CHAPTER 1
INTRODUCTION AND PURPOSE AND NEED FOR AGENCY ACTION

1.0 INTRODUCTION AND PURPOSE AND NEED FOR AGENCY ACTION

This chapter provides an introduction to the Los Alamos National Laboratory's (LANL) ongoing role in supporting the National Nuclear Security Administration's (NNSA) missions and compliance with the National Environmental Policy Act (NEPA), and how NEPA's requirements have been met through the preparation of Site-Wide Environmental Impact Statements (SWEISs). This chapter also includes a statement of the purpose and need for the continued operation of LANL and introduces the alternatives considered reasonable for meeting the purpose and need. A discussion of decisions to be made, descriptions of related NEPA compliance reviews, and a summary of the scope of this SWEIS analysis are also presented.

NNSA[1] proposes to continue managing LANL and its resources in a manner that meets evolving national security missions and that responds to the concerns of affected and interested individuals and agencies. This SWEIS describes the environmental impacts of three alternatives for the continued operation of LANL.[2]

NEPA Compliance

Site-wide NEPA documents are identified by the U.S. Department of Energy (DOE) as those broad-scoped environmental impact statements (EISs) or environmental assessments (EAs) that are programmatic in nature and that identify and assess the individual and cumulative impacts of ongoing and reasonably foreseeable actions at a DOE site. DOE NEPA Implementing Procedures (Title 10 *Code of Federal Regulations* [CFR] 1021.330(c)) require the preparation of SWEISs for certain large multiple-facility DOE sites. These procedures were amended in 1992 to specify that an evaluation of a DOE SWEIS be performed at least every 5 years by means of a Supplement Analysis (SA). Based on the Supplement Analysis, DOE determines whether an existing SWEIS remains adequate, or whether to prepare a new SWEIS or supplement the existing SWEIS, as appropriate. NNSA has prepared this SWEIS in accordance with NEPA, as amended (42 United States Code [U.S.C.] 4321 et seq.), and with Council on Environmental Quality (CEQ) regulations and DOE NEPA Implementing Procedures codified in the *Code of Federal Regulations* at 40 CFR Parts 1500 to 1508 and 10 CFR Part 1021, respectively.

In compliance with its NEPA Implementing Procedures, DOE issued the first SWEIS and Record of Decision (ROD) for the operation of LANL (then known as the Los Alamos Scientific Laboratory, or LASL) in 1979. That EIS was entitled *Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site, Los Alamos, New Mexico* (DOE/EIS-0018). In 1999, DOE issued the *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory, Los Alamos, New Mexico* (*1999 SWEIS*) (DOE/EIS-0238) (DOE 1999a) and its associated ROD. A full copy of the *1999 SWEIS* ROD is provided in

[1] *NNSA is a semiautonomous agency within DOE (see the National Nuclear Security Administration Act [Title 32 of the Defense Authorization Act for fiscal year 2000, Public Law 106-65]).*

[2] *Vertical change bars in the margins indicate the locations of revisions and new information based in part on comments received on the Draft SWEIS.*

Appendix A to this document. In early 2004, NNSA undertook the required 5-year evaluation of the continuing adequacy of the *1999 SWEIS* by initiating the preparation of an SA. In mid-2004, shortly into the process of preparing the SA, NNSA determined that the criteria for preparing at least a Supplemental SWEIS had been met. Criteria identified in DOE NEPA Implementing Procedures (10 CFR 1021.314) state that a Supplemental EIS shall be prepared if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns. The Implementing Procedures do not explicitly define criteria that would trigger the preparation of a new EIS. However, in this circumstance, the general procedural rationale for preparing a new SWEIS would apply.

NNSA discontinued preparation of the SA in late 2004, and initiated preparation of a supplement to the *1999 SWEIS*. In January 2005, DOE announced its intention to prepare a Supplemental SWEIS through a Notice of Intent (NOI) published in the *Federal Register* (FR) (70 FR 807) (see Appendix A of this SWEIS), and held a public scoping meeting (additional information regarding the public involvement process is presented in Section 1.6). Subsequently, NNSA made a determination that the changes in the LANL environment discussed below and the proposed new actions were significant enough to warrant preparation of a new SWEIS.

Since the issuance of the *1999 SWEIS* and its ROD, the LANL environment has been changed by the 2000 Cerro Grande Fire, which burned a part of LANL, the Los Alamos townsite, and the surrounding forested area; a regional drought; and a massive bark beetle evergreen tree infestation. Additional information about the LANL environmental setting has become available as various elements of this setting, in particular the hydrology, have undergone intense investigation over the past decade or longer. LANL security requirements also have evolved in response to changes in recognized threats to facilities and materials at LANL. In addition, since 1999, DOE and NNSA have issued several EISs and EAs for LANL operations and activities. These documents deal with implementing new or changed operations, replacing facilities, conveying or transferring land out of the administrative oversight of DOE (thereby reducing the size of the LANL site), and conducting emergency actions (specifically in response to the 2000 Cerro Grande Fire).

NNSA is considering new actions for initiation at LANL over about the next 5 years that could affect several areas of LANL operations originally analyzed in the *1999 SWEIS*. While consistent with the 1999 DOE decision for operating LANL according to the *1999 SWEIS* Preferred Alternative, these proposed activities represent potentially substantial changes to some operations. They include the refurbishment or replacement of existing infrastructure so that LANL operations can continue into the future.

Jointly, the activities analyzed through NEPA compliance documents completed since 1999, newly proposed activities for LANL, existing and developing changes to the LANL environmental setting, and changes in site security conditions have led NNSA to decide to update the *1999 SWEIS* by preparing a new SWEIS rather than a Supplemental SWEIS. Preparation of a new SWEIS also responds to comments received from the public during the scoping period. This new SWEIS impact analysis tiers from the *1999 SWEIS*, as appropriate, and incorporates information from that document by reference where the information presented in that earlier document remains valid.

One of the primary benefits of updating the environmental analysis is the reevaluation of cumulative impacts associated with LANL operations. When DOE issued the *1999 SWEIS* and its associated ROD, the analyses considered operational impacts to the northern New Mexico environment of actions that would likely occur over the next 10-year period (which was identified as the "foreseeable future" for the purposes of that analysis). This SWEIS considers cumulative impacts associated with activities at LANL on the changed environment in the region. For example, significant effort that was not anticipated in 1999 has been expended since the Cerro Grande Fire to implement forest thinning and watershed protection measures on the Pajarito Plateau.

***1999 SWEIS* Alternatives**

Four alternatives were analyzed in the *1999 SWEIS* to support the Proposed Action of continuing to operate LANL: (1) the No Action Alternative, (2) the Reduced Operations Alternative, (3) the Greener Alternative, and (4) the Expanded Operations Alternative (identified as the Preferred Alternative) which, with certain modifications to weapons-related work regarding the level of nuclear weapons component manufacturing, was selected for implementation.

The *1999 SWEIS* also analyzed Action Alternatives as they could be anticipated at that time. The alternative selected by DOE for implementation at LANL was the Expanded Operations Alternative, with certain modifications to nuclear weapons-related production work regarding the level of nuclear weapons component manufacturing. This modified Expanded Operations Alternative is currently being implemented at LANL.

LANL Support of NNSA Missions

The *1999 SWEIS* assessed impacts to each area of the human and natural environment potentially affected by anticipated operations conducted in support of national security missions, including:

- National security as it relates to the safety and reliability of the nuclear weapons stockpile and its maintenance, the stemming of the international spread of nuclear weapons material and technologies, and the production of propulsion plants for the U.S. Navy;
- Energy resources, including research and development for energy efficiency, renewable energy, fossil energy, and nuclear energy;
- Environmental quality, including treatment, storage, and disposal of DOE wastes, pollution prevention, storage and disposal of civilian radioactive wastes, and development of technologies to reduce risks and reduce cleanup costs; and
- Science, including fundamental research in physics, material science, chemistry, nuclear medicine, basic energy sciences, computational sciences, environmental sciences, and biological sciences.

The President and the Congress created NNSA in early 2000 as a semiautonomous agency within DOE. The legislation that established NNSA assigned it the following mission:

- To enhance U.S. national security through the military application of nuclear energy;
- To maintain and enhance the safety, reliability, and performance of the U.S. nuclear weapons stockpile, including the ability to design, produce, and test in order to meet national security requirements;

- To provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants;
- To promote international nuclear safety and nonproliferation;
- To reduce global danger from weapons of mass destruction; and
- To support U.S. leadership in science and technology (50 U.S.C. Chapter 41, § 2401(b)).

The Congress identified LANL as one of three national security laboratories to be administered by NNSA for DOE. As the NNSA mission is a subset of DOE's original mission assignment, most of the work performed at LANL in support of NNSA has remained unchanged in character from that performed for DOE prior to the creation of NNSA.

In 2002, the Congress created the U.S. Department of Homeland Security (DHS) and assigned it a set of national security missions. At that time, some programs were transferred from DOE and other Federal agencies to DHS. However, no changes to the overall mission assignments of DOE and NNSA occurred. In most cases in which mission support activities were reassigned to DHS, programs have continued to be conducted at the facilities previously supporting them through interagency agreements between the hosting agency and DHS.

