNL/NM Confirmatory Sampling NFA Process

This proposal for a determination of an NFA decision based on confirmatory sampling was prepared using the NFA criteria presented in Section 4.5.3 of the SNL/NM Program Implementation Plan (PIP) (SNL/NM February 1995). Specifically, the proposal "must contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMUs) at the facility that may pose a threat to human health or the environment (Proposed 40 Code of Federal Regulations [CFR] 264.514[a][2])," (EPA July 1990). The HSWA Module IV of the SNL RCRA permit contains the same requirements for an NFA demonstration:

> Based on the results of the RCRA Facility Investigation (RFI) and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993).

If the available archival evidence is not considered convincing, SNL/NM performs confirmatory sampling to increase the weight of the evidence and allow an informed decision on whether to proceed with the administrative-type NFA or to return to the site characterization program for additional data collection (SNL/NM February 1995).

The Environmental Protection Agency (EPA) acknowledged that the extent of sampling required may vary greatly, stating that:

> The agency does not intend this rule [the second codification of HSWA] to require extensive sampling and monitoring at every SWMU....Sampling is generally required only in situations where there is insufficient evidence on which to make an initial release determination....The actual extent of sampling will vary...depending on the amount and quality of existing information available (EPA December 1987).

This request for an NFA decision for ER Site 142, Building 9970 Septic System is based primarily on results of a passive soil-gas survey (NERI 1994) and analytical results of confirmatory soil samples collected from immediately around the ER Site 142 septic system components. Concentrations of site-specific constituents of concern (COCs) were first compared to background upper tolerance limit (UTL) concentrations of COCs found in SNL/NM soils. If, however, no background data were available for a particular COC, concentrations of that constituent were then compared to proposed 40 CFR Part 264 Subpart S (Subpart S) soil action levels for the COC of interest (EPA July 1990). Concentrations of constituents at this site were found to be less than either or both background UTLs or proposed Subpart S action levels. The unit is therefore eligible for an NFA proposal based on one or more of the following criteria taken from the RCRA Facility Assessment Guidance (EPA October 1986):

- Criterion A: The unit has never contained constituents of concern.
- Criterion B: The unit has design and/or operating characteristics that effectively prevent releases to the environment.
- Criterion C: The unit clearly has not released hazardous waste or constituents into the environment.

Specifically, ER Site 142 is being proposed for an NFA decision based on confirmatory sampling data that demonstrate that hazardous waste or constituents have not been released from this SWMU into the environment (Criterion C).

1.3 Local Setting

SNL/NM occupies 2,829 acres of land owned by the Department of Energy (DOE), with an additional 14,920 acres of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service, the State of New Mexico, and the Isleta Indian Reservation (Figure 1). SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other research and development activities since 1945 (DOE September 1987).

ER Site 142 lies within the boundaries of SNL/NM and is located approximately 0.8 mile north of the Isleta Reservation boundary and 0.65 mile east of the Solar Power Tower, a prominent landmark in the area (Figure 1). The site is approximately 1/4 mile west of Lovelace Road, and is situated on the southeast side of Building 9970 (Figure 2). It is reached by traveling south on Lovelace Road (paved), and then turning west on the improved dirt road that services Buildings 9970 and 9972. ER Site 142 encompasses approximately 0.06 acres of land at an average elevation of 5,678 feet above mean sea level (AMSL). The land surface slopes gently to the southwest at this location.

The surface geology at this site is characterized by alluvial fan deposits. Alluvial fan material in the KAFB area is typically highly heterogeneous, and is typically composed of a mixture of medium to fine sand with frequent coarse sand, gravel, and cobble lenses. These

