SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87106 505-262-1862 FAX: 505-262-1864

Radiation Releases at Sandia National Laboratories/New Mexico:
Recently Reported Radiation Releases and Other Potential Sources of Radiation Release

FINAL REPORT

Prepared for
Sandia Labs Awareness Project – Phase II
Albuquerque Center for Peace and Justice
202 Harvard SE
Albuquerque, NM 87106

Supported by a grant from
Citizens' Monitoring and Technical Assessment Fund

by
Paul Robinson
Research Director
Southwest Research and Information Center
PO Box 4524
Albuquerque, NM 87106
505-262-1862
sricpaul@earthlink.net

March 19, 2006

TABLE OF CONTENTS

Radiation Releases at Sandia National Laboratories/New Mexico: Recently Reported Radiation Releases and Other Potential Sources of Radiation Release

I. GENERAL BACKGROUND ABOUT SANDIA NATIONAL LABORATORIES/ NEW MEXICO (SNL/NM)

Sandia was established as "Z Division" on Kirtland Air Force Base in Albuquerque, N.M., in 1945 during the Manhattan Project as a division of the Los Alamos Laboratory to provide engineering design, production, assembly, and field testing of non-nuclear components of nuclear weapons. On request of President Harry Truman, Sandia became an independent laboratory on Nov. 1,1949. Since 1949, Sandia National Laboratories/New Mexico (SNL/NM) has developed science-based technologies that support our national security. (SAND 2005a)

(SAND 2006d)

On November 1, 1949, Sandia Corporation - a wholly owned subsidiary of Western Electric and, later, Bell Labs and AT&T Corporation - began managing Sandia. In 1993, Martin Marietta Corporation (now Lockheed Martin) acquired SNL/NM's management contract. (SAND 2006d)

"Sandia's missions meet national needs in five key areas:

- Nuclear Weapons — Ensuring the stockpile is safe, secure, reliable, and can support our nation's deterrence policy
- Nonproliferation and Assessments — Reducing the proliferation of weapons of mass destruction, the threat of nuclear accidents, and the potential for damage to the environment
- Military Technologies and Applications — Helping to maintain superiority of our armed forces
- Homeland Security — Helping to protect our nation against terrorism [and]
- Energy and Infrastructure Assurance — Keeping America's resources and information flowing" (SAND 2005a)

Sandia is a government-owned/contractor-operated facility "managed by a subsidiary of Lockheed Martin Corporation for the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). Sandia also works for and partners with other DOE agencies, the Department of Defense (DoD), the Department of Homeland Security (DHS), other federal, state, and local agencies and governments, private industry, and academic institutions to accomplish our missions."

"SNL applies its capabilities to the following activities:

- Associated with weapons engineering for all levels and phases of the nuclear weapons life cycle.
- National security-related tasks of nuclear materials safeguards and security, treaty verification and control, intelligence on foreign technologies and weapon systems, defense waste management (WM), and programs in support of the U.S. Department of Defense (DoD).
- R&D on (a) fossil fuels including coal, oil, and gas; (b) conservation and renewable energy, focusing largely on solar energy; (c) nuclear energy, principally in WM and reactor safety, and reliability in support of the Nuclear Regulatory Commission (NRC); (d) magnetic-confinement fusion energy, mainly on plasma/material interactions; and (e) fundamental energy research related to combustion, geosciences and material sciences." (SAND 2006e)

"Sandia designs and develops more than 90 percent of the 3,000-6,500 components in a modern nuclear weapon. Since 1993, Sandia has also manufactured some of the most complex nuclear weapon components." (SAND 2005a)

As of Fall 2005, SNL/NM employed the equivalent of 8,600 full time employees and projected an annual budget of $2.7 billion for Fiscal Year 2006. (SAND 2005a)

II. RECENTLY REPORTED SOURCES OF RADIATION RELEASES AT SNL/NM

Sandia National Laboratory (SNL) reports sources of radiation releases, annual release rates and release estimates and locations of the resources of release in its Annual Site Environmental Reports. The most recent SNL Annual Site Environmental Reports are:

2005 Annual Site Environmental Report for Sandia National Laboratories, New Mexico, SAND2006-4509, September 2006, http://www.sandia.gov/news/publications/environmental/05nm.pdf. (SAND 2006)

2004 Annual Site Environmental Report for Sandia National Laboratories, New Mexico, SAND2005-4594, September 2005, http://www.prod.sandia.gov/cgi-bin/techlib/access-control.pl/2005/054594.pdf. (SAND 2005)

2003 Annual Site Environmental Report for Sandia National Laboratories, New Mexico, SAND2004-2813, September 2004, http://www.prod.sandia.gov/cgi-bin/techlib/access-control.pl/2004/042813.pdf. (SAND 2004)

Sandia National Laboratories reported 16 sources of radioactive releases in 2005. For the general location of these facilities within SNL, see Figure 1. Of the reported releases only five, the Tech Area III facilities - the Mixed Waste Landfill, one of the two Tech Area IV facility - HERMES III facility, and the Tech Area V facilities - the Annular Core Research Reactor, the Hot Cell Facility and the Sandia Pulsed Reactor, are reported by actual monitoring data, the remaining 11 are reported by calculation. Only five of the facilities reporting actual radiation release monitoring are used in SNL/NM's dose calculation data (the HERMES III facility is not included). (SAND 2006)

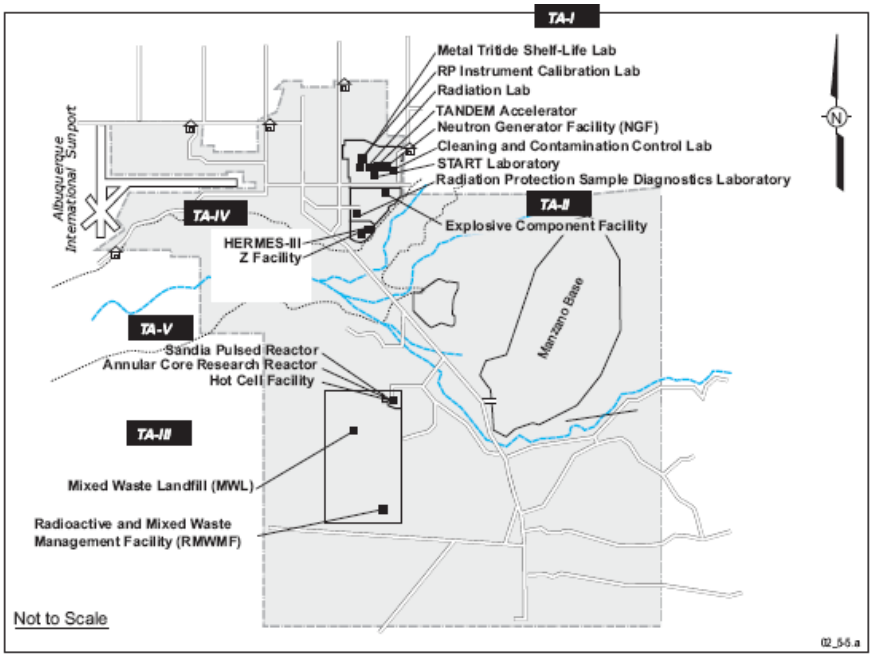


Figure 1 Locations of the 16 Facilities at SNL/NM – and associated Technical Areas (TAs) - that Provided Radionuclide Release Inventories in 2005

The 16 facilities reported as sources of radioactive releases in 2005 include:

Tech Area (TA)-I
Sandia Tomography and Radionuclide Transport (START) Laboratory
Radiation Laboratory
Calibration Laboratory
Neutron Generator Facility (NGF)
TANDEM Accelerator
Metal Tritide Shelf-Life Laboratory
Cleaning and Contamination Control Laboratory (CCCL
Radiation Protection Sample Diagnostics Laboratory (RPSD)

TA-II
Explosive Components Facility (ECF)

TA-III
Mixed Waste Landfill (MWL)
Radioactive and Mixed Waste Management Facility (RMWMF)

TA-IV
High-Energy Radiation Megavolt Electron Source - III (HERMES – III)
Z Facility

TA-V
Hot Cell Facility (HCF)
Annular Core Research Reactor (ACRR)
Sandia Pulsed Reactor (SPR)

The amount of radiation release reported from these facilities is presented in Figure 2. Brief descriptions of these facilities are provided below.

Figure 2 Radioactive Releases from 16 NESHAP Sources at Sandia National Laboratories in 2005

TA	Facility Name	Monitoring Method*	Used in Dose Calculation?	Radionuclide	Reported or Predicted Release (Ci/yr)
I	Sandia Tomography and Radionuclide Transport (START) Laboratory	Calculation	No	Co-60 Cs-137 Pu-238	3.4E-07 5.5E-07 1.0E-07
I	Radiation Laboratory	Calculation	No	H-3 N-13 Ar-41	1.0E-05 2.0E-07 1.0E-09
I	Calibration Laboratory	Calculation	No	H-3	2.2E-05
I	Neutron Generator (NGF)	Continuous	Yes	H-3	0.56
I	TANDEM Accelerator	Calculation	No	H-3	1.0E-05
I	Metal Tritide Shelf-Life Laboratory	Calculation	No	H-3	5.0E-09
I	Cleaning and Contamination Control Laboratory (CCCL)	Calculation	No	N/A (C-14 in 2004)	N/A (2.7E-04 in 2004)
I	Radiation Protection Sample Diagnostics Laboratory	Calculation	No	Am-243 Cl-36 Cm-244 Co-57 Co-60 Cs-134 Cs-137 Fe-55 H-3 Mn-54 Ni-63 Pu-236 Pu-238 Pu-239 Pu-241 Pu-242 Ra-226 Ra-228 Sr-90 Tc-99 Th-232 U-232 U-233 U-236 U-238 Zn-65	3.9E-13 1.2E-08 1.3E-10 1.0E-10 1.0E-10 1.2E-08 1.2E-08 1.3E-10 1.2E-08 1.3E-10 1.3E-10 3.9E-13 3.9E-13 3.9E-13 3.9E-13 3.9E-13 1.3E-10 1.3E-10 1.3E-10 1.2E-08 1.3E-10 3.9E-13 3.9E-13 1.3E-10 1.3E-10 1.0E-15
II	Explosive Components Facility (ECF)	Calculation	No	H-3	8.0E-04
III	Mixed Waste Landfill (MWL)	Periodic	Yes	H-3	0.09
III	Radioactive & Mixed Waste Management Facility (RMWMF)	Continuous	Yes	H-3 Am-241 Sr-90 Cs-137	0.74 2.20E-05 3.5E-07 1.4E-07
IV	High Energy Radiation Megavolt Electron Source III (HERMES III)	Periodic	No	N-13 O-15	1.4E-03 1.4E-04
IV	Z-Facility (Accelerator)	Calculation	No	H-3 (U-238 in 2004) (U-234 in 2004) (U-235 in 2004)	6.6E-07 2.0E-07 9.2E-09 2.1E-09
V	Hot Cell Facility (HCF)	Periodic	Yes	N/A	N/A
V	Annular Core Research Reactor (ACRR)	Periodic	Yes	Ar-41	4.86
V	Sandia Pulsed Reactor (SPR)	Periodic	Yes	Ar-41	7.0E-07

NOTE: *Monitoring Method: Periodic = Based on periodic measurements; Calculation = Calculated from known parameters; Continuous = Based on continuous air monitoring results Ci/yr = curies per year; TA= Technical Area; N/A = not available Source: SAND 2006

`Location: **Tech Area (TA)-I**

Sandia Tomography and Radionuclide Transport (START) Laboratory – This laboratory is used to perform small-scale experiments. In 2005, the facility reported emissions of plutonium-239, cobalt-60 and cesium-137. In 2004, the facility reported emission of cobalt-60 and cesium-137.