During testimony to the House Appropriations Subcommittee on Energy and Water on March 11, 2004, the Secretary of Energy agreed to conduct a comprehensive review of the nuclear weapons complex with consideration of changes in the nuclear weapons stockpile and the current national and international security situation, as well as limitations in available resources, including funding. In January 2005, the Secretary requested the Secretary of Energy Advisory Board to form the Nuclear Weapons Complex Infrastructure Task Force, a task force reporting to the Secretary of Energy Advisory Board. The objective of the Task Force was to assess the implications of Presidential decisions on the size

SWEIS Terminology

Missions. In this SWEIS, "missions" refers to the major responsibilities assigned to DOE and NNSA (described in this section). DOE and NNSA accomplish these major responsibilities by assigning groups or types of activities to DOE's system of security laboratories, production facilities, and other sites.

Programs. DOE and NNSA are organized into Program Offices, each of which has primary responsibilities within the set of DOE and NNSA missions. Funding and direction for activities at DOE facilities are provided through these Program Offices, and similar coordinated sets of activities to meet Program Office responsibilities are often referred to as programs. Programs are usually long-term efforts with broad goals or requirements.

Capabilities. This term refers to the combination of facilities, equipment, infrastructure, and expertise necessary to undertake types or groups of activities and to implement mission assignments. Capabilities at LANL have been established over time, principally through mission assignments and activities directed by Program Offices. Once capabilities are established to support a specific mission assignment or program activity, they are often used to meet other mission or program requirements (for example, the capability for advanced complex computation and modeling that was established to support NNSA's national security mission requirements may also be used to address needs under DOE's science mission).

Projects. This term is used to describe activities with a clear beginning and end that are undertaken to meet a specific goal or need. Projects can vary in scale from very small (such as a project to undertake one experiment or a series of small experiments) to major (such as a project to construct and start up a new nuclear facility). Projects are usually relatively short-term efforts, and they can cross multiple programs and missions, although they are usually "sponsored" by a primary Program Office. In this SWEIS, this term is usually used more narrowly to describe construction activities, including facility modifications (such as a project to build a new office building or to establish and demonstrate a new capability). Construction projects considered reasonably foreseeable at LANL over about the next 5 years are discussed and analyzed in this SWEIS.

and composition of the stockpile; the cost and operational impacts of the new nuclear facility Design Basis Threat; and the personnel, facilities, and budgetary resources required to support a smaller stockpile. This review was to entail evaluation of opportunities for the consolidation of special nuclear material, facilities, and operations across the complex so as to minimize security requirements and the environmental impacts of continuing operations.

On July 13, 2005, a Task Force of the Secretary of Energy Advisory Board issued its report, *Recommendations for the Nuclear Weapons Complex of the Future* (DOE 2005d). This report contains a comprehensive review of the nuclear weapons complex, which includes LANL, and a vision for a modern nuclear weapons complex of the future that would address the needs of the nuclear weapons stockpile. In 2006, NNSA outlined its comprehensive proposal for transforming to a smaller, more efficient nuclear weapons complex by the year 2030 that would be better able and more suited to respond to future national security challenges (NNSA 2006b). The proposal included significant dismantling of retired warheads, consolidating special nuclear materials, eliminating duplicative capabilities, consolidating operations, and implementing more efficient and uniform business practices throughout the complex. In an NOI published in the *Federal Register* on October 19, 2006 (71 FR 61731), NNSA announced its intent to prepare a *Supplement to the Stockpile Stewardship and Management Programmatic Environmental Impact Statement – Complex 2030* (now called the *Complex Transformation Supplemental Programmatic Environmental Impact Statement* [*Complex Transformation SPEIS*]). The NOI outlines alternatives for continued transformation of the nuclear weapons complex to better meet future national security requirements, including a proposal to construct and operate a consolidated plutonium center within the complex. Another proposal, to construct and operate a consolidated nuclear production center, was added as a result of scoping comments. Both of these proposals are analyzed in the Draft *Complex Transformation SPEIS* (DOE 2007b) (additional discussion regarding the *Complex Transformation SPEIS* is provided in Section 1.5 of this SWEIS). On January 31, 2007, NNSA submitted a *Report on the Plan for Transformation of the National Nuclear Security Administration Nuclear Weapons Complex* (NNSA 2007a) to the Congressional Defense Committees. The report provides additional discussion of the Complex Transformation vision and the associated transformation plan, including the consolidated nuclear production center.

The alternatives analyzed in the *Complex Transformation SPEIS* would result in changes to facilities and operations at LANL. In the short term, about the next 5 years, current LANL operations are not expected to change dramatically regardless of the strategy NNSA develops for continuing the transformation of the nuclear weapons complex. However, in recognition of the uncertainties associated with future work assignments to LANL, the "foreseeable future" for the purpose of the Proposed Action in this SWEIS has been changed from the 10 years of LANL operations considered in the *1999 SWEIS* to consideration of proposals regarding LANL operations over about the next 5 years.

As part of the evaluation process for Complex Transformation, NNSA will reconsider whether to construct and operate the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility. Pending completion of the *Complex Transformation SPEIS*, NNSA is deferring a decision on whether to construct the nuclear facility portion of the facility. NNSA is continuing with construction of the radiological laboratory, administrative offices and support function building of the new facility and with the design of the nuclear facility portion.

NNSA and DOE assign work to LANL based on the facilities and expertise of the staff located there, as well as other factors. LANL is a multidisciplinary, multipurpose institution primarily engaged in theoretical and experimental research and development activities with responsibility for some nuclear weapons component manufacturing activities. Detailed information regarding DOE missions and their supporting operations at LANL was included in the *1999 SWEIS*. Facilities and expertise at LANL are used to perform theoretical research (including analysis, mathematical modeling, and high-performance computing), experimental science and engineering, advanced and nuclear materials research and development, and applications (including weapons component fabrication, testing, stockpile assurance, replacement, surveillance, and maintenance). These capabilities allow research and development activities such as high explosives processing, chemical research, nuclear physics research, materials science research, systems analysis and engineering, human genome mapping, biotechnology applications, and remote sensing technologies, as applied to resource exploration and environmental surveillance, to be performed at LANL. The main roles of LANL staff in the fulfillment of NNSA mission objectives include a wide range of scientific and technological capabilities that support nuclear materials handling, processing, and fabrication; stockpile management; materials and manufacturing technologies; nonproliferation programs; and waste management activities.

Specific LANL assignments for the foreseeable future will continue to include production of war reserve products, assessment and certification of the nuclear weapons stockpile, surveillance of war reserve components and weapons systems, ensuring safe and secure storage of strategic materials, and management of excess plutonium inventories. Nuclear weapons pit[3] production work takes place at LANL on a limited scale in accordance with two RODs: the *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (DOE/EIS-0236) ROD (61 FR 68014) and the *1999 SWEIS* ROD (64 FR 50797).

In addition to work performed to support DOE and NNSA missions, work at LANL is also conducted for other Federal agencies such as the Department of Defense and the newly created DHS, as well as for various widely divergent university programs, institutions, and corporate entities such as those involved in the environmental restoration and automotive industries. All work performed by the management and operating contractor at LANL must be compatible with the DOE and NNSA mission support work assigned to LANL and must be work that cannot reasonably be performed by the private sector. The Work-for-Others Program is one such LANL program under which cost-reimbursable work is performed by the staff of the management and operating contractor. Under the terms of the LANL contract, LANL facilities, either in whole or in part, may be used for cost-reimbursable work by the management and operating contractor. About one-fourth (25 percent) of the work performed at LANL, representing about 13 percent of the total annual LANL budget, is currently performed as cost-reimbursable work.

The management and operating contract for LANL was openly competed in 2005 for the first time in the 63-year history of the LANL site. Through 2005, the University of California had been the sole management and operating contractor for the LANL site since its creation in 1943. The new management and operating contractor, Los Alamos National Security, LLC, began

[3] *Pits are the central core of a primary assembly in a nuclear weapon and are typically composed of plutonium-239 or highly enriched uranium, or both, and other materials.*

managing LANL in June 2006. The selection of a new management and operating contractor did not change the DOE and NNSA work performed at LANL.

1.1 Background

LANL is located in northern New Mexico, within the incorporated County of Los Alamos (also referred to as Los Alamos County) (see **Figure 1–1**). The two primary residential areas within the county are the Los Alamos townsite and the White Rock residential area. These two residential areas are home to about 18,400 people. About 13,500 people work at LANL, of which a little less than half reside within the county.