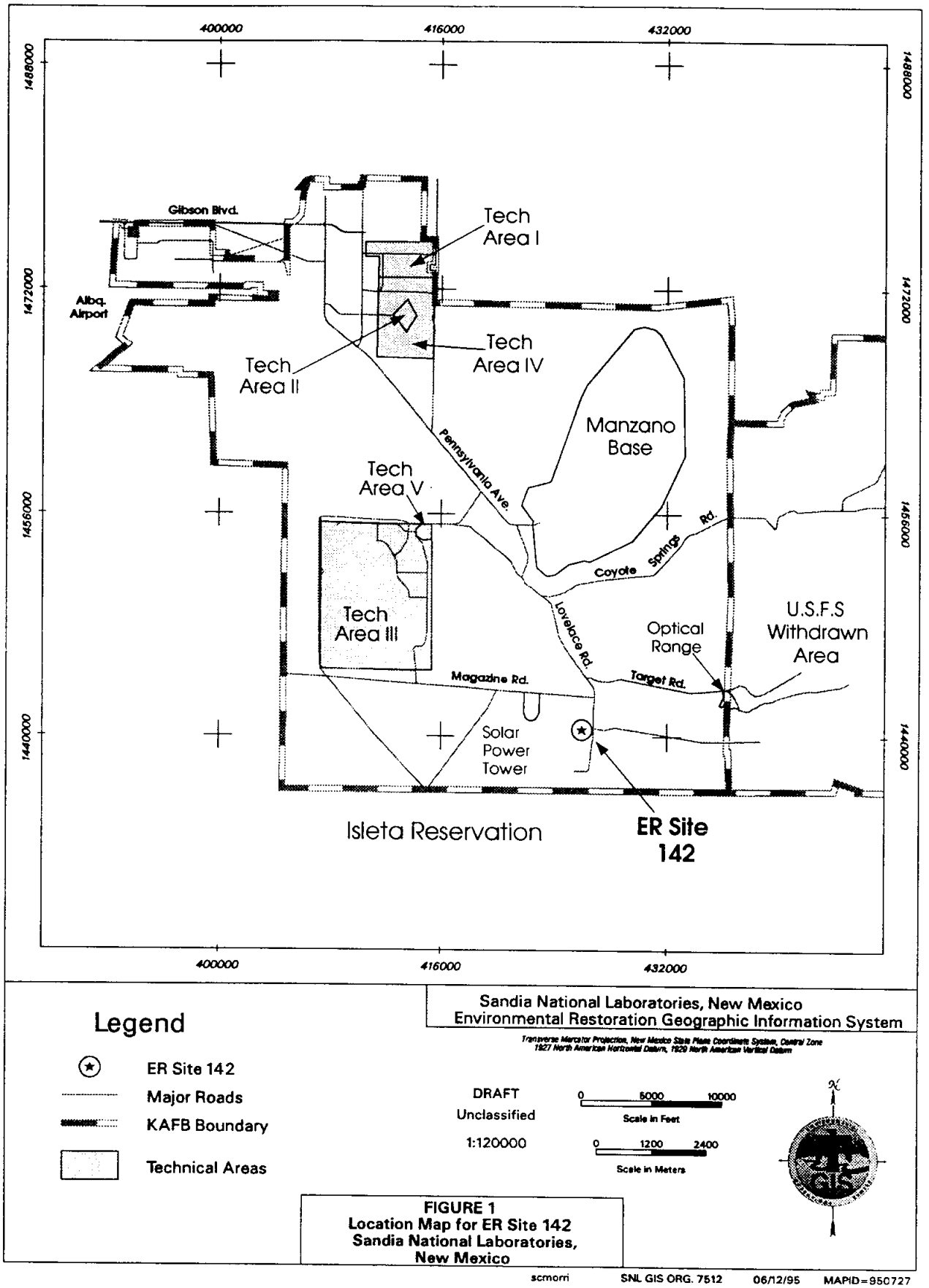


Figure 1. ER Site 142 Location Map

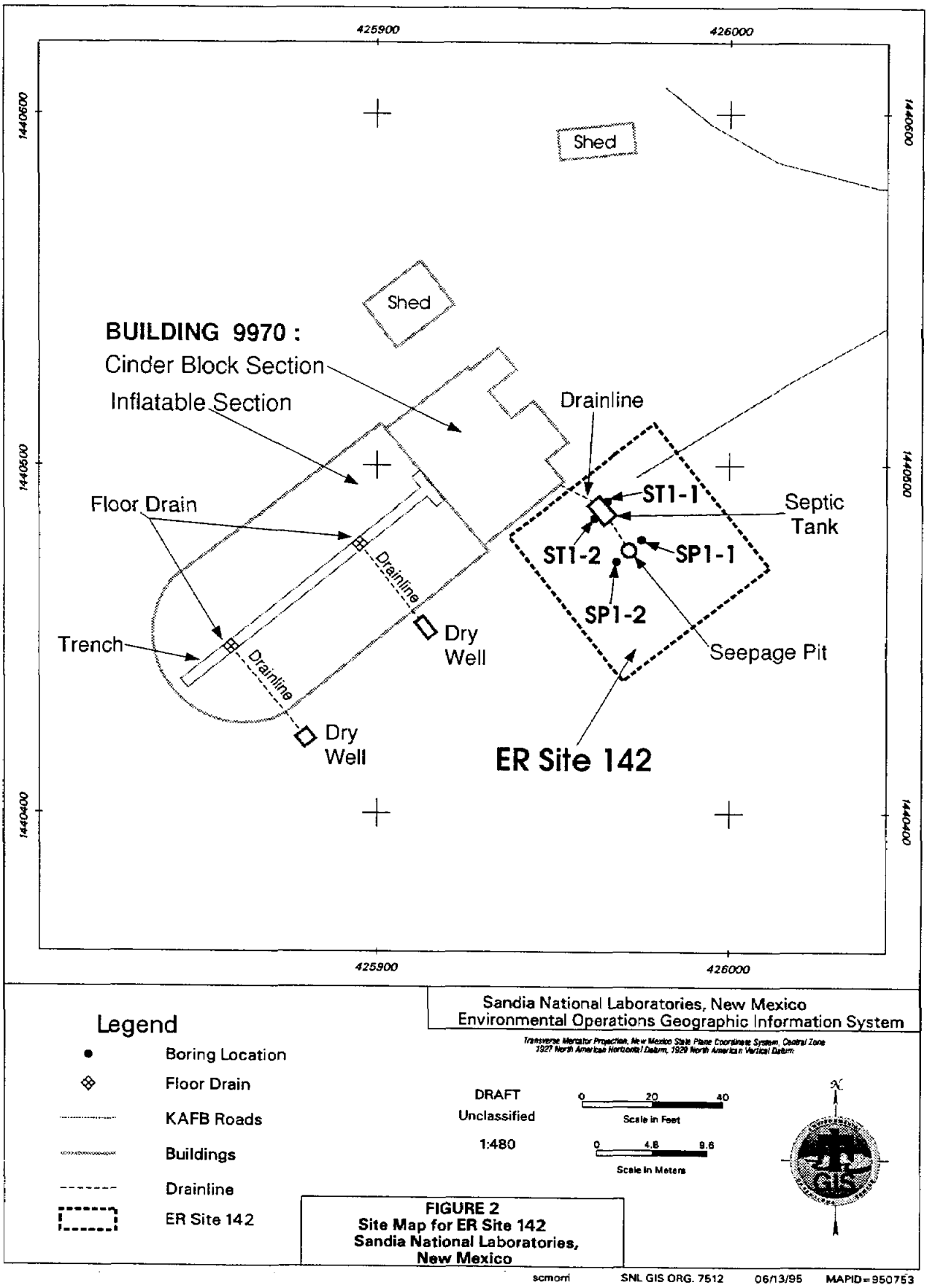


Figure 2. ER Site 142 Site Map

deposits probably extend to the water table. Vegetation consists predominantly of grasses, including gramma, muhly, dropseed, and galleta. Shrubs commonly associated with the grasslands include sand sage, winter fat, saltbrush, and rabbitbush. Cacti are common, and include cholla, pincushion, strawberry, and prickly pear (SNL/NM March 1993).

The water table elevation is approximately 5,550 feet AMSL at this location, so depth to water at the site is about 130 feet. Ground water is believed to flow in a westerly direction beneath the site (SNL/NM March 1995). The nearest ground-water monitoring well (designated TRN-1) is located about 2,190 feet northeast of, and approximately upgradient, of ER Site 142. The nearest water production well is KAFB-8 which lies approximately 4.5 miles northwest of the site (SNL/NM March 1995).

2. History of the SWMU

2.1 Sources of Supporting Information

In preparing the confirmatory sampling NFA proposal for ER Site 142, available background information was reviewed to quantify potential releases and to select analytes for the soil sampling. Background information was collected from SNL/NM facilities engineering drawings and interviews with employees familiar with the operational history at the site.

The following sources of information, hierarchically listed with respect to assigned validity, were used to evaluate ER Site 142:

- Confirmatory shallow subsurface soil samples collected in September and November 1994
- A passive soil-gas survey report (NERI, 1994)
- Three sets of septic tank sludge and/or liquid samples collected in June 1992, April 1994, and November 1994
- RCRA Facilities Investigation Work Plan for Operable Unit 1295, Septic Tanks and Drainfields (SNL/NM March 1993). This document includes information from interviews with past employees of the site
- SNL/NM facilities engineering drawings,
  Photographs and field notes collected by SNL/NM ER staff,
  SNL/NM Geographic Information System (GIS) data
- The RCRA Facility Assessment (RFA) report (EPA April 1987)

2.2 Previous Audits, Inspections, and Findings

Numerous SNL/NM septic systems were first listed as a single site (ER Site 79) in the RFA report (EPA April 1987) because of the potential that hazardous materials may have been

discharged to the septic systems. ER Site 142 was listed as an individual septic system site in 1991, as a precursor to preparation of the HSWA permit (EPA August 1993). However, no releases from the facility had been reported.

2.3 Historical Operations