Radiation Laboratory – Small-scale radiation experiments resulted in the release of air-activation products and tritium.

Calibration Laboratory – Calibration of radiation detection equipment resulted in small releases of tritium.

Neutron Generator Facility (NGF) - Building 870 - The NGF is the nation's principal production facility for neutron generators. This facility currently emits only tritium. The facility has two stacks, but only utilizes the main stack in the Tritium Envelope North Wing. In 2005, 0.56 Curies (Ci) were reported released from the North Wing stack, based on continuous stack monitoring. This emission is approximately five times 2004 reported release of 0.11 Curies (Ci) from the North Wing stack, also based on continuous stack monitoring. Although anticipated tritium releases do not exceed the regulatory threshold requiring continuous monitoring, it is performed voluntarily at the NGF as a best management practice (BMP). Figure 3 identifies historic reported emission rates of Argon-41 and Tritium (H-3) from SNL/NM facilities.

Emissions from NGF are expected to increase over the next few years due to an increase in use of the neutron generator facility for tritium target loading associated with fabrication of nuclear weapons as proposed in the Final Environmental Assessment for the Proposed Consolidation of Neutron Generator Tritium Target Loading Production DOE/EA-1532 DOE 2005.

DOE 2005 proposes to consolidate the neutron generator manufacturing program (target loading, neutron tube and neutron generator production) by centralizing all neutron generator development and manufacturing processes at SNL/NM.

Implementing this proposed action is projected to result in an estimated tritium emission of 785 Ci/year from the NGF, more than twice the "No Action Alternative" emissions rate of 300 Ci/year. DOE 2005 identified the total amount of tritium that would be contained in the maximum number of neutron generator parts, gas standards, loaders, and the tritium capture system (TCS) contained at any given time to be 15,999 Ci for the proposed level of activity and 4,880 CI for the No Action Alternative.

TANDEM Accelerator – This is an ion solid interaction and defect physics accelerator facility. Although the TANDEM did not operate in 2005 or 2004, the facility reported potential emissions of tritium that were being housed in the facility.

Metal Tritide Shelf-Life Laboratory – This laboratory, which conducts research on tritium materials, released negligible levels of tritium (five billionths of a curie).

Cleaning and Contamination Control Laboratory (CCCL) – The CCCL is used for R&D of new and superior materials for government and industrial needs. Carbon-14 was the only radionuclide emission reported in 2004. No emissions were reported in 2005.

Radiation Protection Sample Diagnostics Laboratory (RPSD) – Small-scale radiometric sample analyses on an as-needed basis.

Location: TA-II

Explosive Components Facility (ECF) – Building 905 - The ECF conducts destructive testing on neutron generators. In 2005 and 2004, the facility reported emissions of tritium.

Location: TA-III

Mixed Waste Landfill (MWL) – The MWL was closed in 1988. Although a diverse inventory of radionuclides is present in the MWL, measurements indicate that tritium is the only radionuclide released into the air. In 1992, 1993, and 2003, studies were conducted to quantify the tritium emissions. The most recent value, from 2003, is used for their annual inventory.

"The Mixed Waste Landfill (MWL) is located approximately 5 miles southeast of Albuquerque International Sunport, and 4 miles south of Technical Area (TA) 1. The site covers 2.6 acres in the north-central portion of TA 3.

"The MWL was established in 1959 as a disposal area for radioactive and mixed wastes generated at SNL research facilities. The Mixed Waste Landfill received waste between 1959 and 1988 that was disposed in roughly 50 unlined pits and trenches dug 15 – 25 feet into the soil across a 2.6-acre area, a 0.6-acre portion of which was operated as a "classified waste landfill."

Based on data provided to NMED in 2001 by SNL, the MWL contains approximately 100,000 cubic feet of radioactive and hazardous waste, including more than 10 tons of depleted uranium, estimated to have contained more than 6300 curies of radioactivity at the time of disposal. Hazardous constituents at the MWL include organic chemicals such as trichloroethylene (TCE) and carbon tetrachloride and heavy metals such as lead and cadmium. Radioactive constituents at the MWL include more than 40 radioactive isotopes such as: tritium (H-3), sodium-22, barium-133, cobalt-57, cobalt-60, molybdenum-54, krypton-85, strontium-90, iodine-129, and cesium-137, polonium-210, radium-226, uranium-235, americium-241, thorium oxide, and plutonium-238, among other isotopes." (Citizen Action, 2006)

Radioactive and Mixed Waste Management Facility (RMWMF) – The RMWMF primarily handles low-level waste (LLW), mixed waste (MW), and some transuranic (TRU) waste. In 2005 and 2004, the RMWMF reported tritium releases, americium-241, strontium-90, and cesium-137 as determined by continuous stack monitoring. Although anticipated tritium releases do not exceed the regulatory threshold requiring continuous monitoring, it is performed voluntarily at the RMWMF as a best management practice (BMP). The increase in the tritium release again in 2005 was due to the final processing of tritium-containing oil waste at the RMWMF (begun in 2003).

RMWMF Glovebox

Location: TA-IV

High-Energy Radiation Megavolt Electron Source - III (HERMES - III) – Building 970 - The HERMES III accelerator is used to test the effects of prompt radiation on electronics and complete military systems. This facility produces air activation products, primarily nitrogen-13 and oxygen-15. In 2003, 2004 and 2005, the facility reported releases of nitrogen-13 and oxygen-15.

Z Facility – The Z Facility is an accelerator used for research on light ion inertial confinement fusion. Large amounts of electrical energy are stored over several minutes and then released as an intense concentrated burst (shot) at a target. In 2005, the facility reported releases of tritium. In 2004, the facility reported releases of tritium, uranium-234, uranim-235, and uranium-238.

Location: **TA-V**

Tech Area V

Hot Cell Facility (HCF) - Building 6580 - The HCF provides full capability to remotely handle and analyze radioactive materials such as irradiated targets. It consists of the Hot Cell itself, which contains steel confinement boxes; the glove box laboratory; ancillary analytical equipment; support areas; and fissile- and radioactive-material storage areas. The HCF primarily conducts and supports research and development activities. Therefore, the types and quantities of materials handled, the operations carried out, and the types and quantities of wastes produced vary from project to project. (Global 2006)

In 2005, there were no reportable emissions. In 2004, the facility was used for the 7% enriched project and the lead characterization project. The 7% enriched project is done in a fully enclosed and filtered glovebox; therefore there were no reportable emissions. The

lead characterization program work is done where there is triple HEPA filtration, so again there were no reportable emissions. (SAND 2006)


HOT CELL FACILITY

Annular Core Research Reactor (ACRR) - Building 6588 - This reactor is a pool-type reactor used primarily to support defense program projects. It has a steady state peak power potential of 4 megawatts (MW) with a pulsed power peak up to 30,000 MW. Used primarily for electronics and reactor safety research, the facility has the capability to support the Medical Isotope Production Project (MIPP) by producing molybdenum-99 and other isotopes used in nuclear medicine. Argon-41, an air activation product, was the only reported releases in 2005 and 2004.


ACRR

In a pool-type reactor, activities using the reactor assembly are conducted in a pool of water. In June 2006, SNL/NM was considering re-start of the ACRR without storage pool water following repairs to reconstruct the storage pool after pool water contamination due to deterioration of depleted uranium shielding and a pool liner leak. Following problems associated with decontamination of the liner and determination that the replacement liner fails to meet specifications, SNL/NM considered operations without storage pool water to meet re-start scheduling objectives. (SAND 2006b)

The ACRR Building also houses the Old Gamma Irradiation Facility (OGIF), which consists of two adjoining irradiation cells. The sources provide a variety of radioactive source geometries for irradiating experiments. The OGIF contains approximately 150,000 Ci of Co-60 and is used mainly for radiation certification of satellites and weapons systems, electronic components, dosimetry calibration, and radiation damage to materials studies. (Global 2006)

Sandia Pulsed Reactor (SPR) - Building 6590 - The SPR, including reactors designated as SPR II and SPR III is used to produce intense neutron bursts for effects testing on materials and electronics. The SPR II and SPR III reactors provide a unique, near-fission-spectrum radiation environment in which to test technologies that support defense and

non-defense activities. The primary mission of the facility is to meet high neutron fluency or pulsed high dose requirements in the testing of electronic subsystems and components.

In 2005, release of Ar-41 was reported. There were no reportable emission released in 2004.

The future for the SPR may be very short. In May 2004, the DOE Secretary, then Spencer Abraham, asserted that after operations of three years or less, the Sandia Pulsed Reactor will no longer be need since computer simulations will be able to assume its mission. He also stated that, when the SPR mission is complete the reactor fuel will be removed from SNL/NM, though he did not indicate where that fuel would go. (DOE 2004)

As recently as June 2006, SNL/NM Vice-President Joan Woodward confirm this plan in Sandia Lab News saying, “for reasons associated with the cost of operation and security, we’re going to operate SPR this year and at the end
of this year it is done.” (SAND 2006a)