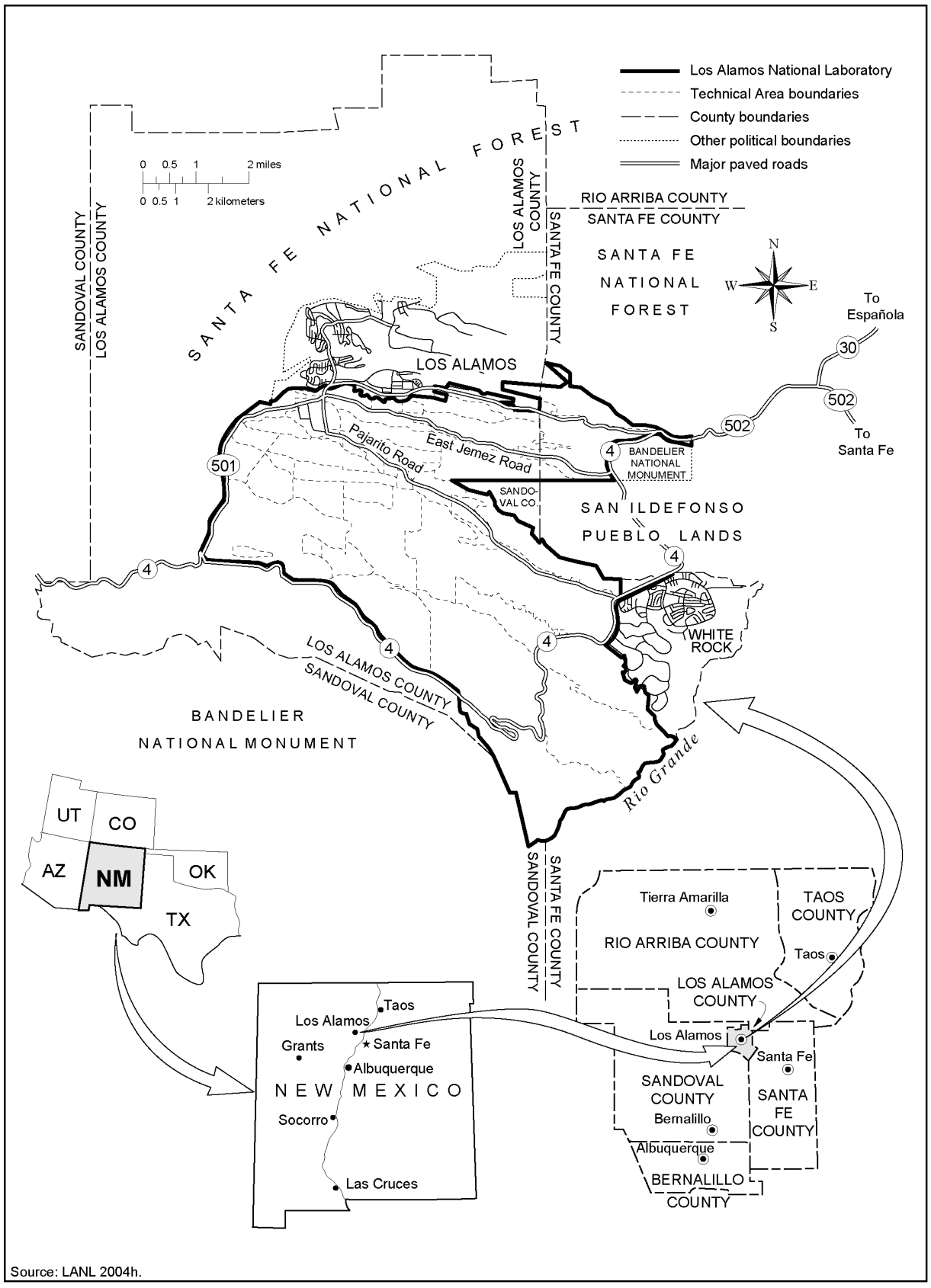
LANL occupies about 40 square miles (25,600 acres [10,360 hectares]) of land on the eastern flank of the Jemez Mountains along the area known as the Pajarito Plateau. The terrain in the LANL area consists of mesa tops and canyon bottoms that trend in a west-to-east manner, with the canyons intersecting the Rio Grande to the east of LANL. Elevations at LANL range from about 7,800 feet (2,380 meters) at the highest elevation on the western side of the site to about 6,200 feet (1,890 meters) at the lowest point along the eastern boundary at the Rio Grande. LANL operations are conducted within numerous facilities located in 48 designated technical areas (TAs) and at other leased properties situated near LANL. The leased properties in the town of Los Alamos are assigned the temporary designation of "TA-0." TA-57 is located about 20 miles (32 kilometers) west of LANL at Fenton Hill on land administered by the U.S. Department of Agriculture, Forest Service. The 47 contiguous TAs (which are not numbered sequentially) have been established so that together they comprise the entirety of the LANL site (see **Figure 1–2**).

Technical Area (TA)

Geographically distinct administrative unit established for the control of LANL operations. There are currently 49 active TAs; 47 in the 40 square miles of the LANL site, one at Fenton Hill, west of the main site, and one comprising leased properties in town.

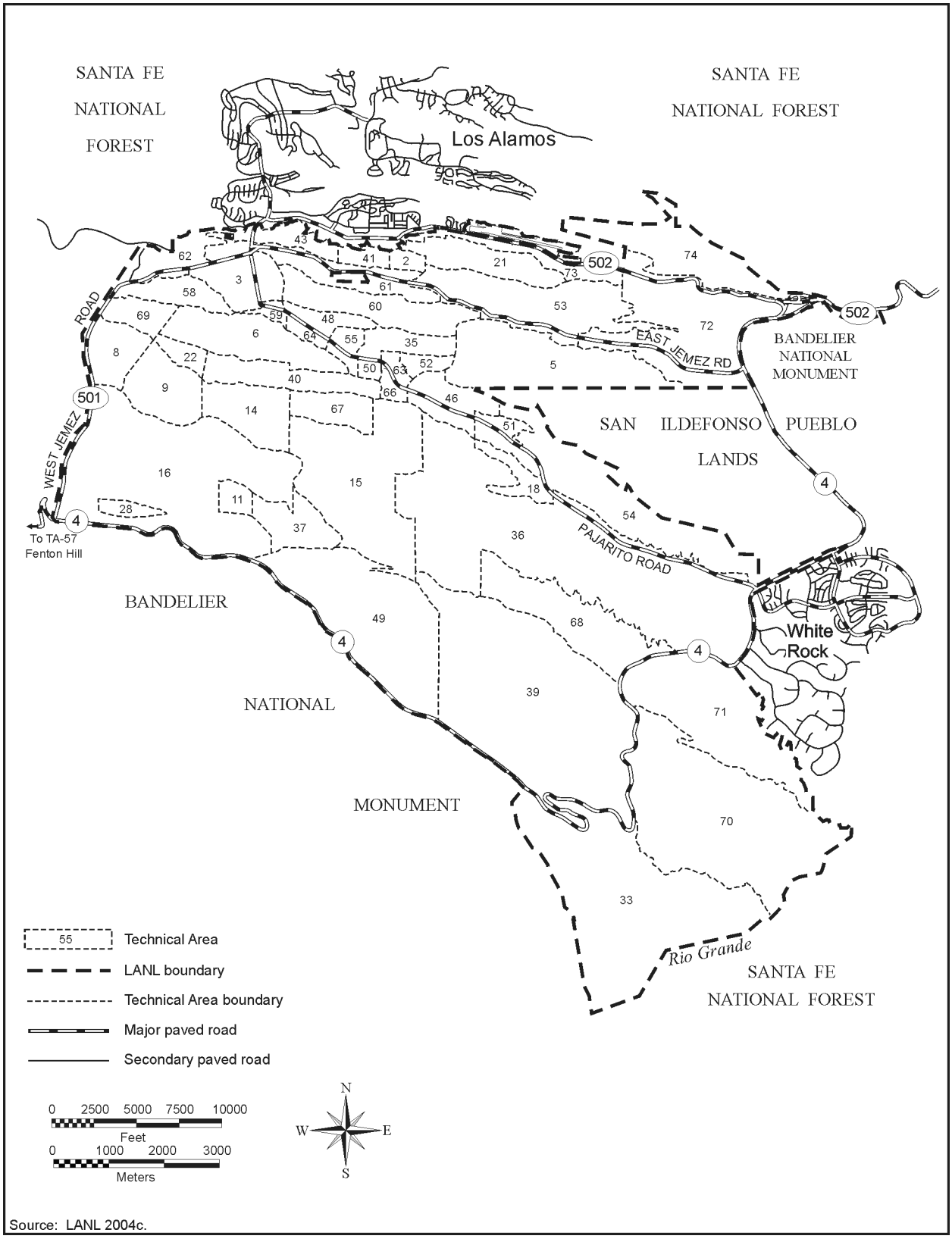
Most of LANL is undeveloped grassland, shrubland, woodland, and forest that serve to provide a buffer for security and safety and space for future expansion. As of the end of 2005, LANL's facilities comprised 8.6 million square feet (800,000 square meters) of laboratory, production, administrative, storage, service, and miscellaneous space; the total space available for operational use changes frequently as structures are demolished or built at LANL. Fifteen facilities within LANL were identified in the *1999 SWEIS* as being Key Facilities for the purpose of facilitating a logical and comprehensive evaluation of the potential environmental impacts of LANL operations. The facilities identified as "Key" for the purposes of the *1999 SWEIS* and this new SWEIS are those that house activities that are critical to meeting work assignments given to LANL and also:

- house operations that could potentially cause significant environmental impacts,
- are of most interest or concern to the public based on scoping comments received, or
- would be most subject to change as a result of programmatic decisions.



Source: LANL 2004h.

Figure 1–1 Location of Los Alamos National Laboratory Site



Source: LANL 2004c.

Figure 1–2 Identification and Location of Technical Areas Comprising Los Alamos National Laboratory

Security Categories

DOE uses a cost-effective, graded approach to provide special nuclear material safeguards and security. Quantities of special nuclear material stored at each DOE site are categorized into Security Categories I, II, III, and IV, with the greatest quantities included under Security Category I, and lesser quantities included in descending order under Security Categories II through IV.