Building 9970 was constructed in 1963 and was used for radio frequency and aircraft radar testing, but is now inactive. A toilet, one or more sinks, and floor drains in the northeast section of the building reportedly discharged into the septic system. Historical records describing past operations at this site are vague. According to interviews with facility personnel in May of 1990, small quantities (less than 2.8 liters, or 3 quarts) of solvents and cleaning agents, including toluene and methyl ethyl ketone (MEK), were reportedly used in Building 9970 operations but were not discharged to the septic system (SNL/NM March 1993). Discharge lines from this section of Building 9970 are now connected to a recent extension of the City of Albuquerque sanitary sewer system.

The northeast end of Building 9970 is constructed of cinderblock, while the remaining southwestern part of the building consists of a large inflatable Quonset hut-shaped structure secured to a concrete slab (Figure 2). The inflatable building is constructed of heavy waterproof fabric and is pressurized by an external fan that runs continuously. The cinderblock part of Building 9970 was served by a septic system consisting of a 3,040 liter- (800 gallon) septic tank and a 1.2 meter- (4 feet) diameter by 1.5 meter- (5 feet) deep seepage pit, both located near the southeast corner of the building (Figure 2). In addition, 2 floor drains are located within a 2.5 foot deep by 3 foot wide concrete-lined trench that runs the length of the inflatable-building portion of the facility. The trench is covered with heavy steel plates to allow moving and setting up equipment for acoustical tests. These floor drains are in turn connected to 2 gravel-filled dry wells approximately 4 feet square and 4 feet deep that are located along the southeast wall of the building (Figure 2). The covered trench system was installed to allow routing of instrumentation cabling below the level of the floor during acoustic tests, and the drains were installed to prevent water discharges (from fire suppression, for example) and water from leaks in the inflatable building from accumulating in the trench. According to interviews conducted during compilation of the RFI Work Plan, no hazardous materials were ever washed into the trench and floor drains.

3. Evaluation of Relevant Evidence

3.1 Unit Characteristics

Release of effluent and discharges from the toilet, sinks, and drains to the Building 9970 Septic System was routine practice when the building was occupied. There are no safeguards inherent in the drain system from Building 9970 or in facility operations that could have prevented past releases to the environment. Effluent and discharges from sinks and the toilet are now directed to the sanitary sewer system, rather than the septic system, which is no longer in use. As described above, small quantities of cleaning solvents were used at the

facility but were reportedly not discharged to the septic system or floor drains. Hazardous wastes were not managed or contained at ER Site 142.

