

2009 ASER

Annual Site Environment Report
Summary Pamphlet
Sandia National Laboratories, New Mexico





INTRODUCTION

The U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) Sandia Site Office (SSO) and Sandia Corporation (Sandia) are committed to protecting the environment and preserving the health and safety of our employees and the public. This Annual Site Environmental Report (ASER) Summary Pamphlet was published in response to the community's desire for a document that summarizes annual environmental activities at Sandia National Laboratories, New Mexico (SNL/NM). For additional technical information and monitoring results at SNL/NM, we encourage you to request a copy or view an online copy of the 2009 ASER at:

<http://www.sandia.gov/news/publications/environmental/index.html>

Sandia collects environmental data to determine and report the impact of existing SNL/NM operations on the environment. Sandia's environmental programs include air and water quality, environmental monitoring and surveillance, and activities associated with the National Environmental Policy Act (NEPA). Sandia's objective is to maintain compliance with federal, state, and local requirements, and to affect the corporate culture so that environmental compliance practices continue to be an integral part of operations.

DOE Order 450.1A, *Environmental Protection Program*, requires DOE sites to implement sound stewardship practices that are protective of the air, water, land and other natural and cultural resources impacted by DOE operations. The stewardship practices are the means by which DOE cost-effectively meets or exceeds compliance with applicable environmental, public health, and resource protection requirements. In accordance with DOE Order 450.1A, Sandia implemented an Environmental Management System (EMS), which addresses the environmental consequences of Sandia's activities, products and services.

We hope that you will find the following pages informative and interesting. We appreciate feedback from the community and invite you to ask questions or offer suggestions about what you would like to see in next year's Summary Pamphlet by contacting:

U. S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, NM 87185-5400
Attention: Karen Agogino



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THE ENVIRONMENT AT SANDIA NATIONAL LABORATORIES, NEW MEXICO (SNL/NM)

SNL/NM is located on Kirtland Air Force Base (KAFB) in Albuquerque, New Mexico. New Mexico is the fifth largest state in the U.S. comprising of 121,000 square miles. The population of New Mexico is projected to be approximately 1,980,225 by 2010, according to the US census. The largest city in New Mexico is Albuquerque with about half a million metro-area residents; other neighboring metro areas, including the City of Rio Rancho, raise that total to over 700,000 residents.

KAFB is a 51,559-acre military installation, including 20,486 acres withdrawn from the Cibola National Forest through an agreement with the U.S. Forest Service (USFS). The total area of DOE/NNSA/SSO-owned and/or leased property dedicated to SNL/NM facilities and operations is 8,685 acres. Sandia conducts its operations within 2,841 acres, including five technical areas (TAs) and several remote test areas (see Figure 1). An additional 9,000 acres serve as a buffer zone near the southwest boundary of KAFB. The regional setting of SNL/NM provides a diverse range of geological, hydrological, climatic, and ecological settings.



Burrowing Owl at SNL/NM near TA-IV

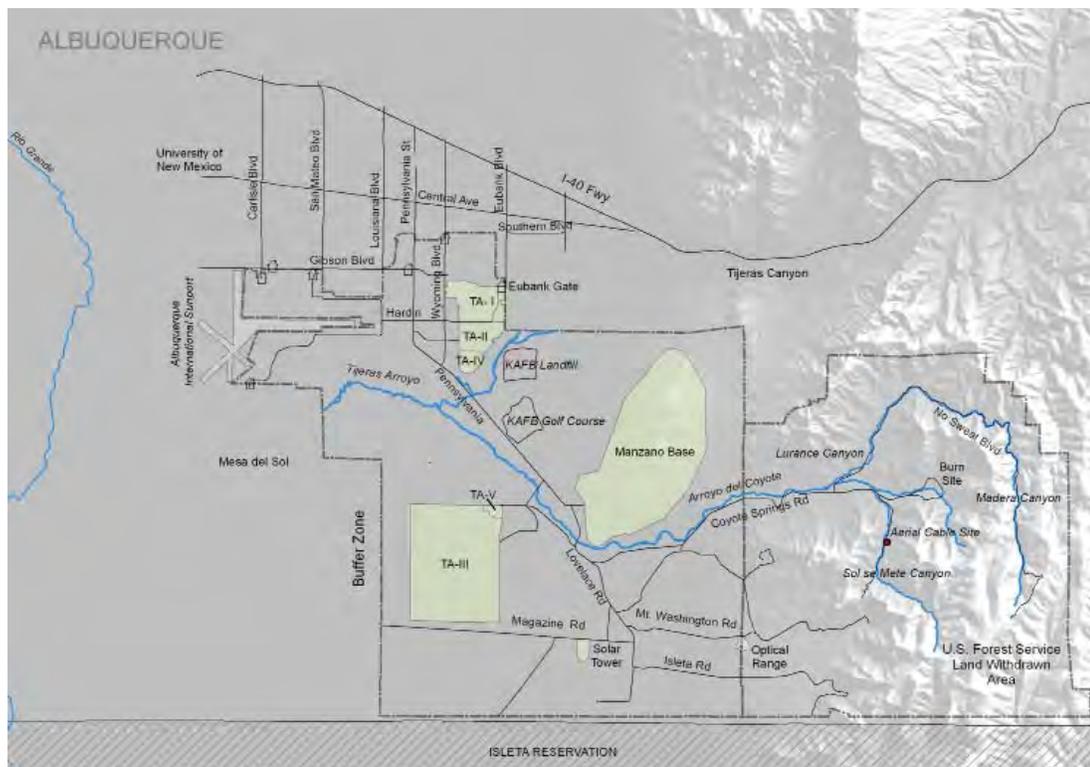


Figure 1: SNL/NM technical areas and the U.S. Forest Service Land Withdrawn Area

KAFB is located at the foot of the Manzanita Mountains, with a mean elevation of 5,384 feet and a maximum of 7,986 feet. KAFB has widely varied topography, ranging from rugged mountains on the east to nearly flat plains on the west. The withdrawn area includes a portion of the Manzanita Mountains within the Cibola National Forest. The remainder of KAFB is situated on gently west-sloping foothill terrain that grades to widespread flat areas where the majority of U.S. Air Force (USAF) and SNL/NM facilities are located.