Taken together, the Key Facilities represent the majority of exposure risks associated with LANL operations. The operation of these 15 Key Facilities, together with functions conducted in other non-Key Facilities, formed the basis of the description of LANL facilities and operations analyzed for potential environmental impacts in the *1999 SWEIS*. For the purpose of the impact analysis provided by this new SWEIS, the identity of the LANL Key Facilities has been modified to reflect DOE decisions made after 1999 that resulted in changes to LANL facilities and operations. As seen in **Table 1–1**, most of the Key Facilities in the *1999 SWEIS* are Key Facilities in this SWEIS. The Nicholas C. Metropolis Center for Modeling and Simulation (Metropolis Center) has been added as a Key Facility because of the amounts of electricity and water it may use. Security Category I and II materials and operations have been moved from the TA-18 Pajarito Site. Under either of the Action Alternatives evaluated in this SWEIS, Security Category III and IV materials and operations also would be removed from the Pajarito Site, and it would be eliminated as a Key Facility. Under the No Action Alternative, the Pajarito Site would remain a Key Facility.

Table 1–1 Comparison of Key Facilities between the *1999 Site-Wide Environmental Impact Statement* and this New Site-Wide Environmental Impact Statement

Technical Areas	*Key Facilities* [a]	*1999 SWEIS*	*New SWEIS*
3	Chemistry and Metallurgy Research Building	✓	✓
3	Sigma Complex	✓	✓
3	Machine Shops	✓	✓
3	Materials Science Laboratory	✓	✓
3	Nicholas C. Metropolis Center for Modeling and Simulation		✓
8, 9, 11, 16, 22, 37	High Explosives Processing Facilities	✓	✓
14, 15, 36, 39, 40	High Explosives Testing Facilities	✓	✓
16, 21	Tritium Facilities	✓	✓
18	Pajarito Site (Los Alamos Critical Experiments Facility)	✓	(b)
35	Target Fabrication Facility	✓	✓
43, 3, 16, 35, 46	Bioscience Facilities (formerly the Health Research Laboratory)	✓	✓
48	Radiochemistry Facility	✓	✓
50	Waste Management Operations: Radioactive Liquid Waste Treatment Facility	✓	✓
53	Los Alamos Neutron Science Center	✓	✓
54, 50	Waste Management Operations: Solid Radioactive and Chemical Waste Facilities	✓	✓
55	Plutonium Facility Complex	✓	✓

[a] The order of these Key Facilities has been changed from that presented in the *1999 SWEIS* to match the order used in this SWEIS, which is based on Technical Areas.

[b] The Pajarito Site remains a Key Facility under the No Action Alternative only.

Nuclear and radiological facilities at LANL are identified by hazard category in accordance with the potential consequences in the event of an accident (10 CFR Part 830). At LANL, there are no Hazard Category 1 nuclear facilities; the nuclear facilities at LANL are either Hazard Category 2 or Hazard Category 3 (DOE and LANL 2005). Facilities that handle less than Hazard Category 3 threshold quantities of radioactive materials, but require identification of "radiological areas" (10 CFR Part 835), are designated radiological facilities. All of the nuclear Hazard Category 2 and 3 facilities and most of the radiological facilities are accounted for in either the analyses of Key Facilities in this SWEIS or the project-specific analyses and evaluations of environmental restoration sites provided in Appendix I (see Chapter 2, Table 2–3, for a listing of Hazard Category 2 and 3 and radiological facilities).

Nuclear Facility Hazard Categories

Hazard Category 1: Hazard analysis shows the potential for significant offsite consequences.

Hazard Category 2: Hazard analysis shows the potential for significant onsite consequences.

Hazard Category 3: Hazard analysis shows the potential for only significant localized consequences.

(10 CFR Part 830)

1.2 Purpose and Need for Agency Action

DOE's purpose and need for agency action in the *1999 SWEIS* is presented in the text box to the right. The purpose and need for action with regard to the continued operation of LANL remains unchanged. With the creation of NNSA in 2000, the President and the Congress reaffirmed the Nation's need for ongoing operations at LANL by designating LANL as one of three national security laboratories. In 2002, the need for ongoing operations at LANL was reaffirmed with the creation of DHS and the subsequent assignment of many of its mission support activities to various Federal facilities, including assignments to each of NNSA's three national security laboratories. While uncertainty remains about the future work NNSA will assign to LANL to support the Nation's security missions, the overall need to continue operation of LANL is unlikely to change over the next several years.

Purpose and Need

The purpose of the continued operation of LANL is to provide support for DOE's core missions as directed by the Congress and the President. DOE's need to continue operating LANL is focused on its obligation to ensure a safe and reliable nuclear stockpile. For the foreseeable future, DOE, on behalf of the U.S. Government, will need to continue its nuclear weapons research and development, surveillance, computational analysis, components manufacturing, and nonnuclear aboveground experimentation. Currently, many of these activities are conducted solely at LANL. A cessation of these activities would run counter to national security policy as established by the Congress and the President (DOE 1999a).

1.3 Scope and Alternatives in this New Site-Wide Environmental Impact Statement for Los Alamos National Laboratory Operations

The Proposed Action analyzed in this SWEIS is the continued operation of LANL. As defined in 40 CFR 1508.28, this new SWEIS impact analysis is based on the *1999 SWEIS*. The *1999 SWEIS* covers broad general matters related to operation of LANL. This SWEIS considers more focused environmental impact analyses of three alternatives to implement the Proposed Action: a No Action Alternative (continued implementation of the *1999 SWEIS* Preferred Alternative together with other activities for which NEPA reviews have been completed); a Reduced Operations Alternative with newly proposed decreases in certain activities; and an

Expanded Operations Alternative with newly proposed additional activities. Consistent with the concept of tiering, pertinent information from the *1999 SWEIS* is summarized and incorporated by reference into this SWEIS. Impacts from all activities, including each of the alternatives analyzed in this SWEIS and in newly proposed projects that may be analyzed in separate NEPA impact reviews as interim actions[4], are considered in the cumulative impacts analyses for LANL operations in this SWEIS.

In March 2005, the State of New Mexico, DOE, and the LANL management and operating contractor entered into a "Compliance Order on Consent" (Consent Order) (NMED 2005) that is currently being implemented to address the investigation and remediation of environmental contamination at LANL. NNSA is including impacts associated with Consent Order implementation in order to facilitate its compliance with the Order. NNSA intends to implement actions necessary to comply with the Consent Order regardless of decisions it makes on other actions analyzed in this SWEIS. The activities and potential impacts of Consent Order-related activities are included under the Expanded Operations Alternative.

Implementing the Consent Order

NNSA intends to implement actions necessary to comply with the Compliance Order on Consent (Consent Order) regardless of decisions it makes on other actions analyzed in this SWEIS. Actions associated with implementing the Consent Order are included in the Expanded Operations Alternative; however, their implementation is not contingent on other actions that are part of the alternative. As explained in Chapter 1, Section 1.4, NNSA can implement individual parts of alternatives.

Due to unusual circumstances that have occurred at LANL since 1999, the environmental setting described in the *1999 SWEIS* has changed. In 2000, the Cerro Grande Fire burned 43,000 acres (17,400 hectares) of land in northern New Mexico. This fire burned about 7,700 acres (3,110 hectares) within the LANL boundaries and additional land in neighboring areas along the mountain flanks above and to the north of LANL (LANL 2004m). In total, about 40 structures at LANL were burned beyond reasonable repair or destroyed outright by the fire; an additional 200 structures suffered varying degrees of damage. Information about the Cerro Grande Fire and actions taken at LANL in direct response to the fire are detailed in the *Special Environmental Analysis for the Department of Energy, National Nuclear Security Administration, Actions Taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/SEA-03) (DOE 2000f). A variety of facility changes occurred that were not anticipated before the fire or that were expedited directly or indirectly because of the fire. These include operations that have been moved or that are planned for removal from canyon locations, buildings that were destroyed by the fire or vacated and demolished after operations were relocated, and new structures that were built during the days after the fire as part of the recovery effort. Post-fire environmental effects included an alteration of watershed areas within LANL and a reduction in the forest fuel loading due to the fire and subsequent tree thinning activities. Additionally, the southwest region of the United States is experiencing a multiyear drought period. The drought, combined with a bark

[4] *CEQ's NEPA Implementing Regulations state that "agencies shall not undertake in the interim any major Federal action covered by the program that may significantly affect the quality of the human environment unless such action: (1) is justified independently of the program; (2) is itself accompanied by an adequate environmental impact statement; and (3) will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives" (40 CFR 1506.1).*

beetle infestation, has resulted in a high mortality rate of evergreen tree species within LANL and surrounding areas.

Another alteration of the LANL environmental setting occurred through the conveyance and transfer of about 3.5 square miles (2,259 acres [914 hectares]) of land pursuant to Public Law 105-119 (Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 1998). Conveyance of land to Los Alamos County and transfer of land to the Department of the Interior in trust for the Pueblo of San Ildefonso has reduced the size of LANL to about 40 square miles (25,600 acres [10,360 hectares]). DOE anticipates conveying additional land before the end of 2012, the deadline for conveyance and transfer of lands established in the Defense Authorization Act, which extended the deadline initially established by Public Law 105-119.