3.2 Operating Practices

There are no known or reported spills that occurred or cleanup actions that were taken at ER Site 142.

3.3 Presence or Absence of Visual Evidence

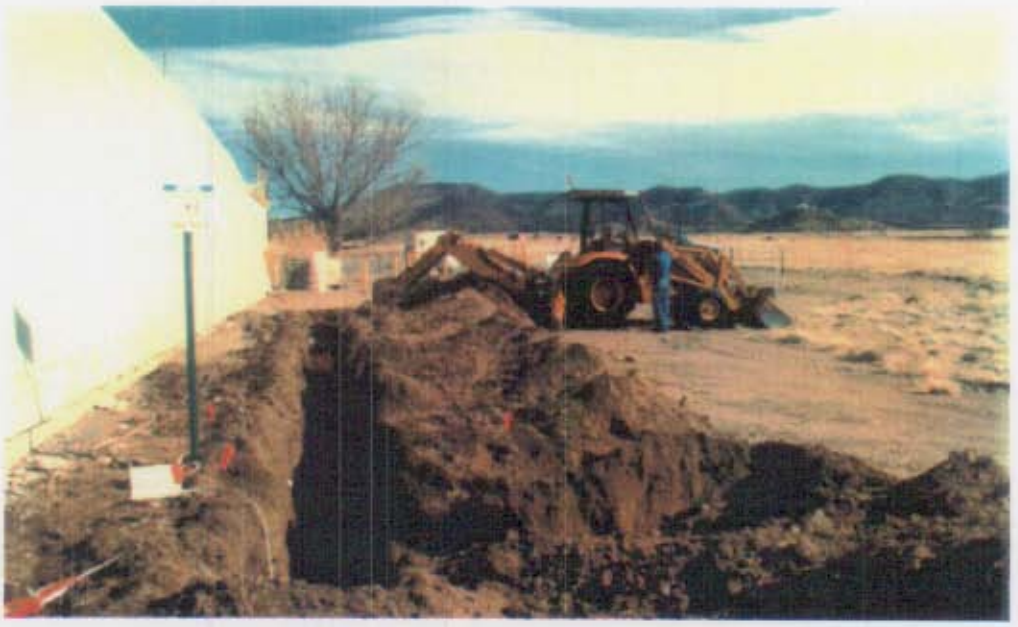
No visible evidence of soil discoloration, staining, or odors indicating residual contamination was observed when soil samples were collected adjacent to the septic tank and seepage pit in the fall of 1994 (SNL/NM September and November 1994).

In January 1995 a backhoe was used to locate and partially excavate the two Building 9970 drywells, and determine the exact locations of the ends of the drain pipes from the two Building 9970 floor drains. The excavating operation is shown in the top photograph of Figure 3. The northeast dry well was found to consist of a rectangular pit 3 feet long by 6 feet wide filled with 2-inch aggregate from about 6 inches below grade down to the bottom of the dry well at four feet below grade. The southwest dry well consisted of a rectangular pit 3 feet long by four feet wide that was filled with 2-inch aggregate from about 6 inches below grade down to the bottom of the dry well at four feet below grade. The ends of the two floor drain lines were also located, and were found to consist of 4-inch-diameter cast iron pipes that were buried 3 feet below grade, and were centered in each of the dry wells. No visual or olfactory evidence of contamination was noted in soils excavated from directly beneath the ends of the drain pipes, or in soils removed from around these dry wells (SNL/NM January 1995). Also, photoionization detector (PID) readings taken from directly above the soil immediately after it was uncovered did not indicate the presence of contamination in soils around these dry wells. No soil samples of the exposed and excavated soil around the dry wells were collected. The top photograph of Figure 3 shows the dry well excavating operation.

3.4 Results of Previous Sampling/Surveys

Liquid and sludge samples were collected from the Building 9970 Septic Tank on June 23, 1992. These samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, various radionuclide isotopes, and other miscellaneous compounds. The samples contained low concentrations of a number of VOC and SVOC constituents, heavy metals, radionuclide isotopes, and other miscellaneous constituents (IT June 1993). A summary of constituents detected in these 1992 septic tank samples are presented in Table A.1 of Appendix A.

A second set of sludge samples was collected from the Building 9970 Septic Tank on April 7, 1994. These samples were analyzed for VOCs, Toxicity Characteristic Leaching



Exposing Dry Wells (view looking northeast)

Seepage Pit (foreground) and Septic Tank Covers (view looking northwest)

Figure 3. ER Site 142: Photographs

Procedure (TCLP) metals, and phenols; low concentrations of seven VOCs and phenols were found. Barium, cadmium, and mercury were detected in the TCLP-derived leachate, but at concentrations below the RCRA Toxicity Characteristic action levels. A summary of the constituents detected in these samples is presented in Table A.2 of Appendix A.

Another set of aqueous and sludge samples was collected from the Septic Tank on November 4, 1994, in order to complete additional analyses required for waste characterization. These samples were analyzed for SVOCs, isotopic uranium, and tritium; the samples contained low concentrations of two SVOCs, isotopic uranium, and tritium. A summary of the constituents detected in these November 1994 samples is also presented in Table A.2 of Appendix A.

The multiple rounds of ER Site 142 septic tank sampling described above were completed to characterize the current septic tank contents for waste disposal purposes. The sludge and liquid in the tank are adequately characterized and will be disposed as a separate removal action.

