Title: **2008 Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory (DOE/EIS 0380) Mitigation Action Plan**

U.S. Department of Energy

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Contents

List of Acronyms

ALARA	As Low As Reasonably Achievable
BA	Biological Assessment
BMPs	best management practices
BRMP	Biological Resources Management Plan
CFR	Code of Federal Regulation
CMRR	Chemistry and Metallurgy Research Building Replacement
CRMP	Cultural Resources Management Plan
DARHT	Dual-Axis Radiographic Hydrodynamic Test Facility
DD&D	decontamination, demolition, and decommissioning
DOE	U.S. Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
ENV-RRO	Environmental Protection (Division)-Risk Reduction Office
ESA	Endangered Species Act
ESR	Environmental Surveillance Report
FONSI	Findings of No Significant Impact
FRS	Flood Retention Structure
FY	fiscal year
HMP	Habitat Management Plan
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LANSCE	Los Alamos Neutron Science Center
LASO	Los Alamos Site Office
MAP	Mitigation Action Plan
MAPAR	MAP Annual Report
MDA	material disposal area
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
OSRP	Off-Site Source Recovery Project
PNM	Public Service Company of New Mexico
PR-ID	Project Requirements Identification
PRS	potential release site
RLWTF	Radioactive Liquid Waste Treatment Facility
ROD	Record of Decision
SEA	Special Environmental Analysis
SERF	Sanitary Effluent Recycling Facility
STA	Southern Technical Area
SWEIS	Site-Wide Environmental Impact Statement
TA	Technical Area
T&E	threatened and endangered
TAWG	Trails Assessment Working Group

U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service
WFMP	Wildland Fire Management Plan
WIPP	Waste Isolation Pilot Plant
WTA	Western Technical Area

1.0 INTRODUCTION

The National Environmental Policy Act (NEPA) Implementing Procedures of the U.S. Department of Energy (DOE) (Title 10 *Code of Federal Regulations* [CFR] 1021.331) requires completion of a mitigation action plan (MAP) following each environmental impact statement (EIS) and its associated record(s) of decision (RODs) to address mitigation commitments expressed in the ROD(s). The DOE/National Nuclear Security Administration (NNSA) issued the *Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory* (2008 SWEIS) (DOE 2008a, DOE/EIS-0380) in May 2008 and issued a ROD on September 19, 2008 (2008 SWEIS ROD or ROD; DOE 2008b); the ROD was published in the Federal Register (FR26SE08N) on September 26, 2008. In the ROD, NNSA decided to implement the No Action Alternative and certain elements of the Expanded Operations Alternative. It is likely that NNSA will issue other RODs regarding the continued operation of Los Alamos National Laboratory (LANL or Laboratory) based on the 2008 SWEIS.

The 2008 SWEIS identifies the environmental impacts resulting from the three analyzed alternatives (No Action, Reduced Action, and Expanded Operations) and discusses measures that NNSA considered for the mitigation or reduction of adverse effects. The SWEIS MAP is a DOE management document that explains how the mitigation measures identified in the 2008 SWEIS and ROD will be planned and implemented. The MAP will be implemented by Los Alamos National Security, LLC, (LANS), as the LANL Management and Operation Contractor for DOE. The MAP must be executed before DOE takes any action directed by a ROD. It may also be revised to meet additional requirements associated with future RODs, or to meet the objectives set out in the 2008 SWEIS.

The MAP will be made available in the appropriate DOE public reading room(s) or other locations for a reasonable time. Copies of the MAP will also be available upon written request from DOE.

1.1 Purpose of the Mitigation Action Plan

The MAP determines what mitigation measures will be implemented from the 2008 SWEIS and explains how the mitigation measures will be planned and implemented for those actions decided in the ROD. There are several different types of mitigation measures included in this MAP, which are outlined in Section 3.0. Planning and implementation of the mitigation measures, as well as reporting requirements to assure proper implementation and performance of the measures, are included in Sections 1.2 and 2.0.

Additionally, the 2008 SWEIS ROD provided commitments to Santa Clara Pueblo as part of ongoing government-to-government relations regarding the 2008 SWEIS. These commitments are outlined in Section 4.0.

1.2 MAP Monitoring and Reporting

1.2.1 SWEIS Yearbook

To measure the accuracy of the 1999 *Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory* (1999 SWEIS) (DOE 1999a, DOE/EIS-0238) impact analysis, the DOE/NNSA Los Alamos Site Office (LASO) and LANS implemented a program to compare actual operational data with the environmental impacts identified in the 1999 SWEIS. These comparisons are published in an annual SWEIS Yearbook. The yearbooks provide data that could be used to develop an impact analysis for future EISs developed for the Laboratory. This MAP requires continuation of the SWEIS yearbooks for implementation of the 2008 SWEIS and ROD. The 2008 SWEIS will be implemented over about a five-year period and the SWEIS yearbooks will provide NNSA with data to facilitate the production of a new SWEIS if deemed necessary. The SWEIS yearbooks will be prepared by LANS for LASO review and approval through the LASO NEPA Compliance Officer and be made available to the public.

1.2.2 MAP Annual Report

Section 5.d(11)(f) of DOE Order 451.1B, *NEPA Compliance Program*, requires LASO to prepare an annual report outlining accomplishment taken in accordance with an issued MAP. The first MAP Annual Report (MAPAR) for the 2008 SWEIS will be published in fiscal year (FY) 2010 and will report actions taken to address the mitigation identified in the 1999 SWEIS and the 2008 SWEIS MAP and other MAPs issued during FY 2008 or 2009. The MAPAR will be submitted as an appendix to the SWEIS Yearbook, or other annual reporting documet with DOE approval (such as the annual Environmental Surveillance Report [ESR]).

2.0 IMPLEMENTATION

The MAP implementation process involves LASO and several LANL organizations. The implementation process includes mitigation action management (task scoping and funding allocation), tracking, technical implementation, annual reporting, and mitigation action closure.

2.1 Roles and Responsibilities

LASO is responsible for implementing and tracking the mitigations in the MAP. The daily coordination and management of MAP activities have been delegated by LASO to LANS in accordance with their Management and Operations contract (Contract #DE-AC52-06NA25396). The LANS responsible office for the implementation of the MAP is the Environmental Protection Division's Risk Reduction Office (ENV-RRO). The ENV-RRO coordinates technical issues regarding the scope and schedule of individual mitigation measures of the MAP with other divisions within LANS. These projects and activities have been assigned to LANL organizations that have primary institutional responsibility for operations that the mitigation actions address.

2.2 Mitigation Tracking

LANS will maintain a log to track the scope, schedule, interim milestones, deliverables, and closure of mitigation measures outlined in this MAP. A copy of the tracking log will be transmitted to the LASO NEPA Compliance Officer monthly. Any issues in meeting the commitments should be identified when LANS transmits the log to LASO.

2.3 MAP Review and Revision

This MAP will be reviewed annually after issuance of the SWEIS yearbook(s) to determine if the mitigation measures identified in the 2008 SWEIS are effective. The MAP may be revised to address any deficiencies.

Additionally, the MAP will be reviewed after each new ROD is issued to determine if new mitigation measures are required or if mitigation measures previously identified need to be revised.

2.4 MAP Duration and Mitigation Closure

The duration for specific mitigation measures will be identified in the MAP tracking log prepared by LANS. As currently scheduled, the implementation of the MAP and all associated mitigation actions will be completed at the end of calendar year 2013, or until directed by LASO. As individual projects and activities that address specific mitigation measures are completed, LANS will provide formal documentation and rationale for recommending mitigation action closure in their monthly reports. LASO will review the documentation and provide authorization of closure or direction for further action. Final closure of mitigation actions authorized by LASO will be reported in the MAPAR.

3.0 MITIGATION

This section outlines the mitigation measures required to implement the 2008 SWEIS. There are several different types of mitigation measures included in the 2008 SWEIS.

The 2008 SWEIS included a review of existing programs, plans, and controls built into the operations at LANL that function as mitigation measures. These measures will continue to be implemented as part of the MAP and are outlined in Section 3.1.

Specific mitigation measures were outlined in the 2008 SWEIS alternatives. These mitigation measures are outlined in Section 3.2, and are further defined in additional measures adopted in this MAP to mitigate the impacts of continuing to operate LANL, as outlined in the ROD. Additional mitigation measures presented in this MAP are of four types and are based on the mitigation measures incorporated in the SWEIS alternatives:

(1) Continuing mitigation commitments established by the earlier 1999 SWEIS MAP and mitigation commitments that reflect NEPA decisions that have occurred since the issuance of the 1999 SWEIS ROD (DOE 1999b) (Section 3.3).