The terrorist attacks that occurred in the United States on September 11, 2001, and subsequent world events have resulted in the implementation of enhanced security measures at LANL. Steps taken to protect LANL assets have resulted or will result in changes to some aspects of the LANL natural and cultural environments. Additionally, there have been changes to both the number of LANL workers and the population around LANL compared to those on which the *1999 SWEIS* socioeconomic and other impact analyses were based. To the extent that changes to, or new information about, the existing LANL environment will affect natural and cultural resource areas and the human environment originally considered in the *1999 SWEIS*, projected impacts from implementing the No Action Alternative and the Action Alternatives over about the next 5 years at LANL are analyzed in this SWEIS.

NNSA will use this SWEIS to consider the impacts of proposed modifications to LANL activities and the cumulative impacts associated with ongoing activities at LANL on the changed LANL environment and to make decisions regarding various proposed projects. Within about 5 years, detailed planning for these proposed projects, or in some cases, the proposed projects themselves, could be initiated. The decisions to be made on the basis of this new SWEIS are discussed in Section 1.4. The following sections provide summary descriptions of the alternatives analyzed in this SWEIS. Detailed descriptions of the SWEIS alternatives, as well as alternatives considered and dismissed, are presented in Chapter 3 of this SWEIS.

1.3.1 No Action Alternative

The No Action Alternative considered in this SWEIS consists of the continued implementation of decisions stated in the *1999 SWEIS* ROD (see Appendix A), together with decisions for other LANL actions based on completed NEPA reviews (see **Figure 1–3**). A list of NEPA EIS- and EA-level analyses completed since 1999 for LANL activities is included in Section 1.5.

The No Action Alternative reflects certain evolutions in the operation of LANL as a result of the implementation of the *1999 SWEIS* Preferred Alternative over the past 7 years. For example, the level of operations has decreased in some LANL facilities, and there have been changes in the amounts of materials at risk[5] in some facilities. Some materials have been transferred from one location to another at LANL, and some materials have been removed from the site to other

[5] *Material at risk is the amount of radioactive material in a facility that needs to be considered in evaluating the potential effects of accidents that could occur at the facility.*

locations around the complex. One former Key Facility identified in the *1999 SWEIS*, the TA-18 Pajarito Site, will be eliminated over the long term as an operating facility. In its 2002 *Final Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory (TA-18 Relocation EIS)* (DOE/EIS-0319) (DOE 2002i) and associated ROD (67 FR 79906), NNSA decided to relocate TA-18 Pajarito Site Security Category I and II operations and associated nuclear materials to the Nevada Test Site. Implementation of the relocation decision was initiated in 2004 and will be carried out over a 5-year period. Security Category I and II operations and materials have recently been removed from the TA-18 Pajarito Site. Because Security Category III and IV materials remain, the TA-18 Pajarito Site has been retained under the No Action Alternative impact analysis as a Key Facility.

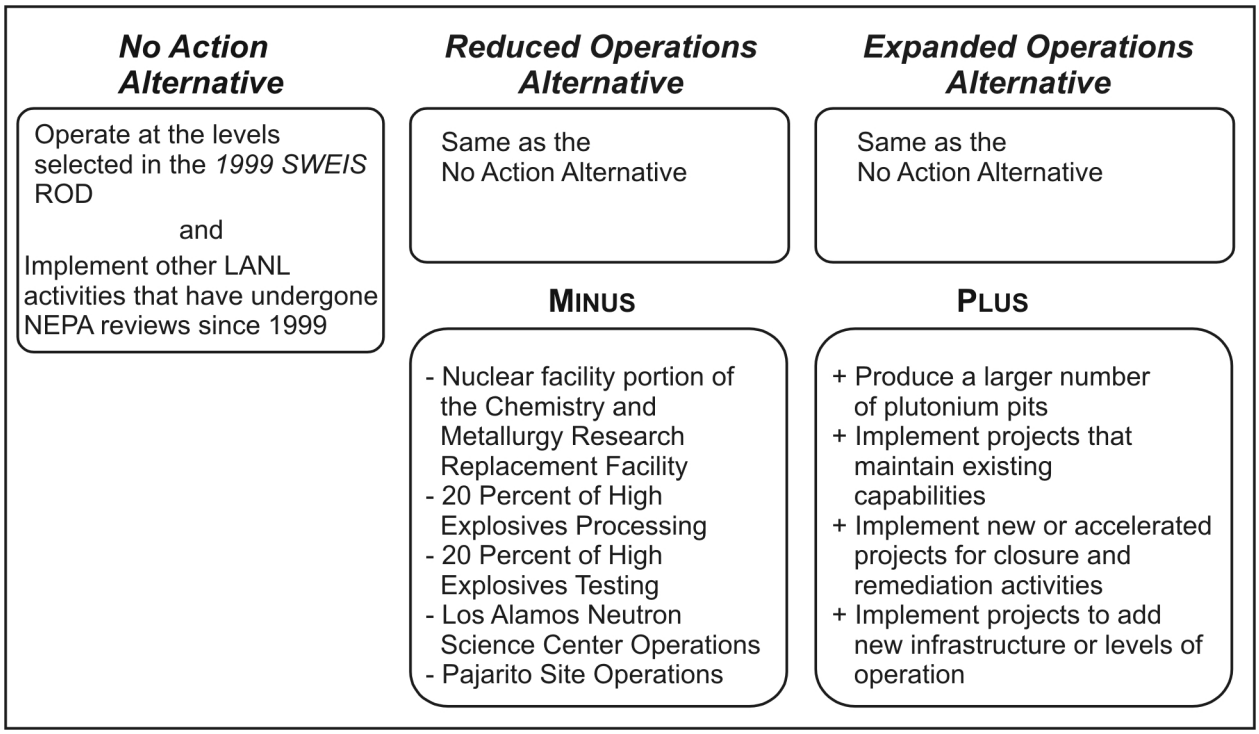


Figure 1–3 Summary Comparison of Alternatives Considered in this New Site-Wide Environmental Impact Statement

Another former Key Facility identified in the *1999 SWEIS*, the Chemistry and Metallurgy Research Building, will also be eliminated over the long term as an operating facility. In its 2004 ROD (69 FR 6967) for the *Final Environmental Impact Statement for the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico (CMRR EIS)* (DOE/EIS-0350) (DOE 2003d), NNSA decided to construct and operate a new Chemistry and Metallurgy Research Replacement Facility at LANL's TA-55. Implementation of the construction phase began in 2004 with site construction planning for the two primary structures of the new facility proceeding on different schedules. Planning is complete and the radiological laboratory, administrative offices and support function building (collectively known as the "Radiological Laboratory") are currently under construction. The separate nuclear facility portion, a Hazard Category 2 nuclear laboratory, is still in the early planning stages and no building construction has begun. Planning for the nuclear facility portion of this project will continue (estimated planning completion is in 2008) and will either facilitate

construction of the structure at LANL, or the planning process will facilitate the construction of a structure with the same capabilities as part of a consolidated plutonium center or as an integrated part of a consolidated nuclear production center. Both the consolidated plutonium center and the consolidated nuclear production center are subjects of the *Complex Transformation SPEIS* currently in preparation. (See discussions regarding Complex Transformation and the *Complex Transformation SPEIS*, and also the previously mentioned *CMRR EIS* elsewhere in this chapter. Additionally, see discussion of the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility in the following Action Alternatives discussion of the Reduced Operations Alternative).

Additional activities that are included in the No Action Alternative are those that may undergo a NEPA review and be categorically excluded from the need for preparation of either an EA or EIS. A list of DOE categorical exclusions is codified at 10 CFR 1021.410; activities conducted at LANL that are categorically excluded from further NEPA review are discussed further in Appendix L. Typically, several hundred proposed activities at LANL are categorically excluded from the need to prepare an EA or EIS each year.

Categorical Exclusions

DOE NEPA Implementing Procedures identify classes of actions that DOE has determined can be categorically excluded from the need to prepare an EA or EIS because they do not individually or cumulatively have a significant effect on the human environment. Examples of activities that could receive categorical exclusions include routine maintenance activities and shop operations; activities in support of environmental management including monitoring and small-scale remediation actions; and a broad range of research and development activities performed within existing LANL facilities.

Action Alternatives

In addition to the No Action Alternative, two Action Alternatives are analyzed in this SWEIS, both of which start with the No Action Alternative as their baseline. Newly proposed changes directed at reducing some operations conducted under the No Action Alternative at certain LANL facilities are analyzed under the Reduced Operations Alternative. Conversely, newly proposed changes reflecting expanded operations at certain LANL facilities, replacement of aging structures to accommodate ongoing operations, and actions associated with environmental cleanup above and beyond the operations included under the No Action Alternative are analyzed under the Expanded Operations Alternative.

1.3.2 Reduced Operations Alternative

The Reduced Operations Alternative analyzed in this SWEIS addresses new proposals that would reduce the overall operational level at LANL below that established for the No Action Alternative by reducing or eliminating certain operations at LANL. This Alternative includes new proposals for:

- Reducing the scope of the Chemistry and Metallurgy Research Replacement Facility Project. Construct and operate only the radiological laboratory, administrative office, and support functions building, and eliminate construction and operation of the proposed nuclear facility portion; operate the existing Chemistry and Metallurgy Research Building beyond its previously identified closure in 2010; upon cessation of operations, decommission, decontaminate, and demolish (DD&D) the building as previously decided;

- Discontinuing all accelerator operations, including all DOE and NNSA mission support work and all Work-for-Others-type operations, at the TA-53 Los Alamos Neutron Science Center (LANSCE) and placing the facility into an indefinite safe shutdown mode;

- Reducing High Explosives Processing Facilities operations conducted at TAs 8, 9, 11, 16, 22, and 37 by 20 percent from the No Action Alternative level of operations in this SWEIS;

- Reducing High Explosives Testing Facilities operations conducted at TAs 14, 15, 36, 39, and 40 by 20 percent from the No Action Alternative level of operations in this SWEIS, and eliminating all dynamic experiments using plutonium at the Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility; and

- Discontinuing all TA-18 Pajarito Site operations and placing the facility into a shutdown mode.