The passive soil-gas survey conducted at the site in late June 1994 utilized PETREX sampling tubes to identify any releases of VOCs and SVOCs to the soil around the septic tank and seepage pit (SNL/NM June 1994). A PETREX tube soil-gas survey is a semiquantitative reconnaissance screening procedure that can be used to identify many VOCs and SVOCs, and can be used to guide VOC and SVOC site investigations. The advantages of this soil-gas sampling methodology are that large areas can be surveyed at relatively low cost, the technique is highly sensitive to organic vapors, and the result produces a measure of soil-vapor chemistry integrated over a two- to three-week period rather than at one point in time. Each PETREX soil-gas sampler consists of two activated charcoal adsorption coated wires housed in a reusable glass test tube container. At each sampling location, sample tubes are buried in an upside down position so that the mouth of the sampler is about 1 foot below grade. Samplers are left in place for a two- to three-week period, and are then removed from the ground and sent to the manufacturer, Northeast Research Institute (NERI) for analysis using Thermal Desorption-Gas Chromatography/Mass Spectrometry. The analytical laboratory reports all sample results in terms of "ion counts" instead of concentrations, and identifies those samples that contain compounds above the PETREX technique detection limits. NERI considers a "hit" for individual compounds (such as perchloroethene [PCE] or trichloroethene [TCE]) to be greater than 100,000 ion counts, and 200,000 ion counts for compound mixtures (benzene, toluene, ethylbenzene, xylene, [BTEX] or aliphatics, for example). The analytical results of the passive soil-gas survey at ER Site 142 are presented in Table A.3 of Appendix A and indicate that no VOCs or SVOCs were detected in soils at ER Site 142 (NERI 1994).

3.5 Assessment of Gaps in Information

The material currently in the tank is not necessarily representative of all discharges to the unit that have occurred since it was put into service in 1963. The analytical results of the various rounds of septic tank sampling were used, along with process knowledge and other available information, to help identify the most likely COCs that might be found in soils

surrounding the septic tank and seepage pit, and to help select the types of analyses to be performed on soil samples collected from the site. While the history of past releases is incomplete, analytical data from confirmatory sampling conducted in September and November of 1994 (discussed below) are sufficient to determine whether the release of hazardous constituents occurred at the site.

3.6 Confirmatory Sampling

Although the likelihood of hazardous waste releases at ER Site 142 is considered low, confirmatory soil sampling was conducted in the fall of 1994 immediately adjacent to both the septic tank and seepage pit to determine whether COCs above background or detectable levels had been released by the septic system to the environment at this site. The confirmatory soil sampling program was performed in accordance with the rationale and procedures described in the Septic Tank and Drainfields (ADS-1295) RCRA Facility Investigation Work Plan (Work Plan) (SNL/NM March 1993), and addenda to the Work Plan developed during the OU 1295 project approval process (IT March 1994 and SNL/NM November 1994).

EPA reviewed the Septic Tanks and Drainfields RFI Work Plan and provided comments on that document as a Notice of Deficiency (NOD) in October 1994. On November 17, 1994, DOE/Sandia submitted comment responses to the NOD (SNL/NM November 1994). In the "Proposed Modifications To The Work Plan" section of that document, it was proposed not to perform any investigation around the two dry wells described above because there was no evidence or history of contaminant releases to these units based on the type of activities (acoustical testing of equipment) performed in the portion of Building 9970 serviced by these units. EPA, in its reply to these responses did not take exception to this proposal (EPA March 1995). Therefore, based on operational history and the lack of evidence of contamination in soils exposed during the dry well excavating operation, it was assumed that no sampling will be required around these two units.

A summary of the types of samples, number of sample locations, sample depths and analytical requirements for confirmatory samples collected at this site is presented in Table 1.

Confirmatory soil samples were collected from one boring on either side of the septic tank, and from one boring on either side of the seepage pit. Borehole locations and the locations of the septic tank and seepage pit are shown on Figure 2. The bottom photograph in Figure 3 shows the entry hatch covers to the septic tank (near the building) and the seepage pit (in the foreground). For septic tank borings, samples were collected from one interval in each borehole starting at the outside bottom of the tank, which was 8 feet below ground surface (bgs) at this site. For seepage pit borings, samples were collected from two intervals in each borehole. The top of the shallow interval started at the outside bottom of the seepage pit, which was 10 feet bgs at this site, and the lower (deep) interval started at 10 feet below the top of the upper interval, or 20 feet bgs. The depths below grade to the bottoms of the septic tank and seepage pit were determined based on field measurements.

Table 1
ER Site 142: Confirmatory Sampling Summary Table

ER Site Number and Unit	Analytical Parameters	Number of Sample Locns.	Top of Splg. Interval(s) at Each Boring Location	Total Number of Invest. Samples	Total Number of Duplicate Samples	Date(s) Samples Collected
142 seepage pit (outside bottom of seepage pit is 10 feet deep, measured in field)	VOCs	2	10', 20'	4		9/22/94: 2 of 2 shallow, 1 of 2 deep intervals, 11/15/94: 2nd deep interval
	SVOCs	2	10', 20'	4		
	RCRA metals	2	10', 20'	4		
	Cyanide	2	10', 20'	4		
	Gamma spectroscopy	1	20'	1		
	Tritium	1	20'	1		
142 septic tank (outside bottom of tank is 8 feet deep, measured in field)	VOCs	2	8'	2	1	11/14/94: 2 of 2 shallow intervals, 1 set duplicate spls.
	SVOCs	2	8'	2	1	
	RCRA metals	2	8'	2	1	
	Cyanide	2	8'	2	1	