SPR

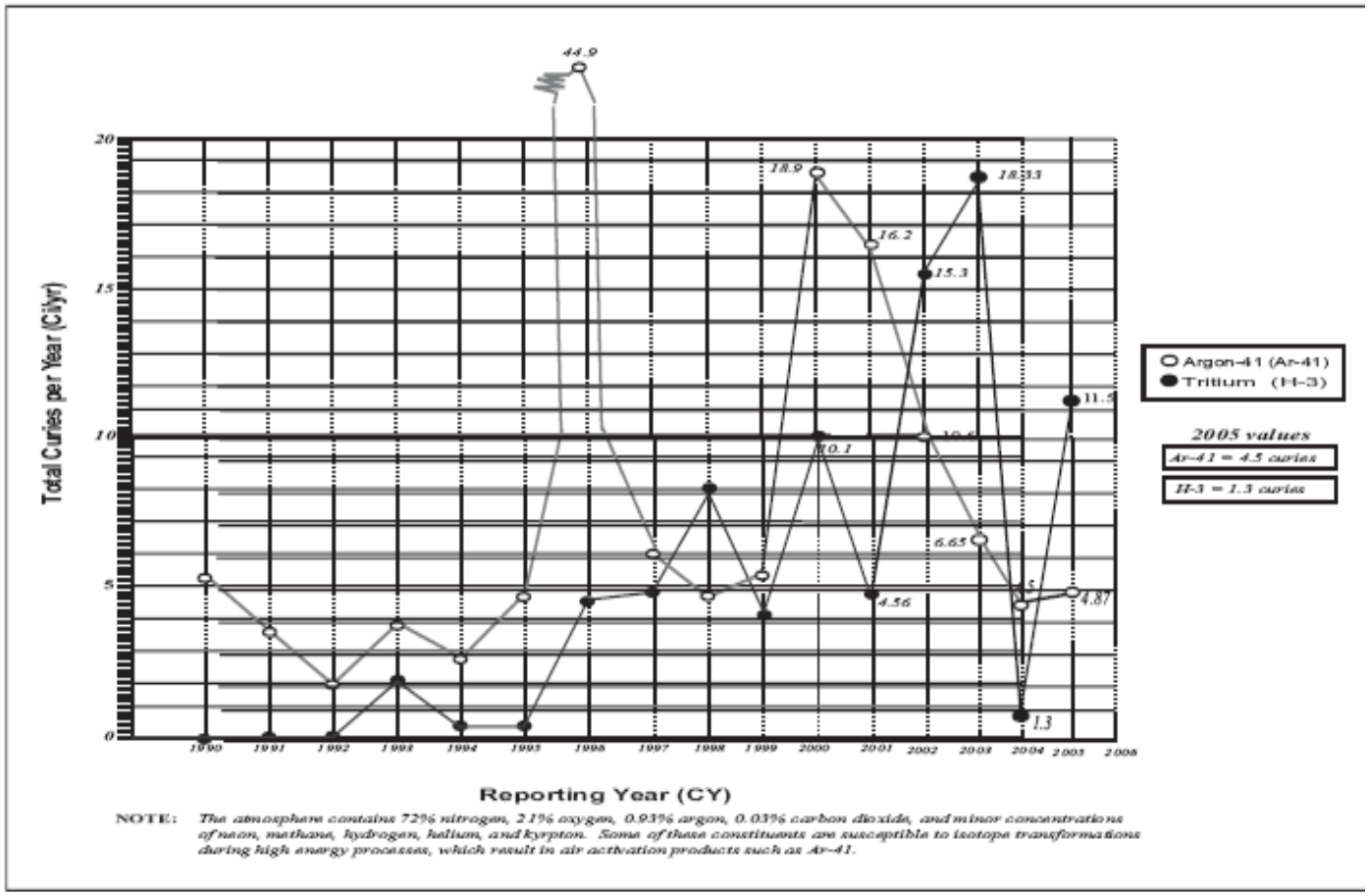


Figure 3 Summary of Atmospheric Releases in Argon-41 and Tritium from SNL/NM Facilities Since 1990 (Emissions vary from year to year based on operations within the facility)

III. RADIOACTIVE MATERIAL AT SNL/NM NOT IDENTIFIED AS SOURCES OF RADIATION RELEASE IN SANDIA'S ANNUAL SITE ENVIRONMENTAL REPORTS

A. REACTOR FUEL AND REACTOR IRRADIATED NUCLEAR MATERIALS

Seventeen batches of reactor irradiated nuclear materials have recently been identified at Sandia National Laboratories as a result of Freedom of Information Act (FOIA) queries by Citizen Action. Upon notification of the occurrence of these materials, the New Mexico Environment Department (NMED) has begun to investigate the degree to which these material are regulated by hazardous waste management regulations or other regulatory programs at the state or federal level. (NMED March 16, 2006)

In July 2004, the NMED requested a report from Sandia National Laboratories providing specific detailed information addressing reactor fuel and reactor irradiated materials determined to occur at Sandia National Laboratories. In a May 2005 report on those materials SNL provided the NMED an inventory list of irradiated reactor fuel and RINM stored in below-grade storage facilities at Technical Area-V (TA-V) and in the Manzano Bunkers surround Four Hills.

In a March 2006 letter, to SNL/NM and DOE, NMED determined that the reactor fuel and reactor irradiated nuclear materials reported by SNL included "metal-bearing materials potentially regulated as hazardous or mixed waste under the Resource Conservation Recovery Act (RCRA). Metals include cadmium, lithium, silver and sodium; other potentially reactive materials in storage in the below-grade storage facilities were also documented." Based on that report NMED required SNL to provide NMED the information … concerning the storage, management and characterization of irradiated reactor fuel, RINM, as well as other potentially hazardous and/or mixed waste stored in below-grade facilities at TA-V and the Manzano Bunkers."

NMED requested detailed information on six of the 18 bins, or "batches," of Reactor Irradiated Nuclear Materials that SNL reported as containing constituents that may be appropriately regulated as hazardous or mixed waste. These materials included:

Batch 5, Deuterium Materials, LiD powders containing chemically reactive Lithium;
Batch 9, Irradiated Uranium, presence of thermocouple materials in scrap and miscellaneous materials and in complete experimental parts and assemblies;
Batches 14 and 15, Sodium-bonded Uranium Materials and Spent Fuel, Uranium fuel bonded with or surrounded by sodium and the sodium removed from the fuel;
Batch 17, Uranium Hexafluoride, exhibits RCRA reactive characteristics;
Batch 18, Uranyl Nitrate, RCRA characteristics (if any) not addressed.

In addition to those six batches of material, SNL identified 12 batches of reactor irradiated nuclear materials with significant radioactive material content that have yet to be disposed of in licensed or permitted facilities but may not include hazardous waste

constituents along with their radioactive material content. All 18 batches of Reactor Irradiated Nuclear Materials are identified in TABLE __. (SAND 2002)

B. MANZANO STORAGE FACILITY BUNKERS

In its March 2006, letter, NMED required detailed information regarding 46 containers in the Manzano Bunkers. The Manzano Bunkers are storage facilities authorized to store nuclear material and waste. Classified nuclear and radioactive materials (fissile and non-fissile) are stored on a long-term basis. No Sandia personnel are permanently assigned to Manzano. The structures are visited randomly several times a week and inspected at least once a month. Five Manzano Bunkers are used for nuclear material storage. The material in these bunkers is currently evaluated to determine its designation as radioactive waste or non-waste material. The Manzano Bunkers materials identified for further investigation in NMED's March 2006 included:

1. Container # 185974, Control # 49559, containing UO2 in Metallic Na Matrix.
2. Container # 186001, Control # 49900, containing UO2 in Metallic Na Matrix.
3. Container # 186025, Control # 101882, containing UO2 in Metallic Na Matrix.
4. Container # 186056, Control # 49634, containing UO2 Part in Metallic Na Matrix.
5. Container # 186360, Control # 143158, containing Scrap Cutting from DF-3.
6. Container # 186735, Control # 47456, containing UO2 in Stainless Steel cladding (SS clad) + Na.
7. Container # 186872, Control # 47258, containing UO2 in SS clad + Na.
8. Container # 186957, Control # 56038, containing UO2 in SS Clad + Na.
9. Container # 186971, Control # 79, containing UCx – SS Clad in NA.
10. Container # 187008, Control # 126966, containing UCx + Metallic Na Met Samples.
11. Container # 187008, Control # 126977, containing UCx + Metallic Na Met Samples.
12. Container # 187008, Control # 126984, containing UCx + Metallic Na Met Samples.
13. Container # 187008, Control # 126991, containing UCx + Metallic Na Met Samples.
14. Container # 187008, Control # 127004, containing UCx + Metallic Na Met Samples.
15. Container # 187008, Control # 127011, containing UCx + Metallic Na Met Samples.
16. Container # 189095, Control # 47500, containing UO2 in SS with Metallic NA.
17. Container # 191098, Control # 143042, containing Sections Cut from DF-3.
18. Container # 191098, Control # 146073, containing Sections Cut from DF-3.
19. Container # 191098, Control # 143080, containing Sections Cut from DF-3.
20. Container # 191098, Control # 143103, containing Sections Cut from DF-3.
21. Container # 191098, Control # 143127, containing Sections Cut from DF-3.
22. Container # 191098, Control # 143141, containing Sections Cut from DF-3.
23. Container # 191920, Control # 143059, containing Transverse Sect/Met Sample UO2.
24. Container # 191920, Control # 143066, containing Transverse Sect/Met Sample UO2.
25. Container # 191920, Control # 143097, containing Transverse Sect/Met Sample UO2.
26. Container # 191920, Control # 143110, containing Transverse Sect/Met Sample UO2.
27. Container # 191920, Control # 143134, containing Transverse Sect/Met Sample UO2.
28. Container # 210007, Control # 189491, containing Thorium.
29. Container # 210007, Control # 189507, containing Thorium.
30. Container # 210120, Control # 185059, containing Thorium Oxide.
31. Container # 210120, Control # 185310, containing Irradiated MP-2 Exp. Debris.
32. Container # 210376, Control # 49757, containing UO2 Part in Metallic Na Matrix.

33. Container # 210376, Control # 47771, containing UO2 Part in Metallic Na Matrix.
34. Container # 210377, Control # 86585, containing UO2 Part in Metallic Na Matrix.
35. Container # 210377, Control # 86592, containing UO2 Part in Metallic Na Matrix.
36. Container # 210377, Control # 86608, containing UO2 Part in Metallic Na Matrix.
37. Container # 210377, Control # 86615, containing UO2 Part in Metallic Na Matrix.
38. Container # 210377, Control # 86622, containing UO2 Part in Metallic Na Matrix.
39. Container # 210377, Control # 87339, containing UO2 Part in Metallic Na Matrix.
40. Container # 210377, Control # 87353, containing UO2 Part in Metallic Na Matrix.
41. Container # 210377, Control # 87377, containing UO2 Part in Metallic Na Matrix.
42. Container # 210377, Control # 87391, containing UO2 Part in Metallic Na Matrix.
43. Container # 210378, Control # 132572, containing UO2 Part in Metallic Na Matrix.
44. Container # 210379, Control # 125536, containing UO2 Part in Metallic Na Matrix.
45. Container # 210380, Control # 105866, containing UO2 Part in Metallic Na Matrix.
46. Container # 210381, Control # 97000, containing UO2 Part in Metallic Na Matrix.

C. RADIOACTIVE MATERIALS NOT YET REGULATED OR DISPOSED OF

In the same March 2006 letter, the NMED requested detail information on materials identified in 1993 at SNL but yet to be effectively regulated or disposed of:

- Manzano Storage Facility, Class "C" explosive in a non-irradiated assembly;
- Annular Core Research Reactor Storage Vault, containing lead and silver solder and lead shield;
- Hot Cell Facility Steel Confinement Boxes, Glove Box Line or Hot Cell, containing soldered electrical components and metals including cadmium, silver, lead, sodium, etc. (NMED 2006)

D. CORRECTIVE ACTION MANAGEMENT UNIT (CAMU)

The Corrective Action Management Unit (CAMU) is designed and permitted to store, treat, and permanently contain Environmental Restoration (ER) Project hazardous wastes. The CAMU is located near the southeastern corner of Technical Area III next to the site of the Chemical Waste Landfill. Waste and debris accumulated during excavation of the Chemical Waste Landfill are stored at the CAMU.

Sandia reports that "the CAMU is not a SNL-regulated radiological work permit (RWP) site or radioactive material management area (RMMA). No radionuclides above what is considered background are permitted within the CAMU except tritium. Soil moisture that contains tritium below a concentration of 20,000 picocuries per liter (pCi/L) has been accepted at the CAMU. This tritium concentration is above what is considered background (i.e., 420 pCi/L), but this referenced level is a EPA drinking water standard and therefore the concentrations present in the soil at the CAMU do not pose any significant radiological health risks.

"Some of the waste managed at the CAMU contains regulated chemical constituents that have potential toxicological and physical hazards. The main types of chemical contamination present in the soils that have been treated at the CAMU are:

- Volatile Organic Compounds (VOCs) - 1,1,1-Trichloroethane and Acetone Semivolatile Organic Compounds (SVOCs) - Aniline, Bis(2-ethylhexyl)phalate, and O-toluidine;
- Heavy Metals - Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, and Selenium ; and
- Polychlorinated Biphenyls (PCBs)

These organic compounds and metals can cause acute and chronic health effects. A few chemicals have been identified as known or suspected human carcinogens. Following treatment to lower contaminant concentrations, soils were placed in the CAMU containment cell." (SAND 2006f)

REFERENCES

Citizen Action 2006 Mixed Waste Landfill Pits and Trenches: Known Inventory," at http://www.radfreenm.org.