(2) Detailed mitigation measures for specific projects analyzed in the 2008 SWEIS and included in the ROD intended to minimize the identified environmental impacts (Section 3.4).
(3) Institutional resource management responsibilities, including Laboratory-wide commitments and mitigation (Section 3.5).
(4) Enhancement of existing programs that will improve operational efficiency and minimize future potential impacts from LANL operations (Section 3.6).

3.1 Existing Programs, Plans, and Controls

Activities undertaken at LANL are performed in compliance with applicable regulations, DOE Orders, and contractual requirements. Many laws and regulations pertaining to operating Federal facilities are in place to protect human health and the environment. It is understood that these or similar regulatory controls will continue to be in place. Operating in compliance with these requirements mitigates the potentially adverse impacts of operations to the public, workers, and the environment.

Contractual mechanisms between DOE and LANS, include regulations and requirements applicable to LANL operations. These regulations and requirements also mitigate the potential for adverse impacts. For example, the application of DOE design standards results in facility designs for modern nuclear facilities that reduce the potential for catastrophic releases from these facilities in the event of earthquakes, high winds, or other natural phenomena. Application of occupational safety and health regulations (29 CFR 1900, et seq.), and other standards promulgated by the American National Standards Institute, the U.S. Department of Defense, and DOE, as well as the use of other life safety and fire safety codes and manuals, limit worker exposures to workplace hazards, thus reducing potential adverse worker health effects.

DOE, NNSA, LASO, and LANS have instituted policies, procedures, and programs applicable to work conducted at LANL to mitigate potentially adverse effects of operations. It is understood that these or similar policies and procedures will continue as described in the 2008 SWEIS. These policies, procedures, and programs include, but are not limited to the following:

- Policies that ensure environmental requirements and issues are identified and reviewed early in the planning process.
- Procedures that institute integrated safety management to control work.
- Policies regarding the knowledge, skills, and abilities of personnel assigned to perform hazardous work (including required training).
- Policies reflected in agreements with other entities (such as accords with the four Pueblos located nearest to LANL), with protocols regarding consultations and other discussions regarding LANL activities.
- Policies and procedures regarding the stoppage and restart of work are similar in effect to work controls; when unexpected situations occur that impose unexpected hazards or reveal unexpected resources, work is stopped, as soon as stoppage can be accomplished safely, until work plans and authorizations can be modified in consideration of the new information.
- Programs and projects at LANL to increase the level of knowledge regarding the

environment around LANL, the health of LANL workers, the health of the public, and the effects of LANL operations on these elements, as well as to avoid or reduce impacts and to remediate contamination from previous LANL activities.

There are also policies, procedures, programs, plans, and projects in place at LANL to (1) reduce potentially adverse impacts by providing a heightened understanding of the resources that could be impacted; (2) avoid impacts where mechanisms for impacts to specific resources are known and avoidable; (3) provide early identification of impacts to enable stoppage or mitigation of the impacts; (4) reduce ongoing impacts; and (5) provide beneficial management opportunities to avoid impacts to natural, cultural, and sensitive resources. It is understood that such activities will continue at LANL. Examples of these include the following:

- LANL implementing policy and procedure (IPP 400.1; LANL 2007a) requires an environmental review for all new and modified work at LANL.
- The Environmental Surveillance and Compliance Program monitors permit and environmental management requirements. This program includes evaluations of samples from various environmental media for radioactive materials and other hazardous materials both locally and regionally. The data generated under this program are collected routinely, reported annually to the public in the ESR, and analyzed to determine regulatory compliance and environmental trends over time.
- The Threatened and Endangered Species Habitat Management Plan (HMP) (LANL 1998; LA-UR-98-4800) provides for long-range planning information for future LANL projects and protects the habitats of federally listed species.
- The Cultural Resources Management Plan (CRMP) (LANL 2004a; LA-UR-04-8964) has undergone public review and is implemented through a programmatic agreement between DOE, the New Mexico State Historic Preservation Office, and the Advisory Council on Historic Preservation. The CRMP is discussed below.
- Waste minimization and pollution prevention efforts at LANL are coordinated by the Pollution Prevention Program, which works to reduce wastes generated and, to some extent, effluents and emissions from facilities.
- Studies of public and worker health in and around LANL have been conducted (some by DOE and some by other agencies) to assess both human health in the region and the potential for adverse human health effects due to LANL operations.
- The Health, Safety, and Radiation Protection Program is based on the As Low As Reasonably Achievable (ALARA) (10 CFR 835) principle for minimizing radiation doses and releases of radioactive materials by employing all reasonable methods. ALARA is a regulatory requirement of DOE radiation safety programs. The Health, Safety, and Radiation Protection Program addresses possible impacts resulting from working with chemicals and biohazardous materials.
- The Groundwater Stewardship Program assesses current groundwater conditions to monitor and protect groundwater through the integration of multiple plans and reports, including an Integrated Facility-Wide Groundwater Monitoring Plan and the ESR.
- The Safeguards and Security Program restricts unauthorized access to areas of LANL that have a high potential for impacts to human health and the environment. Such access restrictions limit the potential for intentional or inadvertent actions that could result in environmental or human health effects.

- LANL's Emergency Management and Response Program effectively combines Federal and local emergency response capabilities and provides planning, preparedness, and response capabilities that can aid in containing and remediating the effects of accidents or adverse operational impacts.
- LANL's Fire Protection Program ensures that personnel and property are adequately protected against fire or related incidents, including fire protection and life safety.
- An Interagency Wildfire Management Team coordinates activities related to reducing regional wildland fire danger. On site, LANL is implementing actions around individual facilities that have moderate or higher vulnerability to wildfire.
- The LANL Environmental Restoration Project (which includes decontamination, demolition, and decommissioning [DD&D] activities) assesses and remediates contaminated sites that either were, or still are, under LANL control. The Environmental Restoration Project serves an important role in reducing the potential for future impacts to human health and the environment due to legacy contaminants in the environment. Contaminant risks at LANL are largely mitigated by actions of this project. The Environmental Restoration Project and Environmental Surveillance and Compliance Program collectively identify contaminant problems at LANL, and upon implementation of the Biological Resources Management Plan (BRMP) (LANL 2007b, LA-UR-07-2595), contaminant monitoring will be complete.

In addition, the 2007 *Update of the Probabilistic Seismic Hazard Analysis and Development of Seismic Design Ground Motions at the Los Alamos National Laboratory* (LANL 2007c; LA-UR-07-3965) provides new information about seismic risks at LANL, which may change how hazardous materials are stored, operations are conducted, and facilities are constructed or renovated. NNSA is conducting a systematic review of LANL structures and operations in light of this information. This review will identify any necessary changes to address the new seismic information. NNSA will implement the necessary changes to LANL facilities and operations based on the review's recommendations.

The MAP is also aligned with the LANL Environmental Management System (EMS) and supports existing projects and operations established to meet the five EMS objectives: ensure environmental compliance; reduce waste generation; energy and fuel conservation; disposition of excess items, equipment, chemicals, documents and materials; and achieve zero liquid discharge by 2013. Many of the mitigation actions discussed in this MAP will be included in one or more of the annual EMS Action Plans. However, many of the mitigation actions are multiple year projects that will be tracked in the MAPAR.

3.2 MITIGATION MEASURES FROM 2008 SWEIS ALTERNATIVES

Several specific mitigation measures are included in the 2008 SWEIS alternatives. Unless otherwise noted below, the analyses in this section assume that the following measures would be implemented. Detailed descriptions of mitigation measures are provided in subsequent sections and section numbers are identified in bold at the end of each description.

- NNSA intends to implement actions necessary to comply with the New Mexico Environment Department (NMED) Compliance Order on Consent (Consent Order)

(NMED 2005); however, specific actions have not been selected. Removal of contamination from material disposal areas (MDAs) and other potential release sites (PRSs), if necessary, would be conducted in a manner that protects the environment and public and worker health and safety. Removal of waste from some large MDAs may require use of temporary containment structures to limit possible releases of contaminated material to the environment to levels within applicable standards and ALARA principles. The MDAs where use of containment structures or equivalent measures may be required for safe removal operations include MDAs A, B, T, AB, and G (Expanded Operations Alternative – MDA Removal Option; **Section 3.5.1**).