Notes

VOC = Volatile organic compounds
SVOC = Semivolatile organic compounds
RCRA = Resource Conservation and Recovery Act

The Geoprobe sampling system was used to collect subsurface soil samples at this site. The Geoprobe sampling tool was fitted with a butyl acetate (BA) sampling sleeve and was then hydraulically driven to the top of the designated sampling depth. The sampling tool was opened, and driven an additional 2 feet in order to fill the 2-foot long by approximately 1.25-inch-diameter BA sleeve. The sampling tool and soil-filled sleeve was then retrieved from the borehole. In order to minimize the potential for loss of VOCs (if present) due to volatilization, the soil to be analyzed was not emptied from the BA sleeve into another sample container. The filled BA sleeve was removed from the sampling tool, and the top 7 inches were cut off. Both ends of the 7-inch section of filled sleeve were immediately capped with a Teflon membrane and rubber end cap, sealed with tape, and placed in an ice-filled cooler at the site. The soil in this 7-inch section was submitted for a VOC analysis.

Soil from the remainder of the sleeve was then emptied into a decontaminated mixing bowl. Following this, one or two more 2-foot sampling runs were completed at each interval in order to recover enough soil to satisfy sample volume requirements for the interval. Soil recovered from these additional runs was also emptied into the mixing bowl, and was blended with soil from the first sampling run. The soil was then transferred from the bowl into sample containers using a decontaminated plastic spatula, and was analyzed for SVOCs, RCRA metals, and cyanide by a commercial laboratory. Routine SNL/NM chain-of-custody and sample documentation procedures were employed, and samples were shipped to the laboratory by an overnight delivery service.

To determine if radionuclides were released from past activities at this site, samples were collected from one of the deep seepage pit sampling intervals and were analyzed by a commercial laboratory for tritium, and were also screened for other radionuclides using SNL/NM in-house gamma spectroscopy. Sample-volume recovery problems at this site precluded collecting additional tritium and gamma spectroscopy samples.

Quality assurance/quality control (QA/QC) samples collected during this sampling effort consisted of one set of soil duplicate samples collected from a septic tank boring that were analyzed for the same constituents as the investigative samples. Also, a soil trip blank sample was included with the September 1994 shipment of ER Site 142 samples to the laboratory and was analyzed for VOCs only. Low concentrations of the common laboratory contaminants acetone and methylene chloride were detected in this soil trip blank by the laboratory.

A summary of all constituents detected by commercial laboratory analyses in these confirmatory samples is presented in Tables 2, 3, and 4. Results of the SNL/NM in-house gamma spectroscopy screening for other radionuclides that was completed on the single seepage pit soil sample are presented in Table A.4 of Appendix A. Complete analytical data packages are archived in the Environmental Operations Records Center and are readily available for review and verification (SNL/NM October 1994).

3.7 Rationale for Pursuing a Confirmatory Sampling NFA Decision

Three rounds of samples were collected of the liquid and/or sludge in the septic tank for waste characterization purposes, and identified only low concentrations of a limited number of VOCs, SVOCs, metals, and radiological constituents. The passive soil-gas survey did not indicate any anomalies or areas of VOC or SVOC contamination in soils at ER Site 142.

Confirmatory soil sampling at the point of discharge around the seepage pit did not identify any residual constituents of concern that indicate past discharges from this unit that could pose a threat to human health or the environment. No evidence of leakage or discharge from the septic tank into surrounding soils was identified from the soil sampling. The single SVOC compound and the four VOC compounds that were detected were all identified at below-reporting-limit concentrations, and are common laboratory contaminants (Table 2). As shown in Table 2, the four VOC compounds and the single SVOC compound detected in the soil samples are common laboratory contaminants that were found for the most part in below-reporting-limit concentrations. Cyanide was not detected in soils at this site.

Soil sample analytical results also indicate that except for arsenic and selenium, the eight metals that were targeted in the investigation were either not detected, or were detected in concentrations below the background UTL concentrations of metals presented in the draft SNL/NM study of naturally-occurring constituents (IT October 1994) (Table 3). Low concentrations of arsenic and selenium were detected in some or all of the ER Site 142 soil samples, but background concentrations of these two metals have not been determined in SNL/NM soils. Arsenic and selenium concentrations were therefore compared to, and were found to be much lower than, the Subpart S soil action level for those metals. In addition,

Table 2

ER Site 142
Summary of Organic and Other Constituents Detected in Confirmatory Soil Samples Collected Around the Septic Tank and Seepage Pit