Each of these reductions in operations would occur at LANL Key Facilities described in the *1999 SWEIS*. Operations at the DARHT Facility were analyzed in the separate *Final Environmental Impact Statement, Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility (DARHT EIS)* (DOE/EIS-0228) (DOE 1995a), for which a ROD was issued. Project and environmental impact information provided through the *DARHT EIS* was included in the preparation of the *1999 SWEIS*. The *TA-18 Relocation EIS* (DOE 2002i) analyzed relocating TA-18, Pajarito Site materials and capabilities; however, the ROD deferred a decision on the Security Category III and IV materials and the Solution High-Energy Burst Assembly (SHEBA).

The 2004 ROD for the *CMRR EIS* announced NNSA's decision to build a two-building replacement facility and, after operations transitioned into the new buildings, to decommission, decontaminate, and demolish the aging Chemistry and Metallurgy Research Building. Construction and operation of the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility at LANL may not occur depending on programmatic decisions reached by NNSA regarding plutonium pit production and nuclear material consolidation that are being evaluated in the *Complex Transformation SPEIS*. In the event that NNSA decides to eliminate the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility, NNSA may select this reduction in LANL operations as one of its decisions informed by this SWEIS impact analysis. Not constructing and operating the new nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility would require NNSA to operate the existing Chemistry and Metallurgy Research Building beyond 2010. Continuing to restrict operations at the Chemistry and Metallurgy Research Building would result in the inability to meet the level of operations determined necessary for the foreseeable future at LANL in the *1999 SWEIS* ROD (NNSA 2007b).

1.3.3 Expanded Operations Alternative

The Expanded Operations Alternative analyzed in this new SWEIS reflects proposals to expand overall operational levels at LANL above those analyzed in the No Action Alternative. This alternative includes the expansion of operations at certain Key Facilities and the construction of new facilities.

The greatest operational change at a Key Facility would occur at the Plutonium Facility. The *1999 SWEIS* analyzed a production level of 50 pits per year in single-shift operations (or up to 80 pits per year in multiple-shift operations) as part of its Expanded Operations Alternative. However, DOE decided in 1999 to manufacture a nominal 20 pits per year, and announced that decision in the *1999 SWEIS* ROD. The annual production of 20 pits was identified in the Final *1999 SWEIS* as the Preferred Alternative, and the analysis of impacts for this Alternative was developed by scaling down the impacts identified for the *1999 SWEIS* Expanded Operations (which was based on an annual production rate of 80 pits) to a production rate of 20 pits per year.[6]

While recent studies suggest that the lifetime of the plutonium pit in the majority of nuclear weapons may be longer than originally thought, NNSA still needs to increase pit production. First, even with longer pit lifetimes, NNSA will need to replace considerable numbers of pits in stockpiled warheads as the stockpile ages. Second, at significantly smaller stockpile levels than today, NNSA must anticipate an adverse change in the geopolitical threat environment, or a technical problem with warheads in the operationally deployed force, either of which could require the United States to manufacture and deploy additional warheads in a relatively short time frame (NNSA 2006c, 2007a).

In this SWEIS, NNSA now proposes to increase the annual manufacturing rate from 20 pits (the rate assumed for the No Action Alternative in this SWEIS) to an annual rate that would produce up to 80 pits at LANL under the Expanded Operations Alternative. The production of pits includes the activities needed to fabricate new pits, to modify the internal features of existing pits, and to certify new pits or requalify pits. Some of the pits produced by these processes may not be certified or requalified. NNSA needs to produce about 50 certified pits annually to meet the immediate requirements of the Stockpile Stewardship Program (although the number of certified pits needed may change in the future), and may need to produce more than 50 pits in order to obtain the appropriate number of certified pits. The Expanded Operations Alternative for this SWEIS is based on an annual production rate of 80 pits per year in order to provide NNSA with some flexibility in obtaining the number of certified pits it requires each year. The annual production rate of 80 pits analyzed in the Expanded Operations Alternative is the upper limit of the annual production rate at LANL. Although NNSA has proposed further transformation of the nuclear weapons complex to meet future national security needs, NNSA has not completed the *Complex Transformation SPEIS* and therefore has not made a decision on the configuration of the future complex, including decisions regarding whether to increase its pit production capabilities above 80 pits per year at LANL or another NNSA site. Any decision to increase pit production beyond 20 pits per year would be made after NNSA issues the *Final Complex Transformation SPEIS*; such a decision would be based on the analyses in the *Complex Transformation SPEIS*, this SWEIS, and other information, including cost studies, budget projections, and national security requirements.

[6] *As part of this scaling process, the 1999 SWEIS provided quantitative adjustments of important impacts where possible to reflect the differences between an annual production rate of 80 pits (the rate used for that SWEIS's Expanded Operations Alternative) and an annual rate of 20 pits (the rate used for the Preferred Alternative and selected by the 1999 ROD) (64 FR 50797). Where quantitative adjustments were not possible, a qualitative discussion of the important differences in impacts was provided.*

A decision to increase pit production significantly above 20 pits annually would require NNSA to issue a new or revised ROD. Work continues toward implementing the decision to produce 20 pits per year announced in the *1999 SWEIS* ROD. NNSA's current proposal to produce up to 80 pits per year involves reorganizing operations within the Plutonium Facility such that no new building or other addition to the "footprint" of the facility would be required. Available production space within the facility would be used more efficiently and process efficiencies identified since 1999 would be employed. Some modifications to equipment arrangements in the Plutonium Facility might also be necessary. This approach – using only existing floor space – is not the same as the approaches analyzed in the *1999 SWEIS*, each of which would have required addition of floor space to the Plutonium Facility. In this SWEIS, NNSA is reanalyzing the potential environmental impacts of using this new approach to obtain up to 80 pits per year as outlined in the Expanded Operations Alternative. As was the case for the impact analysis used in the Expanded Operations Alternative in the *1999 SWEIS*, this SWEIS bases the analysis of impacts for its Expanded Operations Alternative on a maximum annual production rate of up to 80 pits. The No Action Alternative for this SWEIS uses the same scaling process used to develop the Preferred Alternative for the *1999 SWEIS*.

Three types of new projects are addressed in this SWEIS under the Expanded Operations Alternative, including:

- Projects that maintain existing capabilities at LANL;
- Projects that support the cleanup of LANL including the DD&D of excess buildings and implementation of the Consent Order[7] (NMED 2005); and
- Projects that add new or expand existing capabilities at LANL.

Decontamination, Decommissioning, and Demolition (DD&D)

DD&D are those actions taken at the end of the useful life of a building or structure to reduce or remove substances that pose a substantial hazard to human health or the environment, retire it from service, and ultimately eliminate all or a portion of the building or structure.

These newly proposed projects are described in the following paragraphs, and each is analyzed explicitly in the project-specific analyses included in Appendices G through J to this SWEIS.

Projects to Maintain Existing LANL Operations and Capabilities

The first type of proposed project analyzed under the Expanded Operations Alternative would continue operations at LANL at levels identical or very similar to those addressed in the *1999 SWEIS* Preferred Alternative or other LANL-specific NEPA compliance documents. Projects in the group would provide new structures for existing activities at LANL by replacing old and transportable buildings with new modern buildings. These projects include refurbishment of, and reinvestment in, certain existing buildings and structures, as well as construction of new buildings to replace aging buildings and temporary or portable structures. In cases involving new construction, the DD&D of older structures is included as part of the project

[7] *NNSA is including impacts associated with Consent Order implementation in the SWEIS in order to more fully analyze the impacts resulting from Consent Order compliance. NNSA intends to implement actions necessary to comply with the Consent Order regardless of decisions it makes on other actions analyzed in the SWEIS.*

for the purposes of the NEPA impact analysis and decisionmaking, although separate funding packages could be used to implement such activities.

Proposed projects of the first type include:

- Construction and operation of a new Physical Science Research Complex (formerly the Center for Weapons Physics Research) within TA-3;
- Construction of nine replacement office buildings within TA-3;
- Construction and operation of a new Radiological Sciences Institute at TA-48 for consolidating existing radiological operations including Security Category I and II nonproliferation activities, certain Security Category III and IV operations from the TA-18 Pajarito Site (SHEBA would not be included), and relocation of Wing 9 hot cell operations from the Chemistry and Metallurgy Research Building; the first phase would be construction and operation of the Institute for Nuclear Nonproliferation Science and Technology;
- Construction and operation of a Radioactive Liquid Waste Treatment Facility upgrade in TA-50;
- Refurbishment of the existing LANSCE in TA-53;
- Construction and operation of a new Radiography Facility at TA-55;
- Refurbishment of the existing Plutonium Facility Complex at TA-55;
- Construction and operation of a new Science Complex, including space for activities currently performed at the Bioscience Facilities (formerly the Health Research Laboratory); and
- Construction and operation of a new warehouse and truck inspection station in TA-72.