DOE 2004 DOE, "Security Police Office Training Program; Remarks Prepared for Secretary Spencer Abraham." May 7, 2004 http://www.energy.gov/news/1796.htm

DOE 2005 Department of Energy, Final Environmental Assessment for the Proposed Consolidation of Neutron Generator Tritium Target Loading Production, DOE/EA-1532, National Nuclear Security Administration, Sandia Site Office, Albuquerque, New Mexico, June 2005 http://www.eh.doe.gov/NEPA/ea/EA1532/finalea_1532.pdf

SAND 2002 Sandia National Laboratories, "A Material Management and Disposition Plan for the Excess Materials at Sandia National Laboratories," July 2002, Document Number SAND 2002-1785P at http://emi-web.inel.gov/Nissmg/SNLMMP-0707.pdf

NMED 2006 Bearzi, L. to Patty Wagner, Department of Energy and Francisco Figueroa, Sandia National Laboratories, RE: REQUEST FOR INFORMATION REGARDING STORAGE OF IRRADIATED REACTOR FUEL AND REACTOR IRRADIATED NUCLEAR MATERIALS SANDIA NATIONAL LABORATORIES EPA ID# NM5890110518, HWB-SNL-MISC, Santa Fe, NM, March 16, 2006

SAND 2004 Sandia National Laboratories, 2003 Annual Site Environmental Report for Sandia National Laboratories, New Mexico, SAND2004-2813, September 2004, http://www.prod.sandia.gov/cgi-bin/techlib/access-control.pl/2004/042813.pdf.

SAND 2005 Sandia National Laboratories, "2004 Annual Site Environmental Report for Sandia National Laboratories, New Mexico," SAND2005-4594, September 2005, http://www.prod.sandia.gov/cgi-bin/techlib/access-control.pl/2005/054594.pdf.

SAND 2005a Sandia National Laboratories, "Overview: National Security is our Business," Fall 2005, http://www.sandia.gov/news/publications/overview/overviewfall05.pdf

SAND 2006 Sandia National Laboratories, "2005 Annual Site Environmental Report for Sandia National Laboratories, New Mexico," SAND2006-4509, September 2006, http://www.sandia.gov/news/publications/environmental/05nm.pdf

SAND 2006a Sandia LabNews, "Sandia's weapons program: Exciting work ahead, but the fiscal environment will be challenging - Joan Woodard talks about program's accomplishments, prospects, budgets, and staffing," Albuquerque, NM, Vol. 58, No. 12 June, 9, 2006 http://www.sandia.gov/LabNews/ln06-09-06/labnews06-09-06.pdf

SAND 2006b Hoskison, G., "ACRR Restart Without Storage Pool Water," NNSA, Sandia National Laboratories, Albuquerque, NM, June 2, 2006 http://hpschapters.org/riogrande/2006%20Spring%20Tech%20Mtg/ACRR%20Pulse.pdf

SAND 2006c Sandia National Laboratories, "Missions Areas" http://www.sandia.gov/mission/index.html

SAND 2006d Sandia National Laboratories, "Sandia National Laboratories - A History of Exceptional Service in the National Interest," http://www.sandia.gov/recordsmgmt/highlights/snl_historyfs.pdf

SAND 2006e Sandia National Laboratories, "Long-Term Environmental Stewardship: Project Overview," http://www.sandia.gov/ltes/project_overview.htm

SAND 2006f Sandia National Laboratories, Long-term Environmental Stewardship, Corrective Action Management Unit (CAMU) – Site History and Overview, at http://www.sandia.gov/ltes/camu.htmaz

SAND 2006g Sandia National Laboratories, Long-Term Environmental Stewardship, Mixed Waste Landfill, http://www.sandia.gov/ltes/mixedwaste_landfill.htm.

Global 2006 Global Security.org, "Sandia National Laboratories/New Mexico," page last modified April 27, 2005 http://www.globalsecurity.org/wmd/facility/sandia_nm.htm

APPENDIX A

WASTE HANDLING AND DISPOSAL SITES AT SANDIA NATIONAL LABORATORIES/NEW MEXICO (SNL/NM)

I. INTRODUCTION

This list identifies all hazardous and solid waste sites current listed by SNL/NM. It includes sites where both hazardous and radioactive waste constituents have been found or reported. This list has been compiled to provide a list of the status of all identified waste sites and SNL/NM projects where chemical and radioactive materials may have been deposited or handled as part of the Sandia Lab Awareness Project Phase II – SLAP II. It includes several maps that show where the sites are located.

Sandia National Laboratories (SNL) identifies and manages waste sites where radioactive or chemical materials were disposed of and projects where, potentially, chemical and radioactive materials are being handled though separate programs.

For purposes of this report, "Waste Sites" are defined as locations where radioactive and hazardous waste or debris where placed in the past but are no longer receiving material for disposal. These locations are managed by Department of Energy's (DOE) Long-term Environmental Stewardship (LTES) Program.

For purposes of this report, projects where, potentially, chemical and radioactive materials are being handled include sites where current activities handling radioactive and hazardous materials are conducted.

II. SITES OF CURRENT AND PROPOSED RADIOACTIVE AND HAZARDOUS MATERIAL HANDLING

Sites used for radioactive and hazardous materials handling include:

1) Sites addressed by the SNL/NM Resource Conservation and Recovery Act (RCRA) Permit NM5890110518 issued by New Mexico Environment Department (NMED),
2) Sites with Air Quality Permits issued under authority of by the Albuquerque Bernalillo County Air Quality Board and
3) Site where radioactive materials not regulated by a RCRA Permit or other Environmental Permits.

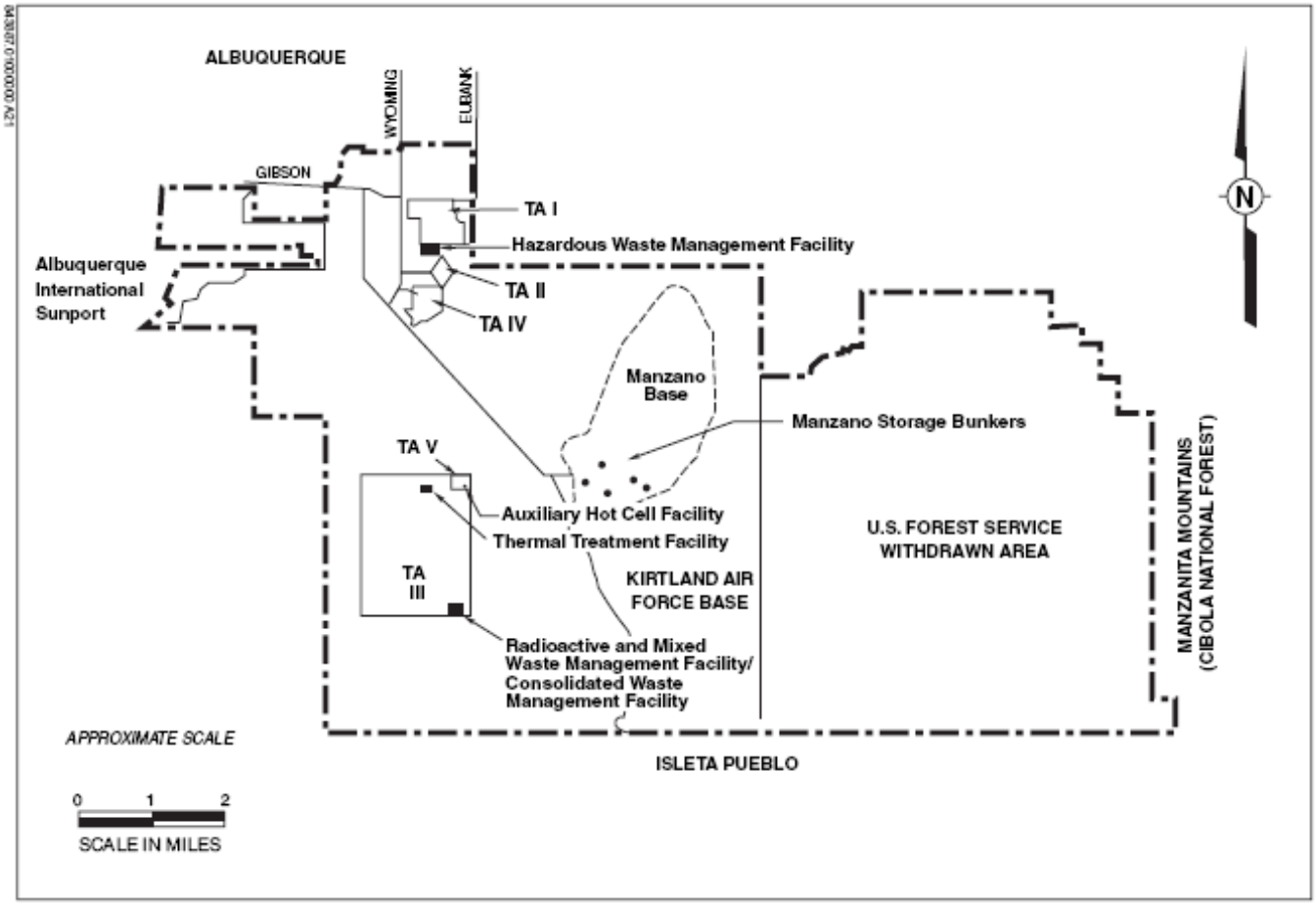


Figure A-1 Locations of Resource Conservation Act (RCRA)-Regulated waste handling and treatment facilities at SNL/NM in relationship to SNL Technical Areas (TAs) and the Kirtland Air Force Base (KAFB) Boundary

1) Sites addressed by the SNL Resource Conservation and Recovery Act (RCRA) Permit are identified in the October 2005 version of the SNL RCRA Permit Application.

The locations of Resource Conservation Act (RCRA)-Regulated waste handling and treatment facilities at SNL/NM in relationship to the location of SNL Technical Areas (TAs) and the Kirtland Air Force Base (KAFB) Boundary are shown in Figure A-1. These facilities are briefly discussed below. SNL/NM RCRA Permit-related activities at these facilities are the subject of a very extensive renewal application - "Part B Application" - that has been undergoing an extensive cycle of review by NMED and revision by SNL/NM since 2002.

Hazardous Waste Management Facility (HWMF). The HWMF consists of several buildings within a fenced area located south of SNL/NM TA-I. The HWMF is used for storage and packaging of RCRA-regulated wastes. The wastes are transported to off-site RCRA-permitted facilities for treatment, storage, and/or disposal. These wastes are generated during SNL/NM operations and corrective action activities.

Thermal Treatment Facility (TTF). The TTF consists of a burn cage with ancillary equipment located in a fenced area south of Building 6715 in the northern part of SNL/NM TA-III. The TTF is used for thermal treatment of explosive wastes generated by SNL/NM operations. RCRA-regulated treatment residues (ash) are transported to off-site permitted facilities for treatment, storage, and/or disposal.

Radioactive and Mixed Waste Management Facility (RMWMF). The RMWMF consists of several buildings within a fenced area located at the southeastern corner of SNL TA-III, west of the CWL. The RMWMF is used for storage, treatment, and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes and treated residues are transported to off-site permitted facilities for treatment, storage, and/or disposal. The RMWMF is operated under interim status.