The regional geologic environment in which the Albuquerque metro area, KAFB and SNL/NM are situated has been subjected to relatively recent (in geologic time) episodes of basaltic volcanism and ongoing regional rifting (crustal extension). The Rio Grande rift (which underlies part of KAFB and part of the Albuquerque metro area) has formed a series of connected down-dropped basins, where vast amounts of sediments were deposited.

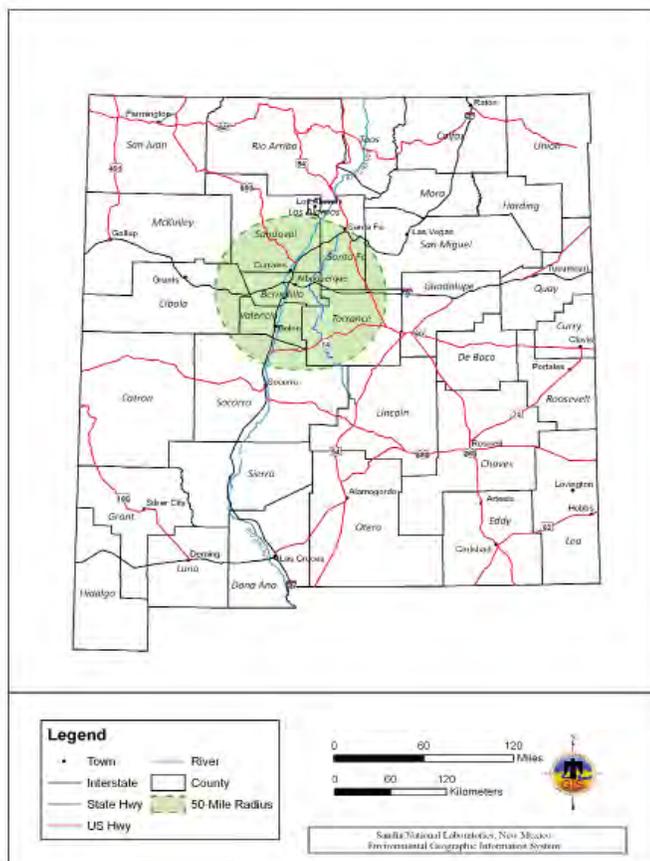
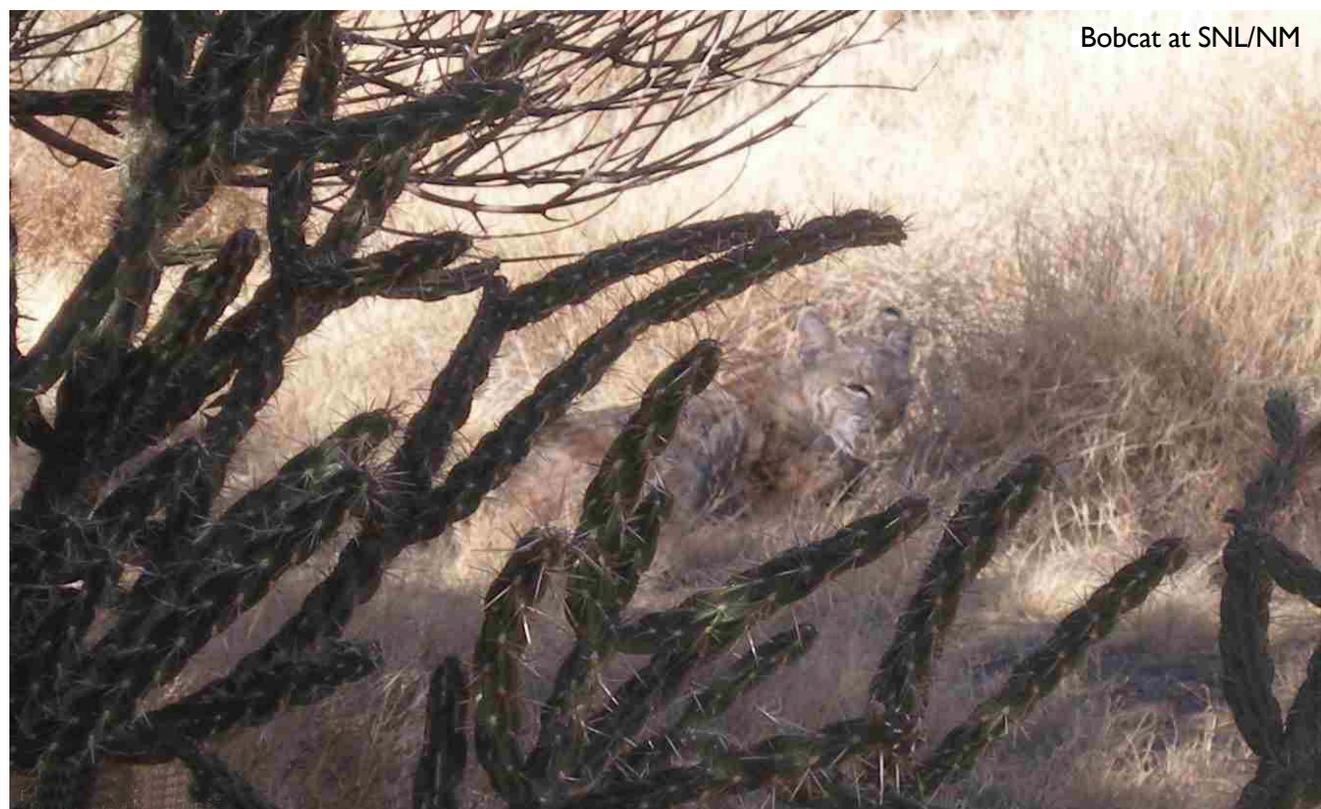


Figure 2: State of New Mexico Map



ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Doves at SNL/NM



In accordance with DOE Order 450.1A, *Environmental Protection Program*, Sandia implemented an EMS as part of the Integrated Safety Management System (ISMS). The EMS is the framework to manage and improve its environmental compliance and sustainability practices. Through the EMS, Sandia identifies the environmental consequences of activities, products, and services at SNL/NM, and develops objectives and measurable targets to mitigate potential impacts to the environment.