- Nonradioactive air emissions, such as from construction equipment would be controlled by proper maintenance of equipment (**Section 3.5.1**).
- Noise impacts on sensitive wildlife species during MDA remediation, DD&D, and construction activities will be mitigated by planning activities outside of the breeding season for sensitive species if any sensitive species' habitat is identified in the area and if the habitat is occupied or the status is uncertain. If appropriate, other protective measures could be employed, such as hand digging (**Sections 3.5.4 and 3.5.5**).
- Radiological air emissions will be monitored and tracked to maintain the annual dose to the public from Los Alamos Neutron Science Center (LANSCE) emissions under the administrative limit (**Section 3.5.1**).
- Actions will be taken to mitigate the risks of a wildfire on waste storage domes in Technical Area (TA) 54. In 2000, the Cerro Grande Fire burned a heavily forested canyon area to within about 0.75 miles (1.2 kilometers) of the waste storage domes in TA-54, but none were burned and there were no radiological releases from domes. Additional fuel reduction has been conducted since the Cerro Grande Fire to further decrease the potential for a waste storage dome fire occurring as a result of a site wildfire. This includes fuel reduction activities to the vegetation surrounding the TA-54 area and within the domes themselves (for example, wooden pallets have been replaced with metal pallets). LANS will continue its wildfire management activities (for example, forest thinning) and further reduce risks by shipping legacy transuranic waste, currently stored in the domes, to the Waste Isolation Pilot Plant (WIPP) (**Section 3.5.2**).
- Expanded sealed source program procedures will ensure adequate controls on the quantities and methods of storing sealed sources containing cobalt-60, iridium-192, or cesium-137 to mitigate the effects of potential accidents. If an accident were to occur, this would reduce the potential direct gamma radiation streaming dose that could compromise the shielding around these gamma-emitting radioisotopes (**Section 3.4.2)**.
- Los Alamos County has recently initiated activities aimed at developing a 40-year water plan to address water service needs, balance the uses of water resources, and make recommendations for a water conservation program tailored to meet specific water supply customer needs in the county, including LANL. Only the Expanded Operations Alternative, which was not selected in the ROD, is projected to have water demands that would approach the available water rights from the regional aquifer. Los Alamos County's plans to use up to 391 million gallons (1,500 million liters) of water per year from the San Juan-Chama Transmountain Diversion Project as early as 2010 would alleviate any potential shortfall between future demand and current groundwater rights. LANL's water use would be mitigated somewhat by the use of recycled water from the Sanitary Effluent Recycle Facility (SERF) for cooling water (**Section 3.5.6.3**).

- Ongoing upgrades are being made to the electrical power transmission and distribution system, including construction of a third transmission line to allow import of additional power into the Los Alamos Power Pool and to support a higher electric peak load beyond 2006. An environmental assessment (EA) titled *Environmental Assessment for the Installation and Operation of Combustion Turbine Generators at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE 2002a; DOE/EA-1430) was prepared and a Finding of No Significant Impact (FONSI) was issued in December 2002 for a project to install two new (20-megawatt) gas-fired combustion turbine generators and to upgrade the existing steam turbines at the TA-3 Co-generation Complex. As discussed in the EA, upgrades and installation of one new combustion turbine generator were scheduled to be completed in 2006. While DOE currently has no timeframe for installing a second combustion turbine generator, its installation in the future would add 20 megawatts (equivalent to 175,200 megawatt-hours) of electrical power generating capacity at LANL (**Section 3.5.6.1**).
- Particulate matter (fugitive dust) emissions from exposed soil and roadways during construction activities will be controlled using routine dust suppression watering as appropriate. As necessary, air pollutant emissions from construction activities and MDA remediation activities would be controlled using standard construction emissions controls. Application of eco-safe chemical stabilizers to exposed areas and administrative controls such as planning, scheduling, and use of special equipment could further reduce emissions under all of the alternatives (**Section 3.5.1)**.
- Use of containment vessels for high explosives testing under all of the alternatives could further reduce air pollutant emissions, such as beryllium and depleted uranium, from this activity (**Section 3.3.1**).
- There is a possibility for an increase in truck traffic into and out of LANL over the next several years related to construction, waste shipments, and decontamination and demolition activities. Additional traffic studies should be undertaken to determine if activities under consideration in the 2008 SWEIS would increase traffic to unacceptable levels and to identify possible solutions in the event such problems are identified (**Section 3.5.8**).
- Traffic and noise impacts on residents of the Royal Crest Mobile Home Park and Los Alamos Town Center due to increased truck traffic could be mitigated by scheduling activities for off-peak hours, rerouting truck traffic, using multiple shifts, using alternative entries and exits, and, in the case of TA-21 remediation and DD&D, possible construction of a bridge or another road off of DP Mesa to allow alternate routing of traffic. Stockpiling bulk materials on the sites during off-peak hours also could be considered to avoid frequent trips during peak hours (**Section 3.5.8**).
- To alleviate concerns associated with additional employees commuting to LANL from areas such as Rio Arriba and Santa Fe counties, expansion of the park-and-ride bus service, currently offered from Española and Santa Fe, may be needed (**Section 3.5.8**).

3.3 Transition of Previous LANL NEPA Mitigation Commitments into the 2008 SWEIS MAP

This section provides an overview of continuing mitigation commitments remaining to be implemented from the 1999 SWEIS MAP and mitigation commitments resulting from projects initiated after the issuance of the 1999 SWEIS ROD. These NEPA mitigation commitments will be transitioned into the 2008 SWEIS MAP reporting process.

3.3.1 Dual-Axis Radiographic Hydrodynamic Test Facility Final Environmental Impact Statement

Objective
Update the Dual-Axis Radiographic Hydrodynamic Test (DARHT) facility MAP (DOE 1996) requirements to reflect current transition to fully contained experiments and close mitigation actions that have been completed.

Context
DARHT began its operations in 2001and the mitigation actions associated with construction of the facility have been completed. The HMP has been developed and implemented, closing the DARHT MAP requirement. A long-term monitoring program was conducted to assess the impact of DARHT operations on Nake'muu (the only documented standing-wall Ancestral Pueblo site on the Pajarito Plateau). The results of the monitoring program have established that the gradual deterioration of the Nake'muu Pueblo is the result of natural causes and not the result of DARHT operations (LANL 2004b; LA-UR-03-7364 and LANL 2006a; LA-CP-06-0926). Therefore, the MAP requirement to monitor Nake'muu has been satisfied and closed.

The 2006 DARHT MAPAR (LANL 2006b; LA-UR-06-5971) recommends reevaluation of the environmental monitoring strategies at DARHT as experiments transition from open shots to shots conducted in steel-walled containment vessels. This change will significantly reduce releases of contaminants into the environment. Trend analysis of contaminant concentrations in the environment demonstrates that during the period when uncontained experiments were conducted at DARHT, contaminant levels were largely static. Increases were observed for uranium-238 and beryllium, and several contaminants have exceeded baseline levels at times, but have always been below the risk screening levels. Since the explosive tests will be mostly contained in steel-walled vessels beginning in 2008, sampling frequency can be reduced, keeping abreast of the contaminants that have consistently exceeded baseline (preoperation) levels.

Background
DOE issued the Final EIS on the DARHT Facility (DOE 1995; DOE/EIS-0228) in August 1995 and issued a ROD on October 16, 1995. The DARHT ROD states that DOE has decided to complete and operate the DARHT facility while implementing a program to conduct most tests inside steel containment vessels with containment to be phased in over 10 years (the Phased Containment Option of the Enhanced Containment Alternative). The ROD further states that DOE will develop and implement several mitigation measures to protect soils, water, and biotic and cultural resources potentially affected by the DARHT facility construction and operation. DOE also committed to taking special precautions to protect the Mexican spotted owl (*Strix*

occidentalis lucida) by preparing and implementing a Laboratory-wide HMP for all Federal threatened and endangered (T&E) species occurring throughout LANL. The DARHT MAP elaborates upon those commitments (DOE 1996).

In December 1995, LANL completed a Biological and Floodplain/Wetland Assessment for the DARHT facility as required under the Endangered Species Act (ESA) (Keller and Risberg 1995; LA-UR-95-647). The assessment includes mitigation expected to prevent any likely adverse effect to T&E species or modification to critical habitat. The mitigation measures identified in the assessment were the basis for U.S. Fish and Wildlife Service (USFWS) concurrence with a finding of "may affect, but not likely to adversely affect," and have been used as the basis for establishing mitigation commitments and action plans for potential impacts to T&E species and critical habitat as identified in the DARHT MAP. These mitigation measures, through implementation of the DARHT MAP, have established some of the guidelines under which the facility was constructed and operates to address the potential impacts.