The plan of operation of the RMWMF in the current RCRA Permit renewal permit application reflects changes from the original RMWMF and minor technical changes and updates previously submitted to NMED in March and July 2005. The application for the RMWMF is included in the October 2005 revision to the RCRA renewal application under review.

Auxiliary Hot Cell Facility (AHCF). The AHCF is located in Building 6597 in SNL/NM TA-V. The AHCF will be used for treatment, packaging, and storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The complete updated application for operation of the AHCF is included in a November 2004 revision to the RCRA renewal application.

Manzano Storage Bunkers (MSB). The MSB are concrete walled bunkers constructed into the sides of the Four Hills at the east end of KAFB used to store RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The seven MSB bunkers listed in the RCRA permit and renewal application are located within the

former Manzano Base in the eastern part of KAFB. RCRA-regulated wastes are typically transported to other SNL/NM Units for storage and/or treatment before being transported to permitted off-site facilities for further treatment, storage, and/or disposal. The MSB are operated under interim status. SNL/NM's February 2002 Renewal Application include plans of operations for the MSB. Plans of operation for five bunkers in the MSB are included in the November 2004 revision to the RCRA renewal application.

Two of the bunkers provide extra capacity that has not been needed and they have never been used for storage of RCRA-regulated wastes under interim status. Sandia/DOE withdrew the Part B permit application for those two bunkers in April 2003. In December 2003, Sandia/DOE submitted a request to NMED for closure of the two bunkers. Sandia/DOE continue to operate the two Units under interim status until NMED approves the closure request.

III. INACTIVE WASTE SITES

Sandia National Laboratories manages waste sites no longer being added to as Environmental Restoration (ER) Site Operable Units (OUs) as part of its Long-Term Environmental Stewardship Program (LTES) as identified at http://www.sandia.gov/ltes/index.html as of April 5, 2006.

The full range of sites managed under the LTES Program at Sandia are identified on the Site Information Page at http://www.sandia.gov/ltes/site_map.htm

The Sandia National Laboratories LTES Site Information page includes an "Operable Unit Site Map" that can be used to identify the specific location of ER sites listed. The "Operable Unit Site Map" is pasted below as Figure A-2.

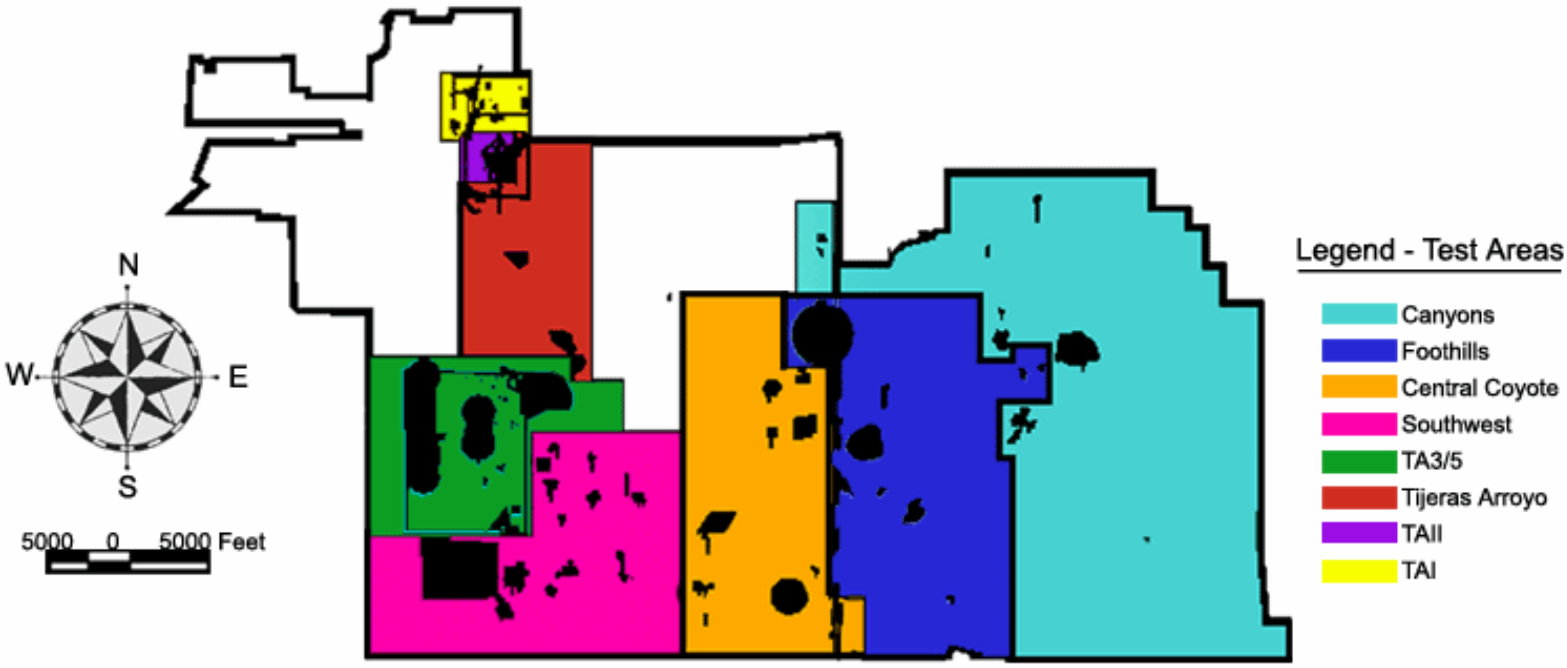


Figure A-2 Location of Environmental Restoration sites - inactive waste disposal sites – managed by the SNL/NM long-term Environmental Stewardship Program

The Environmental Restoration Site information maintained by the Long-term Stewardship Program at SNL/NM data identifies the Specific ER sites as:

1) "Major" ER sites – All located in the Technical Area 3 and 5 (TA3/5) portion of the Figure A-2:
   A) Corrective Action Management Unit (CAMU),
   B) Chemical Waste Landfill, and
   C) Mixed Waste Landfill

2) Waste disposal systems:
   A) Drainage Septic Tanks, and
   B) Liquid Waste Disposal System

3) "Other" ER sites identified as:
   A) "Areas of Concern;"
   B) "ER Sites with Accepted No Further Action Plans (NFAs)" (No Further Action Plans are actions reviewed and approved accepted by the NMED Hazardous Waste Bureau that regulates the ER sites); and
   C) ER Sites "Removed from Hazardous Solid Waste Amendment Act (HSWA) Permit" and no longer being considered for remediation.

1) Major ER Sites: Sandia's LTES web site and links provides information on each of the three major ER sites. Links for the three "major" Sandia LTES Sites and portions of the site-specific information from those links are provided below:

A) **CAMU** – SNL Information Page at http://www.sandia.gov/ltes/camu.htm.

"The Corrective Action Management Unit (CAMU) is designed and permitted to store, treat, and permanently contain Environmental Restoration (ER) Project hazardous wastes. The CAMU is located near the southeastern corner of Technical Area III, on ER Site 107. The regulations governing CAMUs were established to encourage reduction of risks at contaminated waste sites through better control of contaminant sources without the significant expense associated with offsite disposal. Public participation and stakeholder involvement were instrumental in the implementation of a CAMU at Sandia National Laboratories (SNL). This is the first CAMU for Department of Energy (DOE).

"After significant public involvement in the CAMU decision process, SNL applied for a modification to their existing permit for managing hazardous waste. The modification was granted by the Environmental Protection Agency (EPA) in September 1997. Authorization to perform soil washing and/or soil stabilization in the CAMU was granted by the EPA in November 1997. Authorization to operate a low temperature thermal desorption (LTTD) unit, originally granted by the New Mexico Environment Department (NMED) in April 1998, was reissued in September 2002. The CAMU is only permitted to store, treat, and provide long-term management for ER-derived wastes. Wastes produced from SNL's on-going mission-related activities are not allowed in the CAMU. Approval for the safe containment of TSCA-regulated soil was granted by EPA in June 2002."

B) **Chemical Waste Landfill** – SNL Information Page at http://www.sandia.gov/ltes/cwl.htm.

“The Chemical Waste Landfill (CWL) is approximately 1.9 acres and is in the southeast corner of TA-III. Disposal operations at the CWL began in 1962. Separate pits are reported to have been used for the disposal of acids, oxidizers, reducers, organics, reactives, bulky materials, metal, neutral compounds, and salts. Only one of the pits (for chromic acid), on the south end of the CWL, was lined. No record of disposal practices was available for operations occurring between 1962 and 1975, resulting in uncertainty concerning the actual types, amounts, and locations of waste at the site. It has been estimated that approximately 20,000 cubic yards of waste were disposed at this site.
In 1981, all liquid waste disposal in unlined trenches stopped. Liquid waste was stored next to the appropriate trench and later packaged into 55-gal (209-L) drums. Chemically-similar waste, such as oils and organic compounds, was consolidated and subsequently disposed of offsite by a hazardous waste management contractor at an approved hazardous waste disposal facility. Solid disposal into unlined trenches continued until 1985.

“The CWL operated under Resource Conservation and Recovery Act (RCRA) interim status as a hazardous waste drum storage facility with a capacity for 300 drums until 1989. Waste drums were staged in segregated areas according to waste type. Drums were repacked in the temporary repack storage area before storage. A drum-crushing machine was used to crush excess empty drums left over from repack operations.

“The CWL operation was discontinued completely in 1989, and all pits were covered with soil backfill. The lined chromic acid surface impoundment remained uncovered until April 1991. In response to a Tiger Team finding, it was covered with a sheet of plastic and approximately 2 in. of soil to minimize wind-blown chromium dust.

“To comply with RCRA 40 CFR 265.112 groundwater monitoring requirements, five groundwater monitor wells (MW-1, MW-2, MW-3, BW-1, and BW-2) were installed at the CWL during the summer of 1985 using a mud rotary drilling method. These wells were completed at various vertical depths within the aquifer, with screened intervals ranging from 70 to 460 ft (21 to 140 m) in length.

“In response to a Notice of Violation (NOV) from the New Mexico Environment Department (NMED) with regard to inadequate design and construction of the 1985 wells, four additional monitor wells (BW-3, MW-1A, MW-2A, MW-3A) were installed in 1988 with air rotary casing hammer techniques. Monitor Well MW-4 was installed in April 1990, again in response to a requirement for additional groundwater characterization from the NMED, using a combination of auger and mud-rotary techniques. MW-4 was constructed with a 20-ft (6-m) screened interval similar to that for the 1988 wells.
“In the spring of 1990 the presence of trichloroethylene (TCE) in groundwater beneath the CWL was confirmed. Since this finding, a plan for corrective action of contamination was developed and included in the Closure Plan for this site. Continued quarterly groundwater monitoring revealed the presence of TCE mostly in three of the downgradient monitoring wells at levels hovering around the Environmental Protection Agency's (EPA's) drinking water standard. The nearest water supply well to this site is four miles to the north.

“Closure Plan negotiations between DOE/SNL began with the NMED in 1988. The Closure Plan was approved by NMED in February 1993. The discovery of TCE in groundwater caused much of the delay in getting this document approved. The approved Closure Plan has been amended to include the installation of up to eight additional monitoring wells and aquifer testing to complete the characterization of the site.