Sandia initially implemented its EMS in December 2005 and received International Organization for Standardization (ISO) 14001 Certification in 2009 from an external independent body. Since that time, Sandia has worked to fully implement and establish the EMS in conjunction with ISMS in all site operations. Some major accomplishments of the EMS for Fiscal Year (FY) 2009 include:

- Corporate and division-level EMS objectives and targets were established and tracked quarterly to survey progress;
- Internal and external outreach events were conducted to increase environmental awareness;
- Environmental program plans that detail requirements and roles and responsibilities were updated;
- EMS benchmarking exercises were

conducted to determine how DOE and other facilities designed and implemented their EMS;

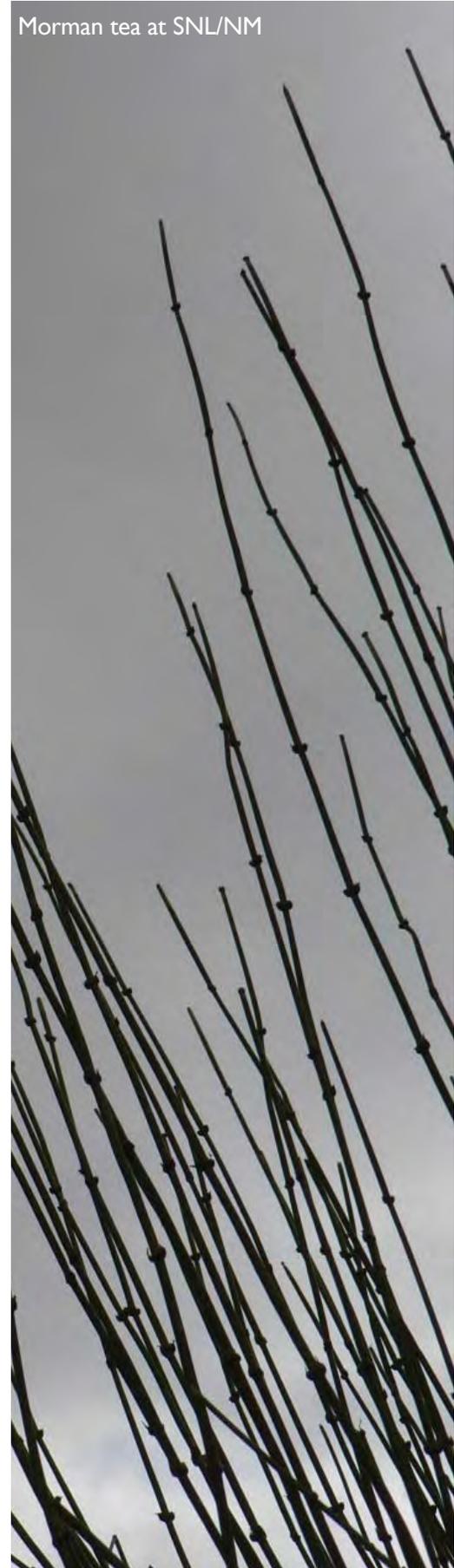
- Chemical Exchange Program (CEP) reapplied over 339 chemicals, eliminating 1,461 kilograms (kg) of hazardous waste and avoiding approximately \$98,735 in waste and \$22,985 in new purchase costs, respectively;
- Based on the Calendar Year (CY) 2009 High Performance Sustainable Buildings Guiding Principles Assessments, Building 750 was selected for green building certification. Building modifications, occupant education, retrocommissioning and other “greening” activities occurred toward the achievement of Leadership in Energy and Environmental Design for Existing Buildings Operations and Maintenance (LEED EBOM) certification during 2009. The award of LEED EBOM certification is expected in 2010; and
- Sixteen buildings were prioritized to be assessed for compliance with the High Performance Sustainable Buildings Guiding Principles.

Additional information can be found on the EMS website:

<http://environment.sandia.gov/new/index.shtml>



Mormon tea at SNL/NM



NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) & QUALITY ASSURANCE (QA)



NEPA

Sandia provides DOE/NNSA/SSO with technical assistance supporting compliance with NEPA and the National Historic Preservation Act. NEPA requires federal agencies, and other organizations that perform federally-sponsored projects, to consider environmental issues associated with proposed actions; be aware of the potential environmental impacts associated with these issues; and include this information in early project planning and decision-making.

The Sandia NEPA Team reviews SNL/NM projects for conformance to existing DOE NEPA documents and determinations. In 2009, the NEPA team reviewed a total of 1,208 proposed projects, and transmitted 90 DOE NEPA checklists to the DOE/NNSA/SSO for review and determination.

The NEPA Team also participated in the review of the Draft Environmental Assessment – Draft Classified Waste Landfill Excavation at SNL/NM. The Classified Waste Landfill was used to store non-hazardous classified media (e.g. floppy disks) and components. Sandia and DOE/NNSA/SSO, instead of seeking permit coverage, made the decision to excavate the contents of the landfill and revegetate the area.