Long-term archaeological investigations at Nake'muu have resulted in completion of the major monitoring mitigation requirements (LANL 2006a; LA-CP-06-0926). The Pueblo of San Ildefonso has been notified of the proposed completion of this requirement. However, the DARHT MAP commits to continue annual Tribal tours of Nake'muu. As DARHT experiments have transitioned to full containment, the annual surveillance sampling schedule will be reduced to include, at a minimum, soils and one additional medium (e.g., vegetation, small mammals, bees, or birds).

Mitigation Action Commitments

- Conduct annual Tribal tours of Nake'muu and maintenance visits.
- Reduce annual surveillance sampling schedule to include, at a minimum, soils and one additional medium.
- Emissions data from contained experiments and comparisons with results from the previous operations, starting in 2001, will be included in the 2009 SWEIS MAPAR to be published in FY2010.

3.3.2 Mitigation Action Plan for the Proposed Los Alamos National Laboratory Trails Management Program

Objective

Continue to implement the Trails Management Program and integrate future mitigation actions with the SWEIS MAPAR to decrease risks associated with trails use on DOE/LANL lands.

Context

Trails use at LANL has been considered one of the benefits of working and living in Los Alamos. However, there was never an explicit DOE or LANL policy or mechanism to balance recreational trails use with environmental, cultural, safety, security, and operational concerns. In 2003, DOE directed LANL to look at establishing such a program. DOE/NNSA published the *Final Environmental Assessment for the Proposed Los Alamos National Laboratory Trails Management Program* and FONSI (DOE 2003a; DOE/EA-1431) on September 2, 2003. The NNSA issued a MAP for this EA on the same date.

The public offered more than 125 comments on the draft EA and representatives from San Ildefonso and Santa Clara Pueblos participated, explaining their concerns and perspectives. The National Park Service and Los Alamos County cooperated as well.

Background
Implementation of the MAP for the LANL Trails Management Program is through individual projects, including measures for planning, repair, and construction of trails, environmental protection, safety, security, and post-project assessments. A standing Trails Assessment Working Group (TAWG) made up of LANL and other agency stakeholders was formed to carry out this program. The TAWG has met regularly since December 2003.

Mitigation Action Commitments
- Complete eligibility evaluations for historic trails under the National Historic Preservation Act and identify additional environmental issues on trails use.
- Evaluate and manage trails to determine appropriate closures and/or restrictions.
- Prepare management plans for trails in LANL TA-70 and TA-71.
- Support the use of volunteers for selected trails maintenance projects at LANL.

3.3.3 Special Environmental Analysis MAP

Objective
Continue to implement ongoing requirements of the Special Environmental Analysis (SEA) MAP (DOE/SEA-03).

Context
The SEA MAP identifies specific mitigation measures to reduce the environmental impacts of Cerro Grande Fire emergency fire suppression, soil erosion, and flood control actions. Annual monitoring has provided evidence that pre-Cerro Grande Fire hydrologic conditions have returned (see Section 3.5.2). However, certain activities identified in the SEA MAP continue.

Background
The DOE/NNSA prepared and issued the SEA in September 2000 (DOE 2000; DOE/SEA-03). The SEA describes and analyzes DOE and LANL actions taken in response to the Cerro Grande Fire. The SEA was prepared pursuant to the Council on Environmental Quality regulations implementing NEPA under emergency circumstances and DOE'S NEPA regulatory requirements by providing an analysis of the Cerro Grande Fire actions taken by NNSA and LANL from May through November 2000. The SEA identified various mitigation measures that must be implemented under the SEA MAP as an extension of the fire suppression, erosion, and flood control actions. Implementation of specific mitigation measures was assigned to LANL on December 18, 2000. Monitoring results of the mitigation effectiveness and the environmental effects of the emergency actions have been available to the public through an annual mitigation tracking report issued by DOE with support from LANL.

Mitigation Action Commitments

- Monitor biota and sediment contamination behind the Los Alamos Canyon Weir and the Pajarito Canyon Flood Retention Structure (FRS) and report results in the ESR (see Section 3.3.4 for additional information on the FRS).
- Periodically remove sediment from the Los Alamos Canyon Weir based on sedimentation rate and contamination accumulation rate.
- Complete rehabilitation of cultural resources impacted by the Cerro Grande Fire.

3.3.4 Flood and Sediment Retention Structure

Objective

Annually monitor the TA-18 FRS for safe operation until removal as discussed in the 2002 *Proposed Future Disposition of Certain Cerro Grande Fire Flood and Sediment Retention Structures at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE 2002b; DOE/EA-1408) and to comply with previous NEPA commitments as per the 2008 SWEIS ROD.

Context

In 2001, NNSA constructed the FRS in the wake of the Cerro Grande Fire as part of its emergency response actions. Compliance with the 2008 SWEIS ROD requires the eventual removal of the FRS in Pajarito Canyon as discussed in the EA. This structure was constructed to control flooding resulting from increased water flow due to post-Cerro Grande Fire hydrologic conditions.

Background

The FRS was built to address the changes in local watershed conditions that resulted from the Cerro Grande Fire. The long-term disposition of this structure was not considered a part of the decision to undertake the construction action. The EA provides NNSA with guidance for removal of this structure and other flood control structures, once they were no longer needed to protect LANL facilities and the businesses and homes located downstream. According to the EA, the Pajarito Canyon FRS will be maintained in a safe and fully functioning condition until NNSA determines that upstream hydrologic conditions have returned to pre-fire flow regimes or the local ecosystem has recovered sufficiently to approximate pre-fire conditions. Once these conditions have been met, the FRS should be removed.

Stream flow conditions in Pajarito Canyon have substantially improved since the Cerro Grande Fire. Immediately after the fire, peak flows of greater than 1,000 cubic feet per second were recorded below the burned area. In the years since, there has been an overall decline in runoff peak flow. Peak flows of 100 cubic feet per second or less are now typical. Peak flows of this magnitude are typical for other drainages across the Pajarito Plateau (for example Los Alamos Canyon).

In addition to the decline in peak flows, there has been a decline in the total volume of runoff yielded by the burned areas following thunderstorms. Total runoff yields from the major LANL canyons that drain burned areas recovered to pre-fire levels by 2002 (Gallaher and Koch 2005; LA-LP-05-008). Additional evidence of ecosystem recovery in the Pajarito Canyon watershed is provided by Clark and Kuyumjian (2006) who indicate that the watershed has recovered to

approximate pre-Cerro Grande Fire conditions. Overall, the risk from flash flooding due to fire conditions has been substantially lowered since 2000.

Mitigation Action Commitments

- Annually monitor the FRS for structural integrity and safe operations until removed.
- Remove portions of the FRS in accordance with DOE/EA-1408.
- Recycle demolition spoils from FRS DD&D as appropriate.
- Consider leaving an aboveground portion of the FRS equivalent to the dimensions of a low-head weir to retain potentially contaminated sediments on Laboratory land.
- Remove aboveground portions of the steel diversion wall below the FRS.
- Recontour and reseed disturbed areas to protect surface water quality in Pajarito Canyon after the FRS is removed.

3.4 Project-Specific Mitigation Measures Analyzed in the SWEIS

3.4.1 Eliminate Effluent Discharge at Radioactive Liquid Waste Treatment Facility (RLWTF)

Objective

Address biological resource compliance requirements associated with eliminating effluent discharges from LANL's National Pollutant Discharge Elimination System (NPDES)-permitted RLWTF outfall.

Context

LANL has an overall goal of eliminating effluent discharges from its NPDES-permitted outfall at RLWTF as part of the institutional zero liquid discharge objective in the LANL EMS. The current and anticipated regulatory requirements for water quality standards drive this action. There are many positive benefits to be realized from eliminating discharges. However, in a semi-arid environment like Los Alamos, the elimination of effluent discharges may negatively impact wetlands, riparian habitats, the occurrence of protected or sensitive species, and prey abundance for T&E species. Wetlands and T&E species are protected under the ESA and Federal regulation 10 CFR 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements."

Background

LANL's industrial effluent outfalls are regulated by the State of New Mexico under the Clean Water Act (33. U.S. Code [U.S.C.] § 1251 et seq.) and are NPDES-permitted. Since 1990, LANL has observed a trend of increasingly stringent water quality standards for effluent discharges in New Mexico as reflected in changing Conditions of State Certification of LANL's NPDES Permit and various proposed NMED and Indian Tribe water quality standards (McInnis and Rae 1994; LA-UR-94-705). LANL's long-term strategy for meeting current and future effluent discharge water quality requirements is to reduce those discharges to zero. To meet this goal, LANL is currently eliminating non-essential outfalls, consolidating essential outfalls, employing evaporation tanks, and pursuing reuse strategies.