“In the winter/spring of 1994, four additional monitoring wells were installed: BW-4, MW-2B, MW-5, and MW-6. The three downgradient boreholes, MW-2B, MW-5, and MW-6, were completed as were two separate wells in one borehole, a 2-in. well and a 5-in. well (i.e., MW-5U [upper] and MW-5L [lower]) to quantify the vertical gradient at this site without installing two separate boreholes at each location. The upper well is installed in the uppermost aquifer and the lower well is installed approximately 25 to 30 ft deeper, in the next significant water-bearing zone.

“The CMS Plan was completed in February 1995. An integrated Corrective Measures Study (CMS) Plan/Voluntary Corrective Measures (VCMs) process was initiated several months later, in May 1995. Completion of the CMS Plan in parallel with extraction of vapors from the vadose zone and excavation of the landfill contents (the VCMs) was conceived to expedite removal of the most threatening contamination and advanced determination of final corrective actions. Additionally, final corrective actions are expected to be of a lesser scope due to VCM completion. RCRA groundwater assessment monitoring has been conducted continuously since 1990, and is scheduled to continue as part of the post-closure care activities.

The CMS Plan included a major treatability study and field pilot testing phase that was completed as part of the technology screening task. This work included a co-metabolic bioventing treatability study, a chromium stabilization/fixation treatability study, and vapor extraction pilot testing at various locations around the site. One series of tests involved vapor extraction and air injection tests at approximately 500 feet below grade. Catalytic oxidation and vapor-phase granular activated carbon treatment technologies were evaluated during these tests, as well as different types of vacuum pumps. Concurrent with the remediation pilot testing, a vadose zone Partitioning Interwell Tracer Test (PITT) was performed to quantitatively characterize the dense non-aqueous phase liquid (DNAPL) beneath two organic disposal pits. This PITT was the first full-scale vadose zone test conducted and successfully improved the understanding of DNAPL presence and migration at the site. The information obtained from this testing was used to design a vapor extraction system and will be valuable during the drafting of the CMS Report.

“The first VCM conducted was the Vapor Extraction VCM (VE VCM) and was completed in June 1999. The VE VCM involved the extraction of soil gas from remediation wells screened over specific intervals of the approximately 500 feet thick vadose zone. In addition, atmospheric air was injected through two wells to promote VOC contaminant removal. Six new remediation wells were installed during the first quarter of FY97 to supplement existing pilot test and groundwater monitoring wells. A total of 11 extraction wells and two air injection wells have been operated during Stage one. Approximately 5000 lbs of TCE was removed through this system.

"Excavation of the landfill (LE VCM) began September 30, 1998. All buried debris was removed from the landfill on June 7, 2001. All excavation was completed in February 2002. One additional hot spot was hand excavated in January 2003. The intent of this VCM was to excavate buried waste material and associated heavily contaminated soil from across the landfill to remove the unknowns and the potential source for future leakage from the landfill and mitigate risks posed by the buried contents and associated highly contaminated soil."

3) **Mixed Waste Landfill** – SNL Information Page at http://www.sandia.gov/ltes/mixedwaste_landfill.htm.

"The Mixed Waste Landfill (MWL) is located approximately 5 miles southeast of Albuquerque International Sunport, and 4 miles south of Technical Area (TA) 1. The site covers 2.6 acres in the north-central portion of TA 3.

"The MWL was established in 1959 as a disposal area for radioactive and mixed wastes generated at SNL research facilities. The landfill accepted low-level radioactive waste and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of radioactive wastes containing approximately 6300 Ci of activity (at the time of disposal) were disposed of at the MWL.

"The MWL consists of two distinct disposal areas. The classified area, occupying 0.6 acres, and the unclassified area, occupying 2.0 acres. Wastes known to have been disposed of in the classified area include solidified acids, solvents, and oils; DU; lead shielding; activation products; beryllium; sodium; lithium; neutron generator tubes; and empty liquid scintillation vials. Wastes known to have been disposed of in the unclassified area include assorted contaminated equipment; decontamination materials; lead shielding; construction debris; contaminated soils; and miscellaneous solid wastes. These wastes were disposed of in seven trenches, typically 15 ft deep, 20 ft wide, and 120 ft long. The exact depth of each trench is unknown.

"In 1967, approximately 271,000 gal of coolant waste water from the Sandia Engineering Reactor Facility was disposed of in Trench D. Approximately 1 Ci of total radioactivity, mainly short-lived radionuclides, was discharged into the trench with the cooling water. Because the disposal occurred in 1967, the short half-lived activation products have decayed to below detectable levels."

2) Waste disposal systems includes the Drainage Septic Tanks and Liquid Waste Disposal System

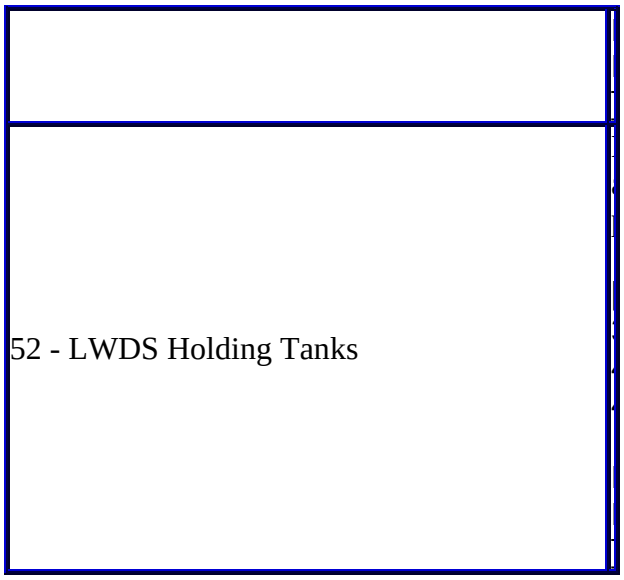
The facilities were used before SNL/NM facilities were connected to a sanitary sewer system of the City of Albuquerque.

A) The closed Drainage Septic Tanks Sites at Sandia include:

49 – Building 9820 Drains
101 – Explosive Contaminated Sumps, Drains (Bldg 9926)
116 – Building 9990 Septic System
137 – Bldg. 6540/6542 Septic System
138 – Bldg 6630 Septic System
140 – Bldg 9965 Septic System (Thunder Range)
141 - Bldg 9967 Septic System (Thunder Range)
142 - Bldg 9970 Septic System
143 - Bldg 9972 Septic System
144 - Bldg 9980 Septic System
145 - Bldg 9981/9982 Septic Systems
146 - Bldg 9920 Drain System
147 - Bldg 9925 Septic Systems
148 - Bldg 9927 Septic System
149 - Bldg 9930 Septic System
150 - Bldg 9939/9939A Septic Systems
151 - Bldg 9940 Septic System
152 - Bldg 9950 Septic System
153 - Bldg 9956 Septic Systems
154 - Bldg 9960 Septic Systems
160 - Bldg 9832 Septic System
161 - Bldg 6636 Septic System

B) The closed Liquid Waste Disposal System (LWDS) sites at SNL/NM include:

4 - LWDS Surface Impoundments
5 - LWDS Drainfield


52 - LWDS Holding Tanks

3) The “Other ER Sites” at SNL/NM include:

A) The List of “Area of Concern” Sites includes:

TAG – Tijeras Arroyo Groundwater
BLDG828 - Former Building 828 (TA-I)
TNT Site – TNT Site
276 – Former Bldg. 829X Silver Recovery Sump (TA-I)
277 - New Firing Site East of Optical Range
1001 - Bldg. 898 Septic System (TA-I)
1003 – Former Bldg. 915/922 Septic System (TA-II)
1004 - Bldg. 6969 Septic System (Robotic Vehicle Range)
1006 - Bldg. 6741 Septic System (TA-III)
1007 - Bldg. 6730 Septic System (TA-III)
1008 - Bldg. 6750 Septic System (TA-III)
1009 - Bldg. 6620 Internal Sump (TA-III)
1010 - Bldg. 6536 Septic System and Seepage Pit (TA-III)
1014 – Former T 12, T-42 and T-43 Septic System (TA-V)
1015 – Former MO 231-234 Septic System (TA-V)
1020 - MO-146, MO-235 and T-40 Septic System (TA-III)
1024 - MO 242-245 Septic System (TA-III)
1025 - Bldg. 6501 East Septic System (TA-III)
1026 - Bldg. 6501 West Septic System (TA-III)
1027 - Bldg. 6530 Septic System (TA-III)
1028 - Bldg. 6560 Septic System (TA-III)
1029 - Bldg. 6584 North Septic System (TA-III)
1030 - Bldg. 6587 Septic System (TA-III)
1031 – Former Bldgs. 6589 and 6600 Septic System (TA-III)
1032 - Bldg. 6610 Septic System (TA-III)
1033 - Bldg. 6631 Septic System (TA-III)
1034 - Bldg. 6710 Septic System (TA-III)
1035 - Bldg. 6715 Septic System (TA-III)
1036 - Bldg. 6922 Septic System (TA-III)
1052 - Bldg. 803 Seepage Pit (TA-I)
1072 - Bldg. T-52 and Former Bldg. 6500 Septic System (TA-V)
1073 - Bldg. 6580 Seepage Pit (TA-V)
1077 - Bldg. 6920 Septic System (TA-III)
1078 - Bldg. 6640 Septic System (TA-III)
1079 - Bldg. 6643 Septic System (TA-III)
1080 - Bldg. 6644 Septic System (TA-III)

1081 - Bldg. 6650 Septic System (TA-III)
1082 - Bldg. 6620 Septic System (TA-III)
1083 - Bldg. 6570 Septic System (TA-III)
1084 - Bldg. 6505 Septic System (TA-III)
1086 - Bldg. 6523 Septic System (TA-III)
1087 - Bldg. 6743 Seepage Pit (TA-III)
1089 - Bldg. 6734 Seepage Pit (TA-III)
1090 - Bldg. 6721 Septic System (TA-III)
1091 - Bldg. 6720 Septic System (TA-III)
1092 - MO 228-230 Septic System (TA-III)
1093 - Bldg. 6584 West Septic System (TA-III)
1094 - Live Fire Range East Septic System (Lurance Canyon)
1095 - Bldg. 9938 Seepage Pit (Coyote Test Field)
1096 - Bldg. 6583 Septic System (TA-III)
1098 - TA-V Plenum Rooms Drywell (TA-V)
1101 - Bldg. 885 Septic System (TA-I)
1102 - Former Bldg. 889 Septic System (TA-I)
1104 - Bldg. 6595 Seepage Pit (TA-V)
1105 - Bldg. 6596 Drywell (TA-V)
1108 - Bldg. 6531 Seepage Pits (TA-III)
1110 - Bldg. 6536 Drain System (TA-III)
1111 - Bldg. 6720 Drywell (TA-III)
1112 - Bldg. 6590 Reactor Sump Drywell (TA-V)
1113 - Bldg. 6597 Drywell (TA-V)
1114 - Bldg. 9978 Drywell (Coyote Test Field)
1115 - Former Offices Septic System (Solar Tower Complex)
1116 - Bldg. 9981A Seepage Pit (Solar Tower Complex)
1117 - Bldg. 9982 Drywell (Solar Tower Complex)
1120 - Bldg. 6643 Drywell (TA-III) [
TA-3 - Rocket Motor Storage Area West of Site 18

B) The list of “Accepted No Further Action (NFA) Sites” includes:

6 - Gas Cylinder Disposal Pit (Thunder Range, Bldg 9966)	Accepted for NFA April 25, 2001
7 - Gas Cylinder Disposal (Arroyo del Coyote)	Accepted for NFA March 27, 2000
9 - Burial Site/Open Dump (Schoolhouse Mesa)	Accepted for NFA December 05, 2000
10 - Burial Mounds (Bunker Area North of Pendulum Site)	Accepted for NFA December 13, 1999
11 - Explosive Burial Mounds	Accepted for NFA December 06, 1999
12 - Burial Site/Open Dump (Lurance Canyon)	Accepted for NFA December 07, 1999
12A - 12A Burial Site/Open Dump (Lurance Canyon)	Accepted for NFA December 13, 1999
12B - 12B Burial Site/Open Dump (Lurance Canyon)	Accepted for NFA December 07, 1999
13 - Oil Surface Impoundment (Lurance Canyon Burn Site)	Accepted for NFA December 13, 1999
14 - Burial Site (Bldg 9920)	Accepted for NFA June 09, 1999
15 - Trash Pits (Frustration Site)	Accepted for NFA September 29, 1997
16 - Open Dumps (Arroyo del Coyote)	Accepted for NFA March 27, 2000
17 - Scrap Yards/Open Dump (Thunder Range)	Accepted for NFA December 06, 1999
19 - TRUPAK Boneyard Storage Area (NW End of Old Aerial Cable)	Accepted for NFA June 09, 1999
20 - Schoolhouse Mesa Burn Site	Accepted for NFA July 10, 1995
21 - Metal Scrap (Coyote Springs)	Accepted for NFA December 06, 1999
22 - Storage/Burn (West of DEER)	Accepted for NFA October 13, 1999
23 - Disposal Trenches (Near Tijeras Arroyo)	Accepted for NFA October 13, 1999
25 - Burial Site (South of TA-I)	Accepted for NFA July 10, 1995
26 - Burial Site (Western Part of TA-III)	Accepted for NFA October 01, 2001
27 - Bldg 9820 – Animal Disposal Pit (Coyote Springs)	Accepted for NFA June 09, 1999

28-1 - 28-1 Mine Shafts	Accepted for NFA September 29, 1997
28-3 - 28-3 Mine Shafts	Accepted for NFA September 29, 1997
28-4 - 28-4 Mine Shafts	Accepted for NFA September 29, 1997
28-5 - 28-5 Mine Shafts	Accepted for NFA September 29, 1997
28-6 - 28-6 Mine Shafts	Accepted for NFA September 29, 1997
28-7 - 28-7 Mine Shafts	Accepted for NFA September 29, 1997
28-8 - 28-8 Mine Shafts	Accepted for NFA September 29, 1997
28-9 - 28-9 Mine Shafts	Accepted for NFA September 29, 1997
28-10 - 28-10 Mine Shafts	Accepted for NFA April 12, 2001
31 - Electrical Transformer Oil Spill (TA-III)	Accepted for NFA May 05, 2000
32 - Steam Plant Oil Spill (TA-I)	Accepted for NFA July 10, 1995
34 - Centrifuge Oil Spill (TA-III)	Accepted for NFA May 05, 2000
35 - Vibration Facility Oil Spill (TA-III)	Accepted for NFA March 05, 2002
36 - Oil Spill – Hermes (TA-V)	Accepted for NFA March 13, 2001
37 - PROTO Oil Spill (TA-V)	Accepted for NFA May 05, 2000
38 - Oil Spills (Bldg 9920)	Accepted for NFA December 17, 1999
39 - Oil Spill - Solar Facility	Accepted for NFA September 29, 1997
40 - Oil Spill (6000 Igloo Area)	Accepted for NFA September 29, 1997
41 - Building 838 Mercury Spill	Accepted for NFA July 10, 1995
42 - Acid Spill Water Treatment Facility	Accepted for NFA December 07, 1999
43 - Radioactive Material Storage Yard (TA-II)	Accepted for NFA December 20, 1999

44 – Decontamination Site & Uranium Calibration Pits (TA-II)	Accepted for NFA December 06, 1999
47 - Unmanned Seismic Observatory	Accepted for NFA July 10, 1995
50 - Old Centrifuge Site (Behind TA-II)	Accepted for NFA March 27, 2000
51 - Building 6924 Pad, Tank Pit	Accepted for NFA May 05, 2000
53 - Building 9923 Storage Igloo	Accepted for NFA September 29, 1997
54 - Pickax Site (Thunder Range)	Accepted for NFA December 17, 1999
55 - Red Towers Site (Thunder Range)	Accepted for NFA September 30, 1999
56 - Old Thunderwells (Thunder Range)	Accepted for NFA December 17, 1999
57A - 57A Workman Site	Accepted for NFA December 13, 1999
57B - 57B Workman Site	Accepted for NFA December 06, 1999
59 - Pendulum Site	Accepted for NFA June 09, 1999
60 - Bunker Area (north of Pendulum Site)	Accepted for NFA December 05, 2000
61A - Schoolhouse Mesa Test Site: Blast Area	Accepted for NFA June 09, 1999
61C - Schoolhouse Mesa Test Site: Schoolhouse Bldg	Accepted for NFA September 30, 1999
62 - Greystone Manor Site (Coyote Springs)	Accepted for NFA July 10, 1995
63A - 63A Balloon Test Area	Accepted for NFA December 06, 1999
63B - 63B Balloon Test Area	Accepted for NFA June 09, 1999
64 - Gun Site (Madera Canyon)	Accepted for NFA December 06, 1999
65 - Lurance Canyon Explosive Test Site	Accepted for NFA September 30, 1999
65A - 65A Lurance Canyon Explosive Test Site	Accepted for NFA March 01, 2000
65B - 65B Lurance Canyon Explosive Test Site	Accepted for NFA March 01, 2000

65C - 65C Lurance Canyon Explosive Test Site	Accepted for NFA March 01, 2000
65D - 65D Lurance Canyon Explosive Test Site	Accepted for NFA September 30, 1999
65E - 65E Lurance Canyon Explosive Test Site	Accepted for NFA December 13, 1999
67 - Frustration Site	Accepted for NFA February 06, 2001
69 - Old Borrow Pit	Accepted for NFA July 10, 1995
70 - Explosives Test Pit (Water Towers)	Accepted for NFA December 06, 1999
71 - Moonlight Shot Area	Accepted for NFA March 18, 1999
72 - Operation Beaver Site	Accepted for NFA February 04, 1998
73 - Bldg 895 Hazardous Waste Repackaging/Storage	Accepted for NFA July 10, 1995
77 - Oil Surface Impoundment (Behind TA-IV)	Accepted for NFA October 13, 1999
81 - New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA September 30, 1999
81A - 81A New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA April 26, 2001
81B - 81B New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA April 25, 2001
81C - 81C New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA September 30, 1999
81D - 81D New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA April 25, 2001
81E - 81E New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA December 05, 2000
81F - 81F New Aerial Cable Site/Burial Site /Dump/Test Area	Accepted for NFA April 26, 2001
82 - Old Aerial Cable Site Scrap	Accepted for NFA December 05, 2000
85 - Firing Site (Bldg 9920)	Accepted for NFA December 13, 1999
86 - Firing Site (Bldg 9927)	Accepted for NFA April 25, 2001
88A - Firing Site: Ranch House	Accepted for NFA July 10, 1995
88B - Firing Site: Instrumentation Pole	Accepted for NFA December 06, 1999

89 - Shock Tube Site (Thunder Range)	Accepted for NFA December 13, 1999
90 - Beryllium Firing Site (Thunder Range)	Accepted for NFA December 14, 1999
92 - Pressure Vessel Test Site (Coyote Canyon Blast Area)	Accepted for NFA September 29, 1997
93 - Madera Canyon Rocket Launcher Pads	Accepted for NFA February 04, 1998
94 - Lurance Canyon Burn Site	Accepted for NFA September 30, 1999
94A - 94A Lurance Canyon Burn Site	Accepted for NFA December 01, 1999
94C - 94C Lurance Canyon Burn Site	Accepted for NFA March 30, 2001
94D - 94D Lurance Canyon Burn Site	Accepted for NFA March 27, 2000
94E - 94E Lurance Canyon Burn Site	Accepted for NFA March 27, 2000
94G - 94G Lurance Canyon Burn Site	Accepted for NFA April 26, 2001
98 - Bldg 863 TCA Photochemical Releases	Accepted for NFA December 05, 2000
100 - Building 6620 HE Sump/Drain (TA-III)	Accepted for NFA March 08, 2001
102 - Radioactive Disposal (East of TA-III)	Accepted for NFA May 05, 2000
103 - Scrap Yard (Bldg 9939)	Accepted for NFA December 06, 1999
104 - PCB Spill, Computer Facility	Accepted for NFA July 10, 1995
105 - Mercury (Bldg 6536) (TA-III)	Accepted for NFA July 10, 1995
107 - Explosive Test Area (SouthEast TA-III)	Accepted for NFA September 28, 2001
108 - Firing Site (Bldg 9940)	Accepted for NFA June 09, 1999
109 - Firing Site (Bldg 9950)	Accepted for NFA December 13, 1999
111 - Building 6715 Sump/Drains (TA-III)	Accepted for NFA March 12, 2001
112 - Explosive Contaminated Sump (Bldg 9956)	Accepted for NFA December 07, 1999
113 - Area II Firing Sites (TA-II)	Accepted for NFA April 25, 2001

115 - Firing Site (Bldg 9930)	Accepted for NFA December 14, 1999
117 - Trenches (Bldg 9939)	Accepted for NFA December 05, 2000
139 - Bldg 9964 Septic System	Accepted for NFA July 10, 1995
141 - Bldg 9967 Septic System (Thunder Range)	Accepted for NFA June 09, 2000
142 - Bldg 9970 Septic System	Accepted for NFA April 18, 2000
143 - Bldg 9972 Septic System	Accepted for NFA April 18, 2000
144 - Bldg 9980 Septic System	Accepted for NFA December 07, 1999s
145 - Bldg 9981/9982 Septic Systems	Accepted for NFA December 07, 1999
151 - Bldg 9940 Septic System	Accepted for NFA June 09, 2000
160 - Bldg 9832 Septic System	Accepted for NFA June 09, 2000
168 - Bldg 901 UST (TA-II)	Accepted for NFA September 01, 1994
169 - Bldg 910 UST (TA-II)	Accepted for NFA September 01, 1994
170 - Bldg 911 UST (TA-II)	Accepted for NFA September 01, 1994
171 - Bldg 912 UST (TA-II)	Accepted for NFA September 01, 1994
172 - Bldg 888 UST (TA-I)	Accepted for NFA September 01, 1994
173 - Bldg 6525 UST (TA-III)	Accepted for NFA September 01, 1994
174 - Bldg 6581 UST (TA-IV)	Accepted for NFA September 01, 1994
175 - Bldg 6588 UST (TA-IV)	Accepted for NFA September 01, 1994
176 - Bldg 605 UST (TA-I)	Accepted for NFA September 01, 1994
178 - Bldg 6587 UST (TA-III)	Accepted for NFA September 01, 1994
179 - Bldg 7570 UST	Accepted for NFA September 01, 1994
186 - Building 859 TCE Disposal	Accepted for NFA March 27, 2000