SNL/NM SITE-WIDE ENVIRONMENTAL IMPACT STATEMENT (SWEIS)

Consistent with NEPA regulations, DOE prepares a SWEIS for its large, multiple-facility sites. In 2009, the SWEIS update process continued to undergo revision to allow better tracking and evaluation of environmental operational limits at both the facility and site level. To accomplish this, Environmental Planning personnel met

with representatives from SNL/NM facilities to discuss environmental operations limits (site and facility limits on parameters such as water and electricity use, waste generation, and air emissions) and their significance within the SWEIS and other NEPA coverage. Causes for exceeding operational parameters were researched and tracked. Exceedances were also put into the context of future activities (for example, whether an exceedance was a one-time event or represented a permanent change in facility configuration or operations).

QA

QA principles, elements, and tools are an integral part of Sandia activities to assure management, customers, regulators, and the community that Sandia is conducting business in a compliant manner, with respect for our employees, the community, and the environment.

Environmental programs utilize QA principles to maintain the integrity of program plans, sampling, and analysis. For example, Sandia's Sample Management Office (SMO) provides environmental programs with guidance and sample management support. SMO processes have been developed to ensure that contractor laboratories provide quality data and laboratory analysis through validation of laboratory data and by conducting audits of contractor laboratories. QA plans are implemented to ensure that data validation and records management are a key asset to providing high-quality environmental data.

COMMUNITY OUTREACH

Sandia's Environmental Outreach Program reaches out to the community through various events, and provides environmental information to members of the workforce. Sandia recognizes that, in addition to complying with requirements, it is important to communicate with Sandia's workforce and the local community to help reduce environmental impacts at work. Sandia has an integrated approach to communicate environmental awareness to its workforce through semi-annual EMS newsletters, semi-annual LTES newsletters, awareness campaigns, and various outreach events. Sandia collaborates with numerous internal and external organizations such as Sandia's Energy Management Team, Sandia's Long-range Development Plan Team, the City of Albuquerque (COA), and the Environmental Education Association of New Mexico (EEANM).

OUTREACH AND AWARENESS EVENTS

Currently, Sandia participates in or holds several internal and external outreach and awareness events. Events conducted in 2009 included the Earth, Wind and Sun sustainability event, Teachers' Open House, Children's Water Festival, Youth Conference on the Environment, School to World, Sandia Earth Day, Family Day, and the annual EMS Excellence Awards Ceremony. Sandia also coordinates the semi-annual DOE Public Meeting. When working with children, the Outreach Team often demonstrates environmental education models on topics including local air quality, landfills, and watershed education. The Outreach Team also encourages the workforce and community to provide feedback and ask questions about Sandia's environmental programs.

In July 2009, Sandia hosted the Earth, Wind and Sun sustainability event. Approximately 60 exhibitors participated (including Sandia's programs and external commercial and non-profit organizations), highlighting information on energy, water, and alternative transportation options. Sandia also offered tours to the Leadership in Energy and Environmental Design (LEED®) certified

Earth, Wind and Sun event at SNL/NM



buildings. Over 1,500 people attended the Earth, Wind and Sun event.

The Annual Youth Conference on the Environment is a free, one-day conference offered to high school students as a means to educate them on various environmental issues. In 2009, the theme of the conference was reduce, reuse, and recycle and about 150 students attended. The event was cosponsored by Sandia, the EEANM, and the COA.

The annual EMS Excellence Awards Program recognizes members of the workforce who demonstrate environmental excellence in five specific categories (energy reduction/water conservation, risk mitigation/environmental protection, environmentally preferable purchasing, waste minimization, and recycling). Since its inception in 2006, the EMS Team has received over 140 nominations from individuals and teams who are contributing to Sandia's vision of EMS.

For additional information, please visit the following websites:

<http://ltes.sandia.gov>

<http://environment.sandia.gov/newindex.shtml>

The Pollution Prevention (P2) Program provides guidance and technical support to reduce waste generation and resource consumption, and to enhance the overall efficiency of processes and organizations within SNL/NM. The program focuses on reducing hazardous, radioactive, and solid wastes, with the associated goal of optimizing processes. Additionally, the P2 Program sets annual targets and activities for recycling, waste reduction, environmentally preferable purchasing (EPP), and reduction of environmental releases. The P2 Program is directed and guided by federal requirements, including DOE directives.

The P2 Program partners with numerous organizations at SNL/NM, including Environment, Safety and Health (ES&H), Facilities Engineering and Procurement.

P2 Program staff research waste reduction technologies and strategies applicable to Sandia work processes, research avenues to reuse and recycle waste streams currently landfilled, and assist with cost-effective implementation for new waste reduction or recycling initiatives.



Waste Sorting at SNL/NM

AWARENESS AND OUTREACH

P2 staff conduct awareness programs and outreach activities that promote and teach P2 strategies and technologies to waste generators. P2 staff also submit nominations for federal (DOE and the U.S. Environmental Protection Agency (EPA)) and other award programs. Internal articles and notices are regularly created that showcase P2 activities and awards to Sandia for its P2 accomplishments. P2 information and successes can be found at the following website:

<http://p2.sandia.gov>

2009 P2 AWARDS

In 2009, Sandia received several awards for P2 accomplishments at SNL/NM:

- 2009 NNSA Best-in-Class Award for Electronics Stewardship;
- DOE E-Star Award (not announced until April 2010);
- NNSA Environmental Stewardship Award for a New Application of Recycled Concrete and Asphalt; and
- Federal Electronics Reuse and Recycling Campaign Regional Award.

ENVIRONMENTAL RESTORATION (ER) PROJECT

Sandia's ER Project was created under the DOE Office of Environmental Management to identify, assess, and remediate sites potentially contaminated by past spills, releases, or disposal activities. These sites were investigated in accordance with corrective action requirements of the Resource Conservation and Recovery Act (RCRA), applicable implementing regulations, and hazardous waste operating Permit NM5890110518-1 (the Permit) issued in 1992 and 1993 to DOE and Sandia by the EPA and the New Mexico Environment Department (NMED). ER sites addressed included solid waste management units (SWMU) and areas of concern (AOC).