The 2008 SWEIS considers the impacts of one major discharge elimination project at the RLWTF. Elimination of effluent was evaluated for impacts to T&E species in Biological Assessment (BA) for the 2008 SWEIS, *Biological Assessment of the Continued Operation of Los Alamos National Laboratory on Federally Listed Threatened and Endangered Species* (LANL 2006c; LA-UR-06-0679). The outcome of the consultation with the USFWS on the closure of two outfalls in Mortandad Canyon was that the closures were not likely to adversely affect T&E species. However, reasonable and prudent mitigation measures were specified in the document.

Mitigation Action Commitment

- All further actions affecting water flow volumes in the Sandia-Mortandad Canyon Area of Environmental Interest should be assessed for positive and negative impacts.

3.4.2 Expanded Operations of the Off-Site Sealed Source Recovery Project

Objective

Ensure adequate controls on the quantities and storage of recovered sealed sources.

Context

The existence of excess and unwanted sealed sources within the U.S. was identified by the Nuclear Regulatory Commission as a threat to national security. Removal of these excess sources requires transportation to safe, secure storage and disposal facilities. Sources are packaged and transported in accordance with U.S. Department of Transportation Regulation (49 CFR 173).

Background

The Low-Level Radioactive Waste Policy Amendments Act (Public Law 99-240) of 1985 assigned the DOE the responsibility for management of greater than Class C waste. DOE's response to Congress stated that management of greater than Class C wastes was not feasible due to the lack of disposal facilities in the U.S. As a solution, a management approach that included the DOE committed to collection and storage of greater than Class C waste pending development of disposal facilities. In 1999, the DOE waste management section and DOE's Albuquerque office consolidated three existing projects related to source recovery and management into the Off-Site Sealed Source Recovery Project (OSRP) and designated LANL as the DOE facility to operate the project.

The initial mission of the OSRP was collection and storage of actinide-bearing sealed sources and utilization of disposal capabilities where they existed. Following the events on September 11, 2001, the OSRP was moved from DOE to NNSA as a part of their Office of Nuclear Non-Proliferation and expanded to include additional nuclides and sealed sources considered to be a risk to national security regardless of their designation as greater than Class C.

Mitigation Action Commitment

- Institute controls on the quantities and methods of storing sealed sources containing cobalt-60, iridium-192, or cesium-137 to mitigate the effects of potential accidents.

3.5 Institutional Resource Management Responsibilities

3.5.1 Air Emissions

Objective
Control air emissions that result from operations, construction, demolition, and remediation activities at LANL.

Context
LANL is required by multiple Federal laws, DOE Orders (e.g., 430.2B, Departmental Energy, Renewable Energy, and Transportation Management), and regulations to monitor and mitigate the release of radiological and nonradiological air emissions. LANL operations can result in the release of nonradiological air pollutants that can affect the air quality of the surrounding area. According to the Clean Air Act Title V (42 U.S.C § 7661 et seq.) site-wide permit, LANL is required to meet the Environmental Protection Agency's National Ambient Air Quality Standards.

In addition, LANL will ensure institutional compliance with requirements of 40 CFR 61, Subpart H: "National Emission Standards for Hazardous Air Pollutants - Radionuclides." LANL is required to measure, analyze, and report on radioactive air emissions from Laboratory facilities according to methods in this regulation.

Background
Emissions of criteria and hazardous air pollutants from activities at LANL are subject to the limitations in the Clean Air Act Title V site-wide operating permit. In addition to these limits there are limits on visible emissions.

All applicable air quality regulations will be implemented for Laboratory activities and the Clean Air Act Title V permit. This includes estimating air emissions, identifying applicable regulations, performing and documenting ambient air assessments, preparing and submitting permit applications, supporting public participation, and responding to public comment. LANL will assess all Laboratory sources and permit conditions to support the annual Title V permit certification; all new permitted sources require a series of notifications to the NMED with an initial source test to verify that emissions limits are met.

Annual Title V Permit Certification requires adherence to all air quality requirements to ensure that appropriate controls, permits, and operational procedures are in place and modifications and new construction are reviewed for air quality regulation applicability prior to initiation of work. There are projects and/or programs identified in the 2008 SWEIS that may contribute to radiological and nonradiological air emissions. These include remediation of MDAs and other PRSs associated with the Consent Order, construction activities, and LANSCE radiological emissions.

Mitigation Action Commitments

- Continue air monitoring program to comply with the Clean Air Act, including monitoring radiological air emissions. Monitor and track LANSCE emissions to maintain the annual dose to the public under the administrative limit.
- Use existing Project Requirements Identification (PR-ID) program and other tools to assess potential air quality impacts from new or modified projects and provide best management practices (BMPs) to control emissions (e.g., maintaining construction equipment and routine watering or eco-friendly chemical stabilization to control fugitive dust).
- Removal of contamination from MDAs and other PRSs would be conducted in a manner that protects the environment, the public, and worker health and safety.
- Removal of waste from some large MDAs may require the use of temporary containment structures to limit possible releases of contaminated material to the environment to levels within applicable standards and ALARA.

3.5.2 Wildland Fire Management

Objective

Comply with the 1999 SWEIS ROD to reduce the risk of a wildfire that may adversely impact the public, workers, facilities, operations, and the environment.

Context

The DOE Wildfire Management Policy (DOE 2003b) states that DOE sites are required to have wildland fire management plans (WFMPs) in place that are consistent with the *2001 Federal Wildland Fire Management Policy and Implementing Actions* (DOE Order 450.1). In addition, "this directive will require contractors to implement a program, as appropriate, to protect site resources from wildland and operational fires as part of their Integrated Safety Management System." The guidance document for the policy (DOE Guide 450-1.4) was developed to assist programs in meeting requirements in DOE Order 450.1.

Background

The 1999 LANL SWEIS included an accident scenario from a wildfire that started on land adjacent to LANL and subsequently spread to the site. It concluded that a major fire was not only credible but also likely and could result in significant impact to the region. In response to this analysis and a pattern of regional wildfires, LANL undertook wildfire mitigation actions, which served to protect critical facilities, such as the waste storage domes at TA-54, during the Cerro Grande Fire that occurred in May 2000. After that event, LANL received emergency funding through the Cerro Grande Rehabilitation Project to mitigate any remaining wildfire hazards. Approximately 7,000 acres of forest and woodland areas were treated. However, hazard areas identified as high priority for treatment remain undone and minimal forest fuels mitigation work has been completed. A comprehensive program is needed to maintain an acceptable level of risk.

In March 2007, the DOE Office of Inspector General completed a final report on "The Department's Wildland Fire Planning and Preparation Efforts." The report states that, "Despite specific experience with the serious consequences associated with wildland fires, Los Alamos

had not completed all necessary preparedness and fire mitigation activities. A number of mitigation activities had been planned, but not completed."

To fulfill the requirements of DOE Order 450.1, and address the findings of the Office of Inspector General audit, a WFMP was developed in November 2007 and has been implemented. The WFMP is a detailed course of action to carry out wildland fire management site policies and help achieve fire protection objectives.

Mitigation Action Commitments

- Implement WFMP with adequately funded ongoing program.
- Continue to further reduce wildfire risks by shipping legacy transuranic waste, currently stored in the TA-54 domes, to WIPP.

3.5.3 Environmental Justice

Objective

Engage in effective communication to provide fair and equitable treatment concerning environmental issues related to LANL operations with surrounding minority and low-income communities.

Context

Many of the public comments from surrounding communities (including nearby Pueblos) expressed concerns about the impact of LANL operations. Some who commented took exception to statements in the 2008 SWEIS that low-income and minority populations are not disproportionately impacted by LANL operations. NNSA is committed to implementing the requirements of the Executive Order on Federal Actions to Address Environmental Justice and has instituted a number of activities to ensure consideration of and participation by members of minority and low-income populations surrounding LANL and its other facilities.

Background

Some public comments, published in Volume 3 of the 2008 SWEIS, expressed concerns about the adequacy of the environmental justice analysis; some stated that the analysis did not meet the requirements of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This Order requires Federal agencies to identify and address disproportionately high and adverse human health or environmental impacts of Federal programs, policies, and activities on minority and low-income populations. The Order also requires agencies to ensure greater public participation in their decision-making practices.

NNSA has met the objectives of Executive Order 12898 to investigate environmental justice impacts that would be potentially high and adverse and would disproportionately affect one group over another. In response to the public comments on the Draft 2008 SWEIS, NNSA added additional discussion to address the potential for environmental justice cumulative impacts. NNSA looked at potential exposure through special pathways as part of the human health impacts analysis in the SWEIS. Even considering these special pathways, NNSA did not find disproportionately high and adverse health impacts to minority or low-income populations.