Sample Number	Sample Matrix	Sample Type	Sample Date	Sample Location (Figure 2)	Top of Sample Interval (fbgs)	VOCs Method 8240 (ug/kg) Acetone	MEK	Meth. Chl.	Toluene	SVOCs Method 8270 (ug/kg) Di-n-butyl phthalate	Cyanide Method 9010/9012 (ug/kg)
017927-1,2	Soil	Field	9/22/94	S142-SP1-1	10	ND	ND	1.8 B,J	ND	ND	ND
017928-1,2	Soil	Field	9/22/94	S142-SP1-1	20	ND	ND	1.8 B,J	ND	ND	ND
017929-1,2	Soil	Field	9/22/94	S142-SP1-2	10	ND	ND	2 B,J	ND	ND	ND
017930-1 *	Soil	Field	9/22/94	S142-SP1-2	20	ND	ND	2.3 B,J	ND	NS	NS
018477-2 *	Soil	Field	11/15/94	S142-SP1-2	20	NS	NS	NS	NS	ND	NS
017931-1	Soil	TB	9/22/94	Site 142	NA	16	ND	3.4 B,J	ND	ND	NS
018475-1,2	Soil	Field	11/14/94	S142-ST1-1	8	9.4 B,J	5.3 J	2.4 J	1.5 J	61 J	NS
018476-1,2	Soil	Dupl.	11/14/94	S142-ST1-1	8	8.2 B,J	3.4 J	ND	4.4 J	ND	NS
018474-1,2	Soil	Field	11/14/94	S142-ST1-2	8	10 B	ND	2.5 J	ND	ND	NS
Laboratory Detection Limit For Soil (ug/kg)						10	10	5	5	330	0.5
Proposed Subpart S Action Level For Soil (ug/kg)						8E+06	5E+07	9E+04	2E+07	8E+06	2E+06

Notes

B = Compound also detected in an associated laboratory blank
Dupl. = Duplicate soil sample
fbgs = feet below ground surface
ug/kg = Micrograms per kilogram
J = Result is detected below the reporting limit or is an estimated concentration
MEK = Methyl ethyl ketone
Meth. Chl. = Methylene chloride
NA = Not applicable
ND = Not detected
NS = No sample
TB = Trip Blank
VOC = Volatile organic compounds
SVOC = Semivolatile organic compounds
* Due to volume recovery problems in the deep (20-foot) interval of borehole SP1-2, a VOC-only sample was collected on 9/22/94, and an additional SVOC sample was collected on 11/15/94.

Table 3

ER Site 142
Summary of RCRA Metals Detected in Confirmatory Soil Samples Collected Around the Septic Tank and Seepage Pit

Sample Number	Sample Matrix	Sample Type	Sample Date	Sample Location (Figure 2)	Top of Sample Interval (fbgs)	RCRA Metals, Methods 6010 and 7471 (mg/kg)							
						As	Ba	Cd	Cr, total	Pb	Hg	Se	Ag
018475-2	Soil	Field	11/14/94	S142-ST1-1	8	2.8	134	ND	4.7	5.4	ND	ND	ND
018476-2	Soil	Dupl.	11/14/94	S142-ST1-1	8	2.5	120	ND	2.8	4.6 J	ND	ND	ND
018474-2	Soil	Field	11/14/94	S142-ST1-2	8	2.9	157	ND	3.8	5.6	ND	ND	ND
017927-2	Soil	Field	9/22/94	S142-SP1-1	10	3.4	77.6	ND	8.5	12.4	ND	1.3	ND
017928-2	Soil	Field	9/22/94	S142-SP1-1	20	2.6	48.8	ND	5.1	11	ND	ND	ND
017929-2	Soil	Field	9/22/94	S142-SP1-2	10	2.7	58.9	ND	6.6	15	ND	0.72	ND
018477-2	Soil	Field	11/15/94	S142-SP1-2	20	2.9	49.1	ND	3.6	5.4	ND	ND	ND
Laboratory Detection Limit For Soil (mg/kg)						1	1	0.5	1	5	0.1	0.5	1
SNL/NM Soil Background Range (mg/kg)*						U	0.13-730	0.1-8.5	0.01-58.1	1-110	U	U	0.05-10
SNL/NM Soil Background UTL, 95th %tile (mg/kg)*						U	407.9	3.51	22.9	15	U	U	4
Proposed Subpart S Action Level For Soil (mg/kg)						20	6,000	80	80,000**	400***	20	400	400

Notes

As = Arsenic
Ba = Barium
Cd = Cadmium
Cr = Chromium
Pb = Lead
Hg = Mercury
Se = Selenium
Ag = Silver
Dupl. = Duplicate soil sample
fbgs = Feet below ground surface
mg/kg = Milligrams per kilogram
J = Result is detected below the reporting limit or is an estimated concentration
ND = Not detected
U = Undefined for SNL/NM soils
UTL = Upper Tolerance Limit
* IT Corp., October 1994
** 80,000 mg/kg is for Cr+3 only. For Cr+6, proposed Subpart S action level is 400 mg/kg.
*** No proposed Subpart S action level for lead in soil, 400 ppm is EPA proposed action level (EPA, July 1994).

Table 4

ER Site 142
Summary of Tritium Analysis of One Confirmatory Soil Sample Collected From Adjacent to the Seepage Pit

Sample Number	Sample Matrix	Sample Type	Sample Date	Sample Location (Figure 2)	Top of Sample Interval (fbgs)	Analytical Method	Compound Name	Result	Detection Limit	+- 2 Sigma Uncertainty	Units
018477-4	Soil	Field	11/15/94	S142-SP1-2	20	600 906.0	Tritium (net)*	ND	250.0	150.00	pCi/L

Notes

fbgs = Feet below ground surface
ND = Not detected
pCi/L = Picocuries per liter
* Net tritium value = gross result minus blank sample result

tritium was not detected in the single soil sample collected from one of the deep seepage pit sampling intervals (Table 4). As shown in Table 4, tritium was not detected in soil moisture from the single sample analyzed for tritium. Finally, the gamma spectroscopy screening of the single soil sample detected only very low activity levels of a few radionuclides, and did not indicate the presence of contamination from other radionuclides at this site (Table A.4 of Appendix A).