Sandia, DOE, and NMED signed a Compliance Order on Consent (COOC) in April 2004. The COOC specifies the current requirements for corrective action for releases of hazardous waste or hazardous constituents. The COOC will terminate upon the completion of its requirements, with the exception of record preservation, and the Hazardous Waste Permit will remain as the enforceable document.

ER PROJECT HISTORY

The initial identification of ER sites at SNL/NM was completed in 1987; at that time, there were 117 identified sites under Sandia's jurisdiction in the initial Comprehensive Environmental Assessment and Response Program (CEARP) Phase I: Installation Assessment. Since then, approximately 500 individual sites, potential sites, or individual historical activities have been identified and addressed. Many of these sites were confirmed to contain little or no contamination, and corrective action has been completed. In addition to the SNL/NM site, other sites included in the original scope of Sandia's ER Project were SNL California (SNL/CA), the SNL Kauai Test Facility (KTF), and the SNL Tonopah Test Range (TTR). There were also a number of miscellaneous sites located in other areas, nationwide and internationally. ER sites that are not at the SNL/NM facility have been addressed.

CLEANUP AND SITE CLOSURES

Waste generated from corrective action at SNL/NM ER sites includes hazardous waste, radioactive low-level waste (LLW), mixed hazardous/radioactive waste (MW), waste subject to the Toxic Substances Control Act (primarily polychlorinated biphenyls [PCB]), and industrial solid waste.

CORRECTIVE ACTION COMPLETE (CAC) STATUS

DOE and Sandia propose ER sites to NMED for CAC status when they meet NMED criteria, either before or after remediation. The criteria include acceptable levels of risk to human health and the environment presented by the contaminants at the site. After NMED grants CAC status, DOE and Sandia submit a request for modification of the Permit to add the site to Table A.2: "List of Solid Waste Management Units (SWMU) and Areas of Concern (AOC) not currently requiring Corrective Action." The majority of ER sites have been granted CAC status under a process in which risks to human health and the ecosystem have been calculated for residual contamination according to EPA and NMED guidelines. The level of contamination remaining and the appropriate land-use category (i.e., industrial, residential, or recreational use) are used as inputs to determine the risk to human health and the ecosystem.

CHEMICAL WASTE LANDFILL (CWL)

The CWL is an interim status landfill undergoing closure in accordance with 40 CFR Part 265 Subpart G and the CWL Final Closure Plan. Closure activities, including two voluntary corrective measures (VCM), were conducted under Sandia's ER Project. One of the VCMs involved excavation of the entire landfill; the soil was treated as needed and placed in an on-site Corrective Action Management Unit (CAMU) containment cell constructed for long-term management. The Draft CWL Post-Closure Care Permit defines post-closure care activities and was issued by the NMED for Public Comment on May 21, 2007. Informal negotiations were initiated by the NMED in August 2008 with all interested parties requesting a public hearing. These negotiations continued into 2009. In October 2009, the CWL Closure Plan Amendment as changed, the CWL Post-Closure Care Permit, and the CWL CMS Report/Final Remedy were approved by NMED.

Chemical Waste Landfill



MIXED WASTE LANDFILL (MWL)

The MWL, one of the SWMUs at SNL/NM, is subject to the corrective action requirements of the COOC and also to a Final Order for Corrective Measures (FOCM) issued by the Secretary of NMED. Subgrade preparation for the MWL Evapotranspirative (ET) Cover (i.e., the selected final remedy in the FOCM) was completed during FY 2007. In November 2008, SNL/NM and DOE responded to the second Notice of Deficiency on the MWL Corrective Measures Implementation Plan (CMIP), and in December 2009 NMED conditionally approved the CMIP. Construction of the MWL ET Cover was completed in FY 2009.

2009 STATUS AND ACTIVITIES

At the close of 2009, there were 33 ER sites remaining on the list of sites requiring corrective action. DOE and Sandia have submitted requests for Class III permit modification to address 31 of the remaining sites. The two remaining sites are the CWL and the MWL. In addition to the 33 sites, final remedies are pending for three groundwater areas of concern. All CAC proposals and Class III Permit modification requests are available for review at the University of New Mexico (UNM) Zimmerman Library.

LONG-TERM ENVIRONMENTAL STEWARDSHIP (LTES)

The LTES Program involves stewardship for past, present, and future activities at SNL/NM. The LTES Program's purpose is to promote the long-term stewardship (LTS) of a site's natural and cultural resources throughout its operational, closure, and post-closure life-cycle. The environmental programs mentioned in this summary pamphlet and in the ASER support that stewardship.

An important component of the LTES Program is LTS of legacy sites (primarily ER sites). The LTS Program requires at some ER sites to have long-term controls such as monitoring or restrictions on future use after corrective action is complete and outreach to keep the public informed. Several of these requirements are established by NMED.

COMPLIANCE OVERSIGHT ACTIVITIES

The LTS Program conducts the long-term monitoring of the CAMU. Leachate is pumped weekly, and periodically sampled and disposed. The CAMU Vadose Zone Monitoring System Annual Monitoring Results Report contains more details on activities conducted, and sampling results. Data from monitoring and sampling activities are maintained in a comprehensive information management system to ensure protection of human health and the environment.

For information on the extensive SNL/NM groundwater monitoring network, see the section in this summary pamphlet on Groundwater Protection.

INSTITUTIONAL CONTROL (IC) ACTIVITIES

Former ER sites that have not been cleaned up to residential risk standards are periodically inspected and maintained when necessary. An IC tracking system has been created to help manage site IC information. A total of 25 IC site inspections were completed in 2009.

COMMUNITY LIAISON AND STAKEHOLDER INVOLVEMENT ACTIVITIES

It is important that the public be made aware of the work being conducted to maintain long-term protection of human health, the environment, and natural and cultural resources. Various efforts include:

- A video that is shown at the National Museum of Nuclear Science and History that explains the LTES Program;
- Semi-annual newsletters and the ASER summary pamphlet are published and distributed to the public; and
- An LTS website is available for public access. It contains environmental regulatory decision documents for all former ER sites and a map with site locations.