Mitigation Action Commitments

- Continue consultations and both formal and informal public meetings.
- Improve upon and implement effective communications strategies to provide fair and equitable sharing of information about LANL operations to surrounding minority and low-income communities.

3.5.4 Reasonable and Prudent Measures from the Site-wide Biological Assessment

Objective

Implement DOE/NNSA commitments for reasonable and prudent measures to mitigate the impact of the continued operation of LANL on T&E species.

Context

During 2005, LANL prepared for DOE/NNSA the 2008 SWEIS *Biological Assessment of the Continued Operation of Los Alamos National Laboratory on Federally Listed Threatened and Endangered Species*. This BA included all projects in this SWEIS and the impacts of site-wide initiatives such as zero liquid discharge and ecological risks from contaminants. All projects evaluated received concurrence from USFWS that they may affect, but were not likely to adversely affect, threatened or endangered species contingent on LANL reasonable and prudent measures identified in the BA to mitigate the impacts of projects. The USFWS deferred an opinion on the proposed transportation bridges over Mortandad and Sandia canyons until further information is available.

Background

Under provisions of Section 7(a)(2) of the ESA, a Federal agency that permits, licenses, funds, or otherwise authorizes activities must consult with the USFWS, as appropriate, to ensure that its actions will not jeopardize the continued existence of any listed species. Reasonable and prudent measures are actions necessary to minimize the impacts of incidental take that is anticipated to result from implementing a project that the USFWS regarded as not likely to jeopardize the species or adversely modify designated critical habitat.

The DOE/NNSA LASO had LANL, as the Management and Operations Contractor, prepare a BA describing the impacts of the proposed operations on federally listed species and propose project-specific reasonable and prudent measures to prevent adverse impacts to those species for the continued operation of LANL. After review and approval of the document, LASO used the BA as their basis for a consultation with the USFWS. The reasonable and prudent measures are similar to those contained in the HMP with the exception that for projects analyzed in the BA, once the project has begun, it will be allowed to finish without delays resulting from threatened or endangered species management issues.

Mitigation Action Commitments

- Develop and implement a wetlands/floodplains management plan to address protection of wetlands, riparian areas, and springs.
- Evaluate watershed-specific ecological risk assessments for T&E species and update outdated site-wide modeling for species.

- Consider span bridges instead of land bridges in areas that cross canyons in T&E species habitats to reduce environmental impacts (land bridge proposals will require USFWS consultation under the ESA).
- Implement all reasonable and prudent measures in the BA through the institutional project review process and implementation of the T&E species HMP.

3.5.5 Managing Biological and Cultural Resources, Implementation of Management Plans

Objective

Comply with the 1999 and 2008 SWEIS RODs to establish and implement proactive and cost-effective ways to meet biological and cultural resource management goals.

Context

Federal laws associated with biological and cultural resources protection include the ESA, the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, the National Historic Preservation Act, and the Native American Graves Protection and Repatriation Act. There are also state laws, Executive Orders, DOE Orders, and institutional policies for biological and cultural resource protection. Some resource management actions, that do not have Federal legal drivers, constitute BMPs for mitigating risks. NEPA, while not mandating any specific standard of protection, requires consideration of biological, natural, and cultural resources in an institution's decision-making process. Lack of such consideration can be grounds for legal action against the institution.

Background

As a very large, mission-driven, spatially and organizationally dispersed institution, LANL sometimes has difficulty in identifying and meeting biological and cultural resource compliance requirements and in setting and implementing resource management goals. This results in lost opportunities for cost-effective compliance and resource management and compliance violations.

Compliance with laws and regulations relating to biological and cultural resources is most expensive when it is done on a project-by-project basis or late in project planning or implementation. Requirements identified late in a project may result in work stoppages, change orders, and other inefficient uses of time and money, as well as suboptimal protection of resources. Proactive resource compliance requires senior management direction to prioritize biological and cultural resource protection strategies. These strategies will be included in project planning and integrated into institutional data systems used to conduct site planning. Full adoption and implementation of the BRMP and CRMP will help make the necessary information and resources available to meet compliance requirements and demonstrate BMPs by using timely and cost-efficient strategies early in planning and project implementation. In addition, effective resource management demonstrates LANL's commitment to being a good environmental citizen.

Mitigation Action Commitments

- Implement CRMP including submittal of landmark and historic district designations, endangered sites rehabilitation, and Historic Building Preservation commitments.
- Implement BRMP.

3.5.6 Energy and Fuels Conservation and Stability

3.5.6.1 Electrical

Objective

Provide energy stability and redundancy and reduce electrical power consumption in accordance with Executive Orders and DOE Orders 450.1A and 430.2B, and the EMS institutional objective for energy and fuels conservation.

Context

The 2008 SWEIS projects an increase in utility demands in Los Alamos for electricity through 2013. Peak load demands are expected to range from 56 percent to 97 percent of capacity. The major contributors to the projected increase in demand are the Los Alamos County users. However, an increase in electric demand at LANL is predicted primarily due to the increase in level of operations at the Metropolis Center. The increased operations at the Metropolis Center will require an additional 131,400 megawatt-hours of electricity annually.

Background

Electrical power for LANL is supplied through a partnership with Los Alamos County, known as the Los Alamos Power Pool, established in 1985. This 10-year contract between NNSA and Los Alamos County described how each of the entity's electric resources would be consolidated or pooled. Changes to the original agreements with the Public Service Company of New Mexico (PNM) resulted in the removal of contractual restraints on Power Pool import resources. Import capacity is limited by the physical capability of the transmission power lines. In 1998, LANL completed the conceptual design for the Electrical Infrastructure and Safety Upgrade project. The upgrade project is expected to be complete by 2013. On-site electric generating capability for the Power Pool is limited to the existing TA-03 Co-generation Complex. This complex is only capable of producing up to 20 megawatts of electric power, shared in the Power Pool under the contractual agreement. In 2002, the *Environmental Assessment for Installation and Operation of Combustion Turbine Generators at Los Alamos National Laboratory* (DOE 2002a; DOE/EA-1430) analyzed the effects of increasing the TA-03 Co-Generation Complex capability by an additional 20 megawatts for a total of 40 megawatts. DOE issued a FONSI in December of 2002.

In an effort to bring additional power to the Los Alamos region, LANL completed construction of the Western Technical Area (WTA) substation. The new substation provides LANL and the town of Los Alamos with redundant electrical power in case of a loss at the Eastern Technical Area substation or the TA-03 substation. In February 2006, the Southern Technical Area (STA) substation near White Rock was completed. A new 115-kilovolt transmission line segment from the WTA substation to the STA substation was constructed as well. In 2007, LANL initiated an electrical conservation program, purchasing 12,000 megawatt-hours of wind energy. This renewable energy resource accounts for approximately three percent of LANL's energy use. The 1999 SWEIS ROD projected annual electrical energy use to be 782,000 megawatt-hours. Since the issuance of the 1999 SWEIS ROD, LANL's electrical energy use has remained well below projected levels. In 2006, LANL's total electrical energy use was approximately 454,000 megawatt-hours.

Mitigation Action Commitments

- Upgrade electrical infrastructure in buildings to reduce electrical usage.
- Install one gas-fired combustion turbine generator and upgrade existing steam turbines.
- Meter major energy user facilities with high-end "Square-D" meters (as required), and sub-meter all other facilities to quantify and evaluate electrical consumption.
- Construct the power line from the Norton substation to the STA substation.
- Construct Pajarito Corridor Electric Substation at TA-50 to serve all new projects along the Pajarito Corridor, including TA-55, Chemistry and Metallurgy Research Building Replacement (CMRR), Nuclear Materials Safeguards and Security Upgrades Project, and RLWTF.
- Implement Energy Savings Performance Contract third-party financed retrofit projects to improve building efficiencies Lab-wide with individual satellite boilers to supply steam to TA-3 buildings, including the Health Research Laboratory at TA-43.
- Purchase additional renewable wind energy.
- Purchase and/or lease "Energy Star" electronics.
- Improve new building efficiencies by integrating Leadership in Energy and Environmental Design/Sustainable Design procedures in line-item projects.

3.5.6.2 Natural Gas

Objective

Reduce natural gas consumption to conserve energy and reduce costs (DOE Order 430.2B, Institutional EMS Objective and Target).

Context

The September 2008 LANL SWEIS ROD projects increased utility demands in Los Alamos for natural gas through 2013. The major contributor to the increase in demand is the Los Alamos County users. Natural gas requirements are expected to increase up to 29 percent of capacity, which is 8.07 decatherms (229 million cubic meters) per year. Many of these actions will be included in Annual Utilities EMS Action Plans.