Buildings and structures constructed and occupied since the late 1940s often cannot adequately accommodate modern operations. Additionally, these buildings and structures were not built to current structural, health, safety, and security standards and cannot be easily or economically retrofitted to meet these standards. These older buildings also are ill-equipped to accommodate the modern office electronics and communications equipment and systems needed for workforce and equipment cooling and heating needs. NNSA is now in the process of replacing many of the old buildings and structures at LANL with modern buildings and structures.

The need to replace these aging structures provides NNSA with an opportunity to consolidate operations and eliminate underutilized and redundant structures and buildings. In general, the analyses of these new construction projects include the DD&D of a comparable amount of space in older buildings or portable structures that are no longer needed or are unsuitable for future use, in keeping with requirements established in the fiscal year 2002 Energy and Water Development Appropriations Act passed by the Congress. According to language included in that Act, space

added by the construction of new facilities within the Complex must be offset by the elimination of an equal amount of excess space.

Projects for Closure and Remediation Actions

Proposed projects of the second type include various actions that would result in the DD&D of excess structures that are not directly connected to the proposed construction of new or replacement facilities or structures, and site remediation and closure. Projects also include replacements of waste management capabilities that would be displaced as a result of remediation activities. Proposed projects of the second type include:

- DD&D of TA-18 Pajarito Site buildings and structures, including relocation of operations;
- DD&D of TA-21 buildings and structures;
- Provision of waste management facilities necessitated by closure of the TA-54 Material Disposal Area[8] (MDA) G; and
- Remediation of major MDAs and other contaminated sites at LANL as required by NMED under the Consent Order.

Regarding relocation of TA-18 Pajarito Site operations, decisions for the future disposition of the Security Category III and IV materials and buildings and structures in the TA were not made following preparation of the *TA-18 Relocation EIS* (DOE 2002i). Additional planning has since been completed, and these buildings and structures are being considered for DD&D rather than reuse after current operations have been relocated. As already stated, Security Category III and IV operations would have to be moved to a new facility before certain DD&D actions could be undertaken.

TA-21 is one of the 10 land tracts identified in accordance with Public Law 105-119 for conveyance or transfer from DOE administrative control. 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/EIS-0293) (DOE 1999d). LANL tritium operations located at TA-21 are either already slated to be moved to other locations at LANL or offsite to other Complex facilities, or will be discontinued entirely. The buildings and structures at TA-21 are some of the oldest at LANL and would be difficult to retrofit for most proposed beneficial reuses. TA-21 buildings and structures also include about 100,000 square feet (9,300 square meters) of highly contaminated space. Additionally, most buildings and structures located at TA-21 are situated atop or adjacent to potential release sites in the form of buried distribution lines, contaminated soil, or waste disposal areas. The demolition of these buildings or structures is necessary before the potential release sites can be adequately investigated and remediated. Investigation and

[8] *A material disposal area or MDA is an area used any time between the beginning of LANL operations in the early 1940s and the present for disposing of chemically, radioactively, or chemically and radioactively contaminated materials.*

remediation of potential release sites at TA-21, if necessary, must be undertaken before the site can be conveyed, transferred, or otherwise reused for other purposes.

The Expanded Operations Alternative in this SWEIS considers the environmental impacts of actions associated with remediation decisions that would not be made entirely by DOE or NNSA. In the case of the MDAs and other potential release sites, remedial actions will be mainly decided in accordance with the Consent Order (NMED 2005) and the Atomic Energy Act. For potential release sites subject to the Consent Order, NNSA and the LANL management and operating contractor will recommend a preferred remediation, but the State of New Mexico will make the final decision on the remedy to be employed. These remediation actions will have associated support actions for which NNSA must make decisions. The remediation of LANL MDAs would require the 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. Support of remediation activities could also require realignment of roads and alteration of traffic patterns. Additionally, new replacement buildings and structures would be required to house ongoing operations and capabilities associated with or collocated with certain MDAs requiring remediation. The construction and operation of the following replacement buildings and structures has been proposed and is analyzed in this SWEIS:

- A new TRU (Transuranic) Waste[9] Facility (previously named the Transuranic Waste Consolidation Facility) for all transuranic waste management activities currently conducted at TA-54;

- A new temporary remote-handled transuranic waste retrieval facility for all or a portion of the remote-handled transuranic waste currently stored underground at TA-54 so that it can be retrieved, processed, and shipped to the Waste Isolation Pilot Plant (WIPP) in New Mexico for disposal; and

- A new administrative and access control building, a new low-level radioactive waste compactor building, and a new low-level radioactive waste characterization and verification building at TA-54.

Projects Associated with New Infrastructure or Levels of Operation

The third type of proposed project considered under the Expanded Operations Alternative would establish new capabilities or expand existing capabilities beyond the type or level of capabilities analyzed in the *1999 SWEIS* Preferred Alternative or other completed NEPA compliance documentation. Proposed projects of the third type include:

[9] *"Transuranic waste is radioactive waste containing more than 100 nanocuries (3,700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the U.S. Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61" (DOE 1999b).*

- Constructing new vehicle parking lots and roads, realignment of existing roads, and altering of traffic patterns at various locations at LANL in support of security requirements;

- Increasing the computational operating capacity of the Metropolis Center at TA-3; and

- Increasing the amount and type of sealed radioactive sources[10] (hereafter called sealed sources) received for long-term management at LANL.

These latter two projects involve Key Facilities as that term was defined in the *1999 SWEIS*. The Solid Radioactive and Chemical Waste Facilities in TA-54 and the Chemistry and Metallurgy Research Building were designated as Key Facilities in the *1999 SWEIS* and, together with other facilities such as the Radiological Sciences Institute, are proposed locations for managing sealed sources. The Metropolis Center in TA-3 is identified as a new Key Facility in this new SWEIS.

Environmental impacts of changes in physical security along Pajarito Road and in TA-3 were evaluated in the *Environmental Assessment for Proposed Access Control and Traffic Improvements at Los Alamos National Laboratory* (DOE/EA-1429) (DOE 2002k). As part of that Security Perimeter Project, the construction and activation of access control stations near each end of Pajarito Road has been completed. Another element of the Security Perimeter Project involving realignment of roads and changes to traffic patterns around TA-3, is also mostly complete. The proposed project in this SWEIS to construct new vehicle parking lots and roads, realign roads, and alter traffic patterns would provide additional security along the western section of Pajarito Road. Implementation of the project would allow restriction of certain vehicle traffic along Pajarito Road while ensuring employee access to work places in TA-35, TA-48, TA-50, TA-55, and TA-63 by means of shuttle buses, walkways, and bicycle paths. Auxiliary actions to the proposed project would also be considered. The first auxiliary action includes the construction of a bridge from TA-35 across Mortandad Canyon to TA-60 and connection to a road leading to TA-3. The second auxiliary action, which is dependent on the first auxiliary action, entails construction of a bridge across Sandia Canyon and extending the road to intersect with East Jemez Road. If implemented, these auxiliary actions would allow vehicles traveling from White Rock to TA-3 or the Los Alamos townsite to bypass the section of Pajarito Road that would have restrictions on certain vehicle traffic.

Construction and operation of the Metropolis Center were analyzed in the *Environmental Assessment for the Proposed Strategic Computing Complex, Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1250) (DOE 1998) and its associated Finding of No Significant Impact (FONSI) (the Metropolis Center was formerly called the Strategic Computing Complex, and the impact analysis appears under that name), which considered impacts associated with operating the computation facility at an initial capacity of a 50-teraflops platform (a teraflop is a trillion floating point operations per second). The Metropolis Center has been constructed and is currently operating a 30-teraflops platform; however, NNSA is considering

[10] *"Sealed radioactive source means a radioactive source manufactured, obtained, or retained for the purpose of utilizing the emitted radiation. The sealed radioactive source consists of a known or estimated quantity of radioactive material contained within a sealed capsule, sealed between layer(s) of nonradioactive material, or firmly fixed to a nonradioactive surface by electroplating or other means intended to prevent leakage or escape of the radioactive material. Sealed radioactive sources do not include reactor fuel elements, nuclear explosive devices, and radioisotope thermoelectric generators" (10 CFR Part 835).*

increases to the facility's operational capacity that could consume additional amounts of water and electrical power resources. The Metropolis Center's performance platform could exceed 100 teraflops before 2009, with dramatic increases thereafter. The proposed increase in the operating platform beyond 50 teraflops is analyzed in this SWEIS; however, the exact level of operations supported would be unknown, as it has become clear over the past 5 years that the operating platform level cannot be directly correlated to a set amount of water or electrical power consumption. Each new generation of computing capability machinery continues to be designed with enhanced efficiency in terms of both electrical consumption and cooling requirements. Therefore, the operating level that can be supported by about 15 megawatts of electrical usage and 51 million gallons (193 million liters) per year of water has been used to project associated potential environmental impacts in this SWEIS.