Additionally, in 2009 stakeholders participated in the semi-annual DOE/Department of Defense (DoD) meetings where the current status of ER and LTS Programs were discussed and the public's questions about the programs were addressed.

The LTS Program maintains the Community Checklist, which was compiled by members of Sandia's workforce and community members who have an interest in LTES/LTS at SNL/NM. The Community Checklist contains the community members' questions about LTES/LTS. The questions were addressed with members of the workforce and posted to the LTES website. The Community Checklist is updated annually.

Please visit the LTES website for more information:

<http://ltes.sandia.gov/>

Click on "Legacy" for information about LTS sites.



Tarantula at SNL/NM

East Anchor Point Vista



Terrestrial surveillance is conducted at SNL/NM through collection and analysis of samples in order to characterize environmental conditions and identify trends. Other objectives of terrestrial surveillance are to establish baseline levels of radiological and non-radiological constituents and assess the effectiveness of P2.

In order to detect potential deposition or migration of contaminated material to off-site locations, samples of surface soil, sediment, and vegetation are collected from on-site, perimeter, and off-site locations (community locations outside KAFB boundaries).

In 2009, there were no terrestrial sample results indicating concerns that would prompt actions at locations that are not already being addressed by the ER Project.

In June 2009, soil at four perimeter locations at a site where (un-fused) land mine experimentation was formerly conducted, was sampled for baseline characterization of any high explosives (HE). This sampling was also performed to determine if past activities at the site had any impact on human health or the environment. Since the inactive land mines remain buried at the site, this sampling serves to document baseline HE conditions in soil that remains in the area from historic testing (and that there is no evidence that HE has leaked from the buried land mines still present). A new sampling location (S-90) has been added to monitor this location.

For a complete list of terrestrial surveillance results for 2009, visit this website for the SNL/NM 2009 ASER:

<http://www.sandia.gov/news/publications/environmental/index.html>

ECOLOGICAL SURVEILLANCE

Biota monitoring began in 1996 as an additional element of environmental monitoring within the Terrestrial Surveillance Program. The objectives of the Ecological Surveillance Program are to:

- Collect ecological resource inventory data to support site activities while preserving ecological resources and to ensure regulatory compliance;
- Collect information on plant and animal species present to further the understanding of ecological resources on-site;
- Collect biota contaminant data on an as-needed basis in support of site projects and regulatory compliance;
- Assist Sandia organizations in complying with regulations and laws;
- Educate the Sandia community regarding ecological resource conservation; and
- Support line organizations with biological surveys in support of site activities.

The biota data collected are consistent with the requirements under DOE Order 450.1A. Data are collected on mammal, reptile, amphibian, bird, and plant species that currently inhabit SNL/NM. Data collected include information on presence, abundance, species diversity, and land use patterns. Since no significantly elevated levels of radionuclides or metals were observed in soil or vegetation samples, no contaminant analysis of radionuclides and metals on wildlife were performed in 2009.

These data are primarily utilized to support NEPA documentation and land use decisions. Data also support wildlife communication campaigns to ensure safe work environments and sustainable decision-making strategies. See Table 1 for common animals identified at KAFB.



Eumeces Obsoletus at SNL/NM

TABLE 1

BIRDS	American Robin	Black-chinned Hummingbird	Broad-tailed Hummingbird	Horned Lark	Loggerhead Shrike	Red-tailed Hawk
	American kestrel	Black-headed Grosbeak	Dark-eyed Junco	Killdeer	Mountain Bluebird	Rufous-sided Towhee
MAMMALS	Black Bear	Banner-tailed Kangaroo Rat	Desert Cottontail	Gunnison's Prairie Dog	Mule Deer	
	Bobcat	Black-tailed Jackrabbit	Deer Mouse	Gray Fox		
REPTILES	Collared Lizard	Round-tailed Horned Lizard	Gopher Snake	Great Plains Toad	Side-blotched Lizard	
	Chihuahuan Spotted Whiptail	Prairie Lizard	Great Plains Skink	Western Diamondback Rattlesnake	Short-horned Lizard	

GROUNDWATER PROTECTION AT SNL/NM

The regional aquifer, supplying the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) and KAFB, is located within the Albuquerque basin. SNL/NM gets its drinking water from KAFB, which gets nearly all of its supplied water from wells in the Albuquerque basin. The basin was created by the extension of the Rio Grande Rift that began forming approximately 30 million years ago. The two groups that conduct groundwater monitoring at SNL/NM are the ER Project and the Groundwater Protection Program (GWPP).

Water levels are a means to assess the physical changes of the groundwater system over time. This includes changes in the local water table, the quantity of water available, as well as the direction and speed of groundwater movement. The GWPP gathers groundwater level measurements from a large network of wells on and around KAFB. In addition to wells owned by DOE/NNSA/SSO, data is solicited for the USAF Installation Restoration Program, ABCWUA, and U.S. Geological Survey wells. In 2009, data from 156 wells were incorporated into the monitor well water level database. Water levels were measured monthly or quarterly.

GROUNDWATER WATER QUALITY MONITORING

In CY 2009, the GWPP conducted surveillance sampling at 14 wells and one spring. There are currently five ER Project areas with ongoing groundwater investigations:

- Chemical Waste Landfill (9 wells sampled in CY 2009)
- Mixed Waste Landfill (7 wells sampled in CY 2009)
- Technical Area V (TA-V) Groundwater Investigation (12 wells sampled in CY 2009)
- Tijeras Area Groundwater (TAG) Investigation (21 wells sampled in CY 2009)
- Burn Site Groundwater Investigation (6 wells sampled in CY 2009)

Results from both groups of wells are compared to maximum contaminant levels established by the EPA, maximum allowable concentrations for groundwater promulgated by the State of New Mexico Water Quality Control Commission, and derived concentration guides for radionuclides, established by the DOE/NNSA/SSO.