Background

After the issuance of the 1999 SWEIS, DOE sold 130 miles of the natural gas pipeline and metering stations to PNM. The 1999 SWEIS ROD identified the need to upgrade and modify the current gas transmission system, so in 2005 a new gas pipeline was constructed in Los Alamos Canyon. The new pipeline provided Los Alamos County and LANL with redundant reliability of natural gas supplies. DOE issued an easement to PNM to allow the construction, operation, and maintenance of the approximately 15,000-foot (4500-meter) segment of gas pipeline in Los Alamos Canyon.

The 1999 SWEIS projected LANL to require 1.84 million decatherms (52.1 million cubic meters) of natural gas per year. Approximately 98 percent of the gas used by LANL was used for heating, with the TA-03 Co-Generation Complex being the biggest user. The remainder was used for electrical production. Annual natural gas usage at LANL has remained below the level projected in the 1999 SWEIS. Demand for natural gas has not exceeded the contractually limited

capacity of 8.07 million decatherms per year. In fact, since 1999, LANL's natural gas consumption has decreased, attributable to warmer winters and replacement of older facilities with more energy efficient ones. In 2006, total natural gas consumption for LANL was approximately 1.03 million decatherms. To continue the downward trend in natural gas consumption, it is important to identify which facilities are the biggest users and seek energy efficient options to reduce consumption. Since many facilities are not metered for natural gas, identifying conservation opportunities is difficult. Metering is a critical first step towards energy conservation.

Mitigation Action Commitments

- Meter major energy user facilities with high-end "Square-D" meters (as required), and sub-meter all other facilities to quantify and evaluate natural gas consumption to enable future conservation efforts.
- Install more efficient gas-fired combustion turbine generators and upgrade existing steam turbines to conserve power and energy.

3.5.6.3 Water

Objective

Increase the use of recycled water to conserve resources and reduce costs (DOE 430.2B, Institutional EMS Objective and Target).

Context

The September 2008 LANL SWEIS ROD predicts increased utility demands in Los Alamos for water through 2013. Water requirements are expected to increase between 89 percent and 101 percent of capacity, or 759 million gallons (2.87 billion liters) per year. DOE Order 430.2B requires sites to reduce potable water use by no less than 16 percent, relative to the Department's potable water use in FY 2007 by 2015. Under the ROD, operations at LANL, combined with projected growth in the rest of Los Alamos County, could result in water consumption that approaches the county-managed rights to withdraw water from the regional aquifer. The Metropolis Center alone could require up to 51 million gallons (193 million liters) of water annually.

Background

On September 8, 1998, DOE leased its groundwater rights (5,541 acre-feet per year or 1.8 billion gallons) to Los Alamos County. This also included DOE's contractual annual right obtained in 1976 to 1,200 acre-feet per year of San Juan-Chama Transmountain Diversion Project water. In September 2001, DOE turned over the water production system and transferred 70 percent of the water rights to Los Alamos County. The Preferred Alternative in the 1999 SWEIS projected LANL's water use to be 759 million gallons per year. In 2006, LANL's water consumption was approximately 342 million gallons. Approximately 60 percent of LANL's water use has been used for cooling tower operation, which results in evaporative losses. The *Environmental Assessment for the Proposed Strategic Computing Complex, Los Alamos, New Mexico* (DOE 1998) analyzed the environmental impacts of water used in the cooling process for the computer complex. DOE issued a FONSI with the stipulation that the Nicholas C. Metropolis Center

(formerly known as the Strategic Computing Complex) must use treated sanitary wastewater from the TA-46 Sanitary Wastewater Systems Consolidation Plant.

In 2005, a new facility, the SERF, was brought on line to treat effluent from LANL's sanitary wastewater system. Due to the high amount of naturally occurring silica in northern New Mexico, wastewater from the sanitary treatment facility requires additional processing to be acceptable for further use. Once the silica is removed and filtered off as sludge, the reclaimed water is then ready to be used as cooling tower makeup water. The treated water is blended with sanitary effluent in a 2 to 1 ratio and sent to the Metropolis Center's cooling towers. After being used through four cycles, the water is discharged through a permitted outfall into Sandia Canyon. This reuse of water is projected to save approximately 21 million gallons of water per year. The SERF is expected to expand and, when fully expanded, it will recycle nearly 100 percent of the effluent from the sanitary wastewater system for use as cooling water makeup for the Power Plant, the cooling towers at the Data Communication Center, and the Metropolis Center. This is expected to result in an approximate 30 percent reduction of LANL's total water consumption and a reduction in water discharged from the site. Ultimately, LANL projects that it will recycle 60 percent of its water.

Mitigation Action Commitment

- Expand the SERF and take advantage of additional opportunities to increase the amount of recycled water usage and reduce water consumption at LANL.
- Promote and reward water conservation projects and plans that contribute to compliance with DOE Order 430.2B using the annual Pollution Prevention awards.

3.5.6.4 Pollution Prevention

Objective

Minimize impacts of operations on the environment through hazardous and radioactive waste reduction and minimization (Institutional EMS Objective and Target).

Context

LANL has established institutional hazardous and radioactive waste reduction goals as part of the EMS and in compliance with DOE Order 450.1. In addition, hazardous and mixed waste minimization is required as part of Module VIII, Section B.1, of LANL's Hazardous Waste Facility Permit (NM0890010515-1).

Background

LANL has established an institutional goal for reduction of hazardous, radioactive, and mixed waste. Pollution prevention assessments and reduction projects have been conducted at LANL since 1993 with significant reductions in hazardous, radioactive, and mixed waste. As part of EMS activities, a more systematic approach is being used to continually improve waste reduction efforts for these waste streams.

Mitigation Action Commitments

- Annually report waste reduction performance against EMS waste reduction goals.
- Continue to integrate waste reduction activities into LANL's EMS.

3.5.7 Reuse of Clean Fill Materials from Excavations and DD&D

Objective
Minimize the resource impacts from excavations required as a result of project construction and DD&D activities.

Context
Compliance with the NMED Consent Order as implemented in the September 2008 SWEIS ROD would significantly impact LANL requirements for clean fill. For example, proposed closures of MDAs would require construction of evapotranspiration covers. The capping of these MDAs at TA-54 and contaminated areas in TA-49 necessitates between 750,000 and 2,000,000 cubic yards (570,000 to 1,500,000 cubic meters) of crushed tuff through 2016 (depending on the required thickness of the covers). Up to 460,000 cubic yards (350,000 cubic meters) of additional rock, gravel, topsoil, and other bulk materials would be required for final surface and erosion controls. Excavation entails air quality, traffic, and visual resource impacts. There could be about 60 truckloads of fill a day coming from the TA-61 borrow pit over a 10-year period.

Background
For economic and feasibility reasons, clean fill would need to be produced from borrow pits and quarries in the LANL area. The only borrow pit now in use at LANL is the East Jemez Road Borrow Pit in TA-61. There would be sufficient tuff available for quarrying at the pit to provide the needed volumes of crushed tuff. Current plans call for excavating about 150 feet down and 300 feet out from the Sandia Canyon floor while leaving the forested hill facing East Jemez Road. Other sources available in the area would be required to provide materials such as soil and coarse material that could be collected from facility construction or DD&D where excess uncontaminated excavated soils may meet backfill or capping criteria. Major projects at LANL, including the CMRR project have generated substantial amounts of clean fill from excavations that is being stockpiled on land suitable for future development. Eventual deconstruction of the FRS located in Pajarito Canyon above TA-18 could be another source of material for projects along the Pajarito Corridor. Using excavated fill produced as close as possible to a project reduces hauling costs and decreases emissions from transport vehicles (trucks), enhances traffic safety, minimizes the need for additional quarrying, and preserves the landscape for future projects.

Mitigation Action Commitments
- Use excavation and demolition spoils locally to minimize purchase or new excavations of clean fill when feasible.
- Report annually on reuse of clean fill materials from excavations and DD&D.

3.5.8 Traffic Mitigation

Objective
Mitigate impacts of increased traffic resulting from LANL operations, heightened security, and environmental remediation and consider Laboratory-wide fuel efficiency and alternative fuels to meet requirements in DOE Order 430.2B.