4. Conclusion

Sample analytical results generated from this confirmatory sampling investigation have shown that detectable or significant concentrations of COCs are not present in soils at ER Site 142, and that additional investigations are unwarranted and unnecessary. SNL/NM will remove the remaining liquid and sludge from the septic tank, properly dispose of the material, and will decommission the septic system in accordance with local ordinances.

Based on archival information and analytical results of soil samples collected at the likely points of release of effluent from the Building 9970 Septic System, SNL/NM has demonstrated that hazardous waste or COCs have not been released from this SWMU into the environment (Criterion C of Section 1.2), and the site does not pose a threat to human health or the environment. Therefore, ER Site 142 is recommended for an NFA determination.

5. References

5.1 ER Site 142 References

Sandia National Laboratories/New Mexico (SNL/NM), June 1994. Field Logbook #0080, Page 41, 6/21/94 for ER Site 142 passive soil-gas survey, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September and November 1994. Field Logbook #0096, Pages 35-38 and 108-110, 9/22/94, 9/26/94, 11/14/94, and 11/15/94, Field Notes for ER Site 142 Shallow Soil Sampling, OU 1295, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 1994. Environmental Operations Records Center, Record Number ER/1295/DAT/142, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 1995. Field Logbook #0102, Page 7, 1/9/95, Field Notes for ER Site 142 dry wells locating and excavating, OU 1295, Sandia National Laboratories, Albuquerque, New Mexico.

5.2 Other References

Department of Energy (DOE), September 1987, draft. Albuquerque Operations Office, "Comprehensive Environmental Assessment and Response Program (CEARP) Phase 1: Installation Assessment, Sandia National Laboratories, Albuquerque," Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, Environmental Safety and Health Division, Environmental Program Branch.

IT Corporation (IT), June 1993. "Sandia National Laboratories/New Mexico Septic Tank Monitoring Report, 1992 Report," Albuquerque, New Mexico

IT Corporation (IT), March 1994. "Sampling and Analysis Plan For Shallow Subsurface Soil Sampling," RCRA Facility Investigation of Septic Tanks and Drainfields (OU 1295), Albuquerque, New Mexico.

IT Corporation (IT), October 1994, draft. "Background Concentrations of Constituents of Concern to the Sandia National Laboratories/New Mexico Environmental Restoration Project," Albuquerque, New Mexico.

Northeast Research Institute (NERI), 1994. "PETREX Soil-gas Survey Results Conducted at Various Sites of the Septic Tanks and Drainfields Operating Units, Sandia National Laboratories," Albuquerque, New Mexico, Northeast Research Institute, Lakewood, Colorado.

Sandia National Laboratories/New Mexico (SNL/NM), March 1993. "Work Plan for the RCRA Facility Investigation of Septic Tanks and Drainfields (ADS-1295)," Sandia National Laboratories, Albuquerque, Environmental Impact and Restoration Department, Albuquerque, New Mexico, and prepared by Ecology and Environment, Inc., Albuquerque, New Mexico, Contract No. 06-2469, WA No. 11.0

Sandia National Laboratories/New Mexico (SNL/NM), November 1994. "Comment Responses to USEPA Notice of Deficiency November 1994," Sandia National Laboratories, Albuquerque, New Mexico

Sandia National Laboratories/New Mexico (SNL/NM), February 1995. "Program Implementation Plan for Albuquerque Potential Release Sites," Sandia National Laboratories Environmental Restoration Program, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 1995. "Groundwater Protection Program Calendar Year 1994 Annual Groundwater Monitoring Report Sandia National Laboratories/New Mexico," Sandia National Laboratories, Groundwater Protection Program, Environmental Operations Center, Organization 7500, Albuquerque, New Mexico

U.S. Environmental Protection Agency (EPA), October 1986. "RCRA Facility Assessment Guidance," EPA/530-86-053, PB87-107769, Washington, DC.

U.S. Environmental Protection Agency (EPA), April 1987. "Final RCRA Facility Assessment Report of Solid Waste Management Units at Sandia National Laboratories, Albuquerque, New Mexico," Contract No. 68-01-7038, EPA Region 6.

U.S. Environmental Protection Agency (EPA), December 1987. "Hazardous Waste; Codification Rule for 1984 RCRA Amendments; Final Rule," *Federal Register*, Vol. 52, Title 40, Parts 144, 264, 265, 270, and 27, Environmental Protection Agency, Washington, DC.

U.S. Environmental Protection Agency (EPA), July 1990. "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities, Proposed Rule," *Federal Register*, Vol. 55, No. 145, July 27, 1990, Washington, DC.

U.S. Environmental Protection Agency (EPA), August 1992. "Hazardous Waste Management Facility Permit No. NM5890110518," EPA Region 6, issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), August 1993. "Module IV of RCRA Permit No. NM 5890110518," EPA Region 6, issued to Sandia National Laboratories, Albuquerque, New Mexico.

U.S. Environmental Protection Agency (EPA), July 1994. "Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead-Contaminated Soil," Memorandum from Lynn R. Goldman, M.D., USEPA Assistant Administrator to EPA Regional Directors.

U.S. Environmental Protection Agency (EPA), March 1995. "Letter from Allyn M. Davis (U.S. EPA Region VI to Kathleen A. Carlson (DOE, Albuquerque, Operations Office) regarding approval of the Workplan for Operable Unit 1295, Septic Tanks and Drainfields."

October 13, 2003

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