For detailed well information and sampling results, please see the 2009 Annual Groundwater Monitoring Report and the 2009 ASER at the following website:

<http://www.sandia.gov/news/publications/environmental/index.html>

Groundwater Monitoring Well Installation



WATER QUALITY

WASTEWATER

Wastewater from SNL/NM is discharged from six on-site outfalls to the COA sanitary sewer system under permits issued by the ABCWUA. Sandia monitors the wastewater to ensure that all discharges meet the standards set by the ABCWUA's publicly owned treatment works. In 2009, there were no reportable events, and all discharge parameters were met; this resulted in SNL/NM receiving six "Gold Pre-Treatment Awards" from the ABCWUA for 2008-2009. These awards are given based on a facility's 100 percent compliance with reporting requirements and discharge limits sent in its permits.

SURFACE DISCHARGE

All water that will be discharged to the ground surface, either directly or to lined containment ponds and areas, must meet State of New Mexico surface discharge standards. In 2009, 24 individual surface discharge requests were made. All requests met the NMED and New Mexico Water Quality Control Commission standards, and were approved by Sandia. Additionally, there were nine minor releases that met the reporting requirements established by NMED. Also, routine water discharges were made to two evaporation lagoons that service the Pulsed Power Facility under an existing discharge permit. During 2009, all permit requirements for both lagoons were met.

STORM WATER RUNOFF

Storm water runoff flowing over the ground surface has the potential to pick up and transport contaminants. The Storm Water Program works in coordination with the P2 Program, the Surface Discharge Program, Facilities Engineering, and the ER Project to implement measures and best management practices to prevent or reduce potential contaminants from being transported in storm water runoff. Potential contaminants may derive from:

- Oils and solvents from machine shops and manufacturing areas,
- Vehicle residues from streets and parking lots,
- Hazardous chemicals and metals from waste handling facilities,
- Residual radioactive and hazardous constituents from SWMUs,
- Building material contaminants from construction activities, and
- Pesticides and fertilizers from landscaped areas.

Sandia controls the potential contaminants that may be picked up by storm water runoff by routing all industrial waste water to the sanitary sewer and storing most chemicals indoors. Sandia also limits storm water contact with chemical storage containers and carefully controls runoff in areas where wastes, chemicals, and oils are stored or handled.

National Pollutant Discharge Elimination System (NPDES) regulations under the Clean Water Act (CWA) require any point sources discharges to be permitted. The NPDES regulations also require protection of storm water runoff during and after construction. In compliance with the NPDES Multi Sector General Permit, SNL/NM currently has 15 monitoring points. Additionally there are 9 surveillance monitoring wells.

OIL STORAGE AND SPILL CONTROL

SNL/NM personnel developed and continue to maintain, as required by the CWA, a Spill Prevention Control and Countermeasures Plan. Five underground storage tanks and 46 above Ground Storage Tanks are currently operating at SNL/NM.

2009 SAMPLING RESULTS

Quarterly visual sampling was conducted in 2009 and did not produce any indications of storm water pollution. Analytical sampling was not required for this year of the permit; however, environmental surveillance sampling was done for total recoverable metals, total suspended solids (TSS), and chemical oxygen demand (COD). The monitoring data are consistent with natural background levels and did not suggest a pollutant "hot spot" thus, current control measures are adequate.

A fecal coliform sample was collected in September 2009 at SNL/NM's primary outfall to Tijeras Arroyo. The analytical laboratory reported a positive result for fecal coliform at 60,000 colony forming units (CFU) per 100ml, and this result was submitted to the State of New Mexico in October 2009.

AIR QUALITY, METEOROLOGICAL MONITORING & NESHAP

Sandia conducts air quality monitoring and surveillance under three programs: (1) the Clean Air Network (CAN) Program, (2) the Air Quality Compliance Program (AQC), and (3) the National Emission Standards for Hazardous Air Pollutants Program (NESHAP).

CAN

In 2009, data were collected from eight meteorological towers located throughout SNL/NM and KAFB. The data provided air dispersion and transport modeling information. Figure 3 shows some of the variations and extremes found in meteorological measurements.

AMBIENT AIR MONITORING

Sandia measures ambient air quality at various locations throughout SNL/NM, and compares results with National Ambient Air Quality Standards (NAAQS) and local ambient air quality regulations. The network monitors criteria pollutants and volatile organic compounds (VOC). The ambient air surveillance data, collected from six locations, are utilized to establish background concentration levels for pollutants of concern and evaluate potential effects of Sandia's operations on air quality. In 2009, all results met NAAQS.

AQC

Air quality standards are implemented through regulations promulgated by local and federal governments in accordance with the Clean Air Act (CAA) and the Clean Air Act Amendments (CAAA) of 1990. The Albuquerque Bernalillo County Air Quality Control Board, the State of New Mexico, and the EPA determine applicable air quality standards for non-radiological pollutants.

In 2009, DOE/NNSA/SSO and Sandia met all requirements for air pollution control permits and registrations.

NESHAP

Radionuclide air emissions from DOE/NNSA/SSO facilities are regulated under NESHAP, with the exception of naturally occurring radon. In 2009, there were 14 SNL/NM facilities reporting NESHAP regulated emissions. Of these 14 sources, 13 were point sources and one a diffuse source. Four of the 13 facilities reported no emissions in 2009.

In 2009, the primary radionuclide released was from tritium. The on-site theoretical individual with the highest calculated exposure to the radionuclide emissions (the maximally exposed individual [MEI]) received a dose of 0.00105 millirems per year at the Honeywell Systems Support Site on KAFB. The dose resulted primarily from releases of tritium from Sandia's Responsive Neutron Generator Product Deployment Center. The off-site MEI (at the KAFB Eubank Gate) received a total dose of 0.000476 millirems per year. Both doses are well below the 10 millirems per year EPA standard.