Context

Clean up, remediation, and LANL missions, activities, and projects over the next five years will result in increased truck and construction traffic on the Pajarito Plateau. The 2008 SWEIS considers the environmental impacts of actions associated with remediation decisions that would not be made solely by DOE or NNSA. In the case of the MDAs and other PRSs, remedial actions have been decided in accordance with the Consent Order. Remediation actions will have associated support actions for which NNSA must make decisions. The remediation of MDA B at TA-21 requires construction and operation of various new temporary ancillary structures for such purposes as waste characterization, sorting, treatment, and packaging or overpacking operations; material lay-down and storage areas; and vehicle parking and equipment storage. Remediation activities at TA-21 are predicted to impact traffic patterns in and around downtown Los Alamos through 2013. Increased traffic will also likely increase the amount of fuel use on the Pajarito Plateau. DOE Order 430.2B requires that Federal facilities explore alternative fuels, encourage conservation, and optimize fuel efficiency.

Background

The September 2008 LANL SWEIS ROD projects increased traffic due to DD&D and site closure activities, including approximately 6,800 additional daily trips. This will have several impacts, including a spike in petroleum-based fuel consumption. In addition to this issue, security-driven traffic modifications have and will continue to impact peak traffic flows and congestion in and around Los Alamos. Specific projects identified in the 2008 SWEIS could create increased problems for commuters and Los Alamos County residents in specific areas. Proposed environmental remediation and DD&D activities at TA-21 represent one such project.

TA-21, Land Transfer Tract A-16, is one of the tracts identified in accordance with Public Law 105-119 for conveyance or transfer from DOE administrative control to Los Alamos County. Potential environmental impacts from contemplated reuses of TA-21 were analyzed in the *Final Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the U.S. Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico* (DOE 1999c). Tritium operations located at TA-21 either are slated to be moved to other locations at LANL or offsite to other Complex facilities or will be discontinued. The TA-21 buildings and structures are some of the oldest at LANL and would be difficult to retrofit for most proposed beneficial reuses. TA-21 also includes about 100,000 square feet (9,300 square meters) of highly contaminated space. Additionally, most TA-21 buildings and structures are situated atop or adjacent to PRSs, including buried distribution lines, contaminated soil, and waste disposal areas. The demolition of the buildings and structures is necessary before the PRSs can be adequately investigated and remediated. Investigation and remediation of TA-21 PRSs, if necessary, must be undertaken before the site can be conveyed, transferred, or reused.

Mitigation Action Commitments

- Identify possible solutions (e.g., schedule activity for off-peak hours, reroute truck traffic, construct alternative roads, use multiple shifts, and use alternative entries and exits) to minimize traffic issues for Royal Crest Mobile Home Park and the Los Alamos Town Center related to DD&D, remediation, and site closure projects.

- Encourage alternative transportation, including walking, car-pooling, bicycling, and public transportation.
- Consider plans for an alternative route off DP Mesa.

3.6 Enhancement of Existing Programs

3.6.1 Integrating Environmental and Operational Constraints with Site Planning

Objective
Provide a comprehensive analysis of development opportunities and constraints for site planning to minimize environmental impacts from LANL operations and streamline regulatory compliance.

Context
Many planning decisions at LANL are made on a project-by-project basis. This approach has resulted in decisions that have required additional compliance measures often causing unexpected project delays and additional costs. An integrated analysis for site selection decisions would provide for a comprehensive assessment of development opportunities and constraints such as mission requirements, resource protection, authorization basis, institutional plans, physical security, and utilities capacity.

Background
LANL recently successfully piloted an integrated spatial analysis of land development opportunities and constraints on portions of Laboratory lands to identify properties appropriate for transfer. This integrated spatial analysis should be expanded for the purposes of site planning, resource management, and project site selection. This approach would streamline the project compliance process and support the Environmental Protection Policy (IPP 400.1, Rev. 3). Benefits of an integrated spatial analysis will include an expedited compliance process, thus reducing the probability of significant impacts and associated mitigation measures.

Mitigation Action Commitments
- Enhance the decision support tool to offer an objective and semi-quantitative method for integrating opportunities and constraints for project planning and compliance.
- Use Project Review and Requirements System in concert with the decision support tool and project site selection process to better identify potential site planning constraints early in project development.
- Use the decision support tool to comply with Land Transfer Regulations (10 CFR 770).

3.6.2 Compliance Assurance

Objective
Measure and improve implementation of compliance requirements and BMPs identified for new and modified projects in the PR-ID system, reducing costs and delays.

Context

Compliance assurance for the PR-ID system would entail selecting a 5 percent to 10 percent sample of PR-ID review documents and tracking the implementation of review requirements throughout the life of the construction/demolition project. Where necessary, the assurance process would include providing solutions to compliance requirements that prove difficult to implement. To address continuous improvement in the compliance process, metrics will be developed to track performance of the PR-ID system in reducing environmental impacts and assuring compliance with the myriad state and Federal environmental regulations that are associated with construction and demolition projects.

Background

The new IPP 400.1, Rev. 3, requires all new and modified projects to complete the PR-ID process. PR-ID assures that projects consider compliance issues, requirements, and BMPs in the planning process. The objective of this system is to allow project managers the ability to reduce environmental impacts and their associated compliance requirements. However, no quality assurance system exists to see if the identified requirements are implemented during project execution. Identified requirements include the full spectrum of environmental concerns such as waste generation and disposal, archaeological site protection, sediment control from storm water run-off, air quality, construction noise, and night light impacts on sensitive T&E species. A proactive assurance program would have avoided costly environmental problems, for example, to DARHT, the Biosafety Level-3 facility, and the historic Manhattan Project Gun Site.

Mitigation Action Commitments

- Implement compliance assurance process on a sample of PR-ID projects.
- Develop metrics and track compliance results.
- Formally assign a functional manager for the PR-ID process and support tool and ensure supporting authority and funding for effective use in project development, compliance, and site planning.
- Implement process improvement measures as appropriate.

4.0 COMMITMENTS TO SANTA CLARA PUEBLO

NNSA recognizes that the operation of LANL over the last 65 years has affected the people of neighboring communities in northern New Mexico, including Tribal communities. These effects, which vary in nature across communities, include alterations of lifestyles, community, and individual practices. While the analysis conducted by NNSA found no disproportionately high and adverse impacts to minority or low-income populations, based on comments from the Santa Clara Pueblo, the 2008 SWEIS ROD committed that:

> "…NNSA will undertake implementation of the decisions announced in this ROD in conjunction with a MAP. The MAP will be updated as the need arises to identify actions that would address specific concerns and issues raised by the Santa Clara Pueblo as well as those of other tribal entities in the area of LANL."

The SWEIS ROD also committed that:

> "…with respect to the concerns raised by the Santa Clara Pueblo, the NNSA will continue its efforts to support the Pueblo and other tribal entities in matters of human health, and will participate in various intergovernmental cooperative efforts to protect indigenous practices and locations of concerns. NNSA will conduct government-to-government consultation with the Pueblo and other tribal entities to incorporate these matters into the MAP."

To this end, no later than January 30, 2009, NNSA LASO shall develop jointly with Santa Clara Pueblo a mutually acceptable plan to address specific environmental justice and human health concerns and issues identified by the Santa Clara Pueblo during the SWEIS process. The plan will include specific tasks and timelines, and will identify the necessary NNSA and Pueblo resources to help ensure implementation of the plan.

In consultation with Santa Clara Pueblo, NNSA LASO shall then update the MAP to incorporate these actions.

5.0 REFERENCES

10 CFR 770, Transfer of Real Property at Defense Nuclear Facilities for Economic Development.

10 CFR 835, Regulations Relating to As Low As Reasonably Achievable Radiation Dose.

10 CFR 1021, National Environmental Policy Act Implementing Procedures of the U.S. Department of Energy.

10 CFR 1022, Compliance with Floodplain and Wetland Environmental Review Requirements.

29 CFR 1900 et seq., Occupational Safety and Health Regulations.

40 CFR 61, Subpart H, National Emission Standards for Hazardous Air Pollutants - Radionuclides.

49 CFR 173, Regulations Relating to Department of Transportation.

33 U.S.C. § 1251 et seq., Clean Water Act

42 U.S.C. § 7661 et seq., Clean Air Act Title V

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DOE 2002c: Environmental Assessment for Proposed Access Control and Traffic Modifications at Los Alamos National Laboratory, DOE/EA-1429.

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DOE 2003b: Memo from DOE Secretary to Undersecretary for Energy, Science, and Environment. Subject: *Department of Energy Wildland Fire Management Policy*, 2002-019296, February 24, 2003.

DOE 2008a: Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory, DOE/EIS-0380.

DOE 2008b: Record of Decision: Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory, September 19, 2008; Federal Register Notice FR26SE08N, September 26, 2008.

Executive Order 13148, Greening the Government through Leadership in Environmental Management.

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