188 - Bldg 6597 Above Ground Containment Spill Tank	Accepted for NFA July 10, 1995
191 - Equus Red (Thunder Range)	Accepted for NFA April 25, 2001
192 - TA-I Waste Oil	Accepted for NFA December 17, 1999
193 - Sabotage Test Area (Thunder Range)	Accepted for NFA December 13, 1999
194 - General Purpose Heat Source Test Area (Thunder Range)	Accepted for NFA September 29, 1997
211 - Bldg 840 Former UST 840-1	Accepted for NFA March 27, 2000
228A - 228A Centrifuge Dump Site (Tijeras Arroyo)	Accepted for NFA March 23, 2000
228B - 228B Centrifuge Dump Site (Tijeras Arroyo)	Accepted for NFA March 30, 2001
235 - Storm Drain System Outfall (Behind TA-IV)	Accepted for NFA March 27, 2000
241 - Storage Yard	Accepted for NFA October 04, 2001
275 - TA V Seepage Pits	Accepted for NFA December 13, 1999
BLDG828 - Former Building 828 (TA-I)	Accepted for NFA October 11, 2001
277 - New Firing Site East of Optical Range	Accepted for NFA April 25, 2001

C) The list of “Removed from Hazardous Solid Waste Amendment Act (HSWA) Permit” Sites includes:

6 - Gas Cylinder Disposal Pit (Thunder Range, Bldg 9966)	Removed from Permit November 2001
6A - 6A Gas Cylinder Disposal Pit (Thunder Range, Bldg 9966)	Removed from Permit November 2001
7 - Gas Cylinder Disposal (Arroyo del Coyote)	Removed from Permit October 2000
10 - Burial Mounds (Bunker Area North of Pendulum Site)	Removed from Permit July 2000
11 - Explosive Burial Mounds	Removed from Permit October 2000
12A - 12A Burial Site/Open Dump (Lurance Canyon)	Removed from Permit October 2000
12B - 12B Burial Site/Open Dump (Lurance Canyon)	Removed from Permit July 2000
13 - Oil Surface Impoundment (Lurance Canyon Burn Site)	Removed from Permit July 2000
14 - Burial Site (Bldg 9920)	Removed from Permit July 2000
15 - Trash Pits (Frustration Site)	Removed from Permit September 1997
16 - Open Dumps (Arroyo del Coyote)	Removed from Permit October 2000
17 - Scrap Yards/Open Dump (Thunder Range)	Removed from Permit July 2000
19 - TRUPAK Boneyard Storage Area (NW End of Old Aerial Cable)	Removed from Permit July 2000
20 - Schoolhouse Mesa Burn Site	Removed from Permit December 1995
21 - Metal Scrap (Coyote Springs)	Removed from Permit October 2000
22 - Storage/Burn (West of DEER)	Removed from Permit July 2000
23 - Disposal Trenches (Near Tijeras Arroyo)	Removed from Permit July 2000
25 - Burial Site South of TA-I	Removed from Permit December 1995
27 - Bldg 9820 - Animal Disposal Pit (Coyote Springs)	Removed from Permit July 2000
28-1 - Mine Shafts	Removed from Permit September 1997
28-3 - Mine Shafts	Removed from Permit September 1997

28-4 - Mine Shafts	Removed from Permit September 1997
28-5 - Mine Shafts	Removed from Permit September 1997
28-6 - Mine Shafts	Removed from Permit September 1997
28-7 - Mine Shafts	Removed from Permit September 1997
28-8 - Mine Shafts	Removed from Permit September 1997
28-9 - Mine Shafts	Removed from Permit September 1997
28-10 - Mine Shafts	Removed from Permit November 2001
31 - Electrical Transformer Oil Spill (TA-III)	Removed from Permit November 2001
32 - Steam Plant Oil Spill (TA-I)	Removed from Permit December 1995
34 - Centrifuge Oil Spill (TA-III)	Removed from Permit November 2001
36 - Oil Spill - Hermes (TA-V)	Removed from Permit November 2001
37 - PROTO Oil Spill (TA-V)	Removed from Permit November 2001
38 - Oil Spills (Bldg 9920)	Removed from Permit July 2000
39 - Oil Spill - Solar Facility	Removed from Permit September 1997
40 - Oil Spill (6000 Igloo Area)	Removed from Permit September 1997
41 - Building 838 Mercury Spill	Removed from Permit December 1995
42 - Acid Spill Water Treatment Facility	Removed from Permit October 2000
43 - Radioactive Material Storage Yard (TA-II)	Removed from Permit October 2000
44 - Decontamination Site & Uranium Calibration Pits (TA-II)	Removed from Permit July 2000
47 - Unmanned Seismic Observatory	Removed from Permit December 1995
50 - Old Centrifuge Site (Behind TA-II)	Removed from Permit October 2000
51 - Building 6924 Pad, Tank Pit	Removed from Permit November 2001

53 - Building 9923 Storage Igloo	Removed from Permit September 1997
54 - Pickax Site (Thunder Range)	Removed from Permit July 2000
55 - Red Towers Site (Thunder Range)	Removed from Permit October 2000
56 - Old Thunderwells (Thunder Range)	Removed from Permit July 2000
57A - 57A Workman Site	Removed from Permit October 2000
57B - 57B Workman Site	Removed from Permit October 2000
59 - Pendulum Site	Removed from Permit July 2000
60 - Bunker Area (north of Pendulum Site)	Removed from Permit November 2001
61A - Schoolhouse Mesa Test Site: Blast Area	Removed from Permit July 2000
61B - Schoolhouse Mesa Test Site: Cratering Area	Removed from Permit September 1996
61C - Schoolhouse Mesa Test Site: Schoolhouse Bldg	Removed from Permit October 2000
62 - Greystone Manor Site (Coyote Springs)	Removed from Permit December 1995
63A - 63A Balloon Test Area	Removed from Permit October 2000
63B - 63B Balloon Test Area	Removed from Permit July 2000
64 - Gun Site (Madera Canyon)	Removed from Permit October 2000
65A - 65A Lurance Canyon Explosive Test Site	Removed from Permit October 2000
65B - 65B Lurance Canyon Explosive Test Site	Removed from Permit October 2000
65C - 65C Lurance Canyon Explosive Test Site	Removed from Permit October 2000
65D - 65D Lurance Canyon Explosive Test Site	Removed from Permit October 2000
65E - 65E Lurance Canyon Explosive Test Site	Removed from Permit July 2000
67 - Frustration Site	Removed from Permit November 2001

69 - Old Borrow Pit	Removed from Permit December 1995
70 - Explosives Test Pit (Water Towers)	Removed from Permit October 2000
71 - Moonlight Shot Area	Removed from Permit July 2000
72 - Operation Beaver Site	Removed from Permit July 2000
73 - Bldg 895 Hazardous Waste Repackaging/Storage	Removed from Permit December 1995
77 - Oil Surface Impoundment (Behind TA-IV)	Removed from Permit July 2000
81A - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit November 2001
81B - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit November 2001
81C - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit October 2000
81D - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit November 2001
81E - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit November 2001
81F - New Aerial Cable Site/Burial Site/Dump/Test Area	Removed from Permit November 2001
82 - Old Aerial Cable Site Scrap	Removed from Permit November 2001
85 - Firing Site (Bldg 9920)	Removed from Permit July 2000
86 - Firing Site (Bldg 9927)	Removed from Permit November 2001
88A - Firing Site: Ranch House	Removed from Permit December 1995
88B - Firing Site: Instrumentation Pole	Removed from Permit October 2000
89 - Shock Tube Site (Thunder Range)	Removed from Permit July 2000
90 - Beryllium Firing Site (Thunder Range)	Removed from Permit October 2000
92 - Pressure Vessel Test Site (Coyote Canyon Blast Area)	Removed from Permit September 1997
93 - Madera Canyon Rocket Launcher Pads	Removed from Permit July 2000
94A - Lurance Canyon Burn Site	Removed from Permit July 2000

94C - Lurance Canyon Burn Site	Removed from Permit November 2001
94D - Lurance Canyon Burn Site	Removed from Permit October 2000
94E - Lurance Canyon Burn Site	Removed from Permit October 2000
94G - Lurance Canyon Burn Site	Removed from Permit November 2001
100 - Building 6620 HE Sump/Drain (TA-III)	Removed from Permit November 2001
102 - Radioactive Disposal (East of TA-III)	Removed from Permit November 2001
103 - Scrap Yard (Bldg 9939)	Removed from Permit July 2000
104 - PCB Spill, Computer Facility	Removed from Permit December 1995
105 - Mercury (Bldg 6536) (TA-III)	Removed from Permit December 1995
108 - Firing Site (Bldg 9940)	Removed from Permit July 2000
109 - Firing Site (Bldg 9950)	Removed from Permit July 2000
111 - Building 6715 Sump/Drains (TA-III)	Removed from Permit November 2001
112 - Explosive Contaminated Sump (Bldg 9956)	Removed from Permit October 2000
113 - Area II Firing Sites (TA-II)	Removed from Permit November 2001
115 - Firing Site (Bldg 9930)	Removed from Permit October 2000
117 - Trenches (Bldg 9939)	Removed from Permit November 2001
139 - Bldg 9964 Septic System	Removed from Permit December 1995
141 - Bldg 9967 Septic System (Thunder Range)	Removed from Permit November 2001
142 - Bldg 9970 Septic System	Removed from Permit October 2000
143 - Bldg 9972 Septic System	Removed from Permit October 2000
144 - Bldg 9980 Septic System	Removed from Permit October 2000

145 - Bldg 9981/9982 Septic	Systems Removed from Permit October 2000
151 - Bldg 9940 Septic System	Removed from Permit November 2001
155 - Bldg 6597 25,000 Gallon Tank (TA-V)	Removed from Permit May 1994
160 - Bldg 9832 Septic System	Removed from Permit November 2001
168 - Bldg 901 UST (TA-II)	Removed from Permit May 1994
169 - Bldg 910 UST (TA-II)	Removed from Permit May 1994
170 - Bldg 911 UST (TA-II)	Removed from Permit May 1994
171 - Bldg 912 UST (TA-II)	Removed from Permit May 1994
172 - Bldg 888 UST (TA-I)	Removed from Permit May 1994
173 - Bldg 6525 UST (TA-III)	Removed from Permit May 1994
174 - Bldg 6581 UST (TA-IV)	Removed from Permit May 1994
175 - Bldg 6588 UST (TA-IV)	Removed from Permit May 1994
176 - Bldg 605 UST (TA-I)	Removed from Permit May 1994
178 - Bldg 6587 UST (TA-III)	Removed from Permit May 1994
179 - Bldg 7570 UST	Removed from Permit May 1994
180 - Bldg 6503 UST (TA-III)	Removed from Permit May 1994
181 - Bldg 6500 UST (TA-V)	Removed from Permit May 1994
186 - Building 859 TCE Disposal	Removed from Permit October 2000
188 - Bldg 6597 Above Ground Containment Spill Tank	Removed from Permit December 1995
191 - Equus Red (Thunder Range)	Removed from Permit November 2001
192 - TA-I Waste Oil Tank	Removed from Permit July 2000

193 - Sabotage Test Area (Thunder Range)	Removed from Permit July 2000
194 - General Purpose Heat Source Test Area (Thunder Range)	Removed from Permit September 1997
211 - Bldg 840 Former UST 840-1	Removed from Permit October 2000
225 - AEC Storage Facility/Kirtland AFB	Removed from Permit September 1996
228A - 228A Centrifuge Dump Site (Tijeras Arroyo) [	Removed from Permit October 2000
235 - Storm Drain System Outfall (Behind TA-IV) [	Removed from Permit October 2000
275 - TA V Seepage Pits	Removed from Permit July 2000
277 - New Firing Site East of Optical Range	Removed from Permit November 2001