Wind Speed	Minimum (m/sec)	Maximum (m/sec)	Spread (m/sec)
Average Annual Wind Speed	3.65 (CL1)	3.99 (CW1)	0.34
Greatest Difference in Average Speed over 24 hours	4.65 (KU1)	9.00 (A13)	4.35 In March
Greatest Daily Difference in Maximum Wind Gust	14.3 (SC1)	28.0 (KU1)	13.7 In May
Average Difference in Daily Wind Speed	0.97		



Temperature	Minimum (°C)	Maximum (°C)	Spread (°C)
Average Annual Temperature	13.54 (SC1)	14.26 (A13)	0.72
Network Annual Temperature Extremes	-14.72 (CW1)	36.85 (A13 & KU1)	51.57
Greatest Difference in Daily Minimum Temperature	10.85 (KU1)	16.01 (MW1)	5.16 In May
Greatest Difference in Daily Average Temperature	10.45 (CL1)	12.58 (SC1)	2.13 In February
Greatest Difference in Daily Maximum Temperature	10.23 (SC1)	13.52 (A21)	3.29 In January



Precipitation	Minimum (cm)	Maximum (cm)	Spread (cm)
Annual Precipitation (Extremes)	17.35 (A21)	23.47 (SC1)	6.12
Greatest Daily Rainfall Variation	0.25 (SC1)	1.37 (A36)	1.12 In May
Greatest Monthly Precipitation Difference	4.17 (A21)	6.35 (SC1)	2.18 In September
Greatest in Monthly Rainfall		6.35 (SC1 in September)	

NOTE: Winter precipitation that falls as snow is underestimated (mostly at the SC1 tower)

Figure 3: Variations and Extremes in Meteorological Measurements Across the Meteorological Tower Network in 2009

WASTE MANAGEMENT

Waste generated in 2009 at SNL/NM was managed at one or more of the following facilities: the Hazardous Waste Management Facility (HWMF), the Thermal Treatment Facility (TTF), the Radioactive and Mixed Waste Management Facility (RMWMF), Manzano Storage Bunkers (MSB) and the Solid Waste Transfer Facility (SWTF).

HWMF

The HWMF manages hazardous wastes and chemical wastes. The waste processing functions include reviewing waste characterization, as well as waste collection, segregation, packaging, storage, and shipment to permitted off-site facilities for recycling, treatment, and/or disposal. In order to track waste through each waste handling step, each waste item received at the HWMF is labeled with a unique bar code and the information is maintained in a database. Waste is usually processed and shipped off-site within 90 days of receipt. In 2009, a total of 12,715 package items were handled by the HWMF. 8,491 packages (395,370 kilograms [kg] or 869,814 pounds [lb]) of hazardous waste were shipped offsite and 1,399 packages were recycled.

RMWMF

The RMWMF manages SNL/NM's radioactive and mixed waste. The waste processing functions at the RMWMF include waste characterization, collection, segregation, treatment, packaging, storage, and shipment to permitted off-site facilities. In 2009, the RMWMF shipped 8,088 kg (17,825 lb) of LLW, and 1,480 kg (3,262 lb) of MW to permitted off-site facilities for treatment and/or disposal. In 2009, 2,060 kg (4,534 lb) of MW was treated at the RMWMF to meet applicable hazardous waste treatment standards. Of the treated waste, 108 kg (343 lb) were rendered non-hazardous. The treated wastes were then stored at the RMWMF or MSB, or they were shipped to permitted off-site facilities. Transuranic (radioactive) waste (TRU) and mixed TRU wastes (MTRU) were stored at SNL/NM during 2009; these wastes will be sent to the Advanced Mixed Waste Treatment Project in Idaho for certification before being sent to the Waste Isolation Pilot Plant (WIPP) for final disposal.

TTF AND MSBs

The TTF is operated by SNL/NM as a treatment facility for certain explosive waste streams. The MSBs are used for storage of LLW, MW, TRU, and MTRU wastes.

SWTF

The SWTF manages solid waste from SNL/NM operations in compliance with all applicable regulations; waste processing functions include collecting waste, screening it for prohibited items, processing it, and shipping it to offsite facilities for recycling or disposal. The SWTF also processes and ships (but does not collect) solid waste from KAFB and DOE/NNSA/SSO. In 2009, the SWTF received 775,821 kg (1,708,856 lb) of SNL/NM solid waste and 965,533 kg (2,126,724 lb) of KAFB and DOE/NNSA/SSO solid waste.

RECYCLABLES

The secondary function of the SWTF is to collect, process (screen, bale, and track), market, and ship the following recyclable materials from SNL/NM: cardboard, white paper, mixed paper, aluminum cans, scrap metals, printer consumables, and plastics (see Table 2). Proceeds from the sale of recyclable materials are reinvested in the recycling program. The SWTF also provides some recycling support for KAFB and DOE/NNSA/SSO.

In support of small SNL/NM construction and demolition projects, the Construction and Demolition (C&D) Recycle Center accepts small quantities of C&D waste, but it is managed separately from the solid waste. The C&D Recycle Center provides contractors of small C&D projects a location to recycle cardboard, wood, and scrap metal.

Table 2: Waste Recycled at SNL/NM in 2009

	lbs.
Chemicals Exchanged	73
Binders	273
Anti-freeze/Coolant	440
Granular Activated Carbon	6,000
Plastics	11,373
Light Bulbs	20,327
Tires	25,700
Toner / Ink Cartridges	27,393
Carpet	38,088
Batteries	69,288
Oil / Grease / Fuel	121,936
Wood	319,270
Computers / Electronics	531,269
Paper / Cardboard	839,276
Metals	3,032,017
Concrete / Asphalt	36,784,400

442 500 METERS
(WEST)

57° 30' N
T. 10 N
R. 9 E



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