The acceptance of certain sealed sources at LANL for radioactive material recovery was initiated after DOE prepared an EA in 1995 that supported a FONSI (DOE 1995b). Recovery of the radioactive material from the sealed sources at the Plutonium Facility Complex, as was originally proposed, never occurred; and in 2000, NNSA proposed that those sealed sources be managed and disposed of as waste. An SA to the *1999 SWEIS* was prepared to consider that action, and a finding was reached that the *1999 SWEIS* impact analysis adequately bounded the management and disposal of those particular waste items (DOE 2000d). Another type of source contained within radioisotope thermoelectric generators was subsequently considered for management within LANL's solid waste management capabilities in 2004, and the environmental impacts were considered through preparation of an SA to the *1999 SWEIS*. A finding was again reached that the *1999 SWEIS* impact analysis adequately bounded the anticipated impacts from that action (DOE 2004a). NNSA is now proposing to broaden the range of radionuclides in sealed sources to be managed at LANL. The new nuclides being considered include some that are not actinides.[11] Management of these sealed sources could require their indefinite storage at LANL until alternate storage or disposal facilities become available. In July 2007, DOE issued an NOI to prepare an EIS to support a decision regarding the disposal of Greater-Than-Class C waste[12] and DOE waste with similar characteristics (72 FR 40135). This waste includes some of the sealed sources managed at LANL.

1.3.4 Preferred Alternative

NNSA has selected the Expanded Operations Alternative as its Preferred Alternative for the continued operation of LANL (discussed in Chapter 3 of this SWEIS). This alternative includes fabrication of up to 80 pits per year at the Plutonium Facility Complex in TA-55, as well as increased activity levels at certain other Key Facilities (such as the Chemistry and Metallurgy Research Replacement Facility) to support this level of pit production. Under the Expanded Operations Alternative, NNSA would undertake activities to facilitate compliance with the

[11] Actinides are any of the elements in the series of elements beginning with actinium (atomic number 87) and ending with lawrencium (atomic number 103). This series includes thorium, uranium, neptunium, plutonium, and americium, among others. Nonactinides, therefore, are elements that are not included among the list of actinides.

[12] Greater-Than-Class C low-level radioactive waste is defined by the U.S. Nuclear Regulatory Commission (NRC) in 10 CFR 72.3 as "low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in [10 CFR 61.55]." It is generated by NRC or Agreement State licensed activities. Such waste generally requires disposal technologies having greater confinement capability or protection than "normal" near surface disposal. Such improved technologies could involve better waste forms or packaging, or disposal by methods having additional barriers against intrusion.

Consent Order and remediation of the MDAs. Capabilities, activity levels, and projects identified under the No Action Alternative that remain unchanged under the Expanded Operations Alternative would continue as described. Proposed increases in activity levels would be implemented and new capabilities would be added to existing Key Facilities. The proposed projects discussed in the appendices to this SWEIS would proceed, commensurate with funding.

However, full implementation of the Preferred Alternative may be affected by future programmatic decisions. NNSA is reconsidering its decision regarding construction and operation of the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility at LANL pending completion of its NEPA analysis for transformation of the nuclear weapons complex. NNSA is deferring a decision on how to provide the necessary long-term analytical chemistry, materials characterization, and research and development capabilities that would be provided by the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility. Given the uncertainty regarding the nuclear weapons program work that will be assigned to LANL in the future, NNSA expects to issue two or more RODs to implement its decisions. As discussed later in Section 1.4 of this chapter, NNSA may ultimately choose to implement only part of the Expanded Operations Alternative depending on how it decides to transform the complex.

Decisions relating to site remediation and to DD&D of facilities are expected to be in the first ROD based on this SWEIS. Specifically, these include activities that would facilitate remediation of MDAs and other contaminated sites as required by the Consent Order; the Waste Management Facilities Transition Project, including construction and operation of a new TRU Waste Facility; closure of TA-18, including relocation of Security Category III and IV material from TA-18 to other LANL locations, cessation of SHEBA operations, and the DD&D of TA-18 structures, as appropriate; TA-21 DD&D; and any activities in support of the closure of the Los Alamos County Landfill. Another decision that might be announced in the first ROD is enhancement of the operating levels at the Metropolis Center in TA-3. Projects to maintain existing capabilities at LANL that may be included in the first ROD include construction and operation of replacement office buildings in TA-3; construction and operation of the TA-50 Radioactive Liquid Waste Treatment Facility upgrade; construction and operation of the new Science Complex in TA-62; the LANSCE Refurbishment Project; and construction and operation of the new Consolidated Warehouse and Truck Inspection Station in TA-72.

Decisions regarding operations and projects that might be made in subsequent ROD(s) are initiation of a new capability at the Radiochemistry Facility (atom trapping); Security-Driven Transportation Modifications; elevated operations at the High Explosives Processing Facilities; construction and operation of the TA-3 Physical Science Research Complex; construction and operation of the Institute for Nuclear Nonproliferation Science and Technology, the first component of the new Radiological Sciences Institute at TA-48; facility refurbishments that make up the TA-55 Plutonium Facility Complex Refurbishment Project; construction and operation of a radiography facility at TA-55; and an increase up to 80 in the number of nuclear weapons pits produced within the TA-55 Plutonium Facility Complex, along with increases in the levels of operations of associated activities such as the management of solid and liquid radioactive wastes. NNSA's implementation of its decisions is subject to annual congressional funding levels. Although the SWEIS ROD(s) would indicate NNSA's commitment to a project,

capability, or operational level, the actions would be taken contingent upon the level of funding allocated.

1.4 Decisions the National Nuclear Security Administration May Make on the Basis of the Site-Wide Environmental Impact Statement

This SWEIS updates the *1999 SWEIS* analysis and evaluates the impacts of newly proposed projects. The RODs based on this new SWEIS may supersede previous decisions made in 1999 regarding the level at which LANL operations will be conducted over at least the next 5 years. Analyses in this SWEIS considered levels of operations and new projects proposed for the period 2007 through about 2011, but would equally apply to actions beyond 2011 as long as the actions are bounded by the analyses in the SWEIS. The impacts analyses provided in this SWEIS will allow NNSA to reassess the potential impacts of LANL operations on workers, the public, and the environment in light of changes in the environmental circumstances that have developed since 1999.

This SWEIS also represents an opportunity to update information regarding the current status of the regional, local, and LANL-specific environmental conditions. The Cerro Grande Fire of 2000 burned over 7,700 acres (3,110 hectares) of land at LANL, resulting in changes to area watershed functions, vegetation cover functions, wildlife use, and cultural resources present in the area. The physical environment at and around LANL has also been affected by a southwestern regional drought and the attendant bark beetle infestation of evergreen trees. The Cerro Grande Fire and the bark beetle infestation have resulted in widespread vegetation mortality, particularly of evergreen trees, which will cause long-term ecological changes to the LANL area.

In addition, the new SWEIS impacts analyses give NNSA the opportunity to reassess the potential impacts of LANL operations on the public in light of changes in the size and distribution of the population near LANL, the distance to the site boundaries (and therefore, to potential public receptors), and changes in assessment methodologies adopted by DOE. The impacts analyses consider the most recent census data on the number and location of people living near LANL. The analyses also consider changes that have occurred as a result of the conveyance and transfer of certain land tracts away from the LANL reservation. Conveyance and transfer of lands have reduced the land areas that provide distance buffering between LANL operations and the public, resulting in potential changes to the locations used to assess impacts to a hypothetical "maximally exposed individual" member of the public from normal operations and postulated accidents. Assessments of risk associated with radiation exposure also reflect changes to the guidance on dose-to-risk conversion factors that have occurred since 1999.

These changes, together with information regarding impacts analyses specific to newly proposed projects at LANL that could have overarching effects, will inform NNSA regarding decisions about the continued operation of LANL over about the next 5 years. At this time, a nominal 5-year period has been selected, recognizing that a meaningful level of detail is not possible when trying to project changes in operations over a long period of time. Focusing on LANL operations over about the next 5-year window of time allows NNSA to make decisions with a reasonable expectation of being able to implement those decisions and associated mitigative measures.

The analyses of potential environmental impacts that could occur if NNSA implemented the No Action Alternative, Reduced Operations Alternative, or Expanded Operations Alternative are evaluated in this SWEIS. NNSA could choose to implement the alternatives either in whole or in part; that is, NNSA could select the level of operations for a Key Facility or whether to implement individual projects. NNSA intends to implement actions necessary to comply with the Consent Order, regardless of decisions it makes on other actions analyzed in this SWEIS; the Expanded Operations Alternative includes the analysis of the actions needed to comply with that order. Similarly, NNSA plans to complete the design for the Chemistry and Metallurgy Research Replacement Facility, but is deferring a final decision on whether to construct the nuclear facility portion at LANL. NNSA could issue a ROD or RODs to document its decisions regarding the level of LANL operations or the implementation of a project no sooner than 30 days after the Environmental Protection Agency Notice of Availability of the Final SWEIS.

Decisions NNSA may make regarding the operation of LANL are:

- *Whether to implement the No Action Alternative for continued LANL operations, either in whole or in part*. NNSA may choose to implement the No Action Alternative in its entirety, thereby deciding to continue LANL operations for about the next 5 years at levels previously selected and to implement none of the specific projects or actions that are elements of the Expanded Operations Alternative; or NNSA may elect to implement the No Action Alternative in part by taking no action on certain specific projects or actions while electing to implement others. As explained previously, a decision to postpone an action decision results in a *de facto* decision to implement the No Action Alternative for that proposed project. That No Action Alternative decision could be changed later with the issuance of a subsequent ROD regarding selection of one of the Action Alternatives for implementation.

- *Whether to implement the Reduced Operations Alternative, either in whole or in part.* The Reduced Operations Alternative includes specific actions at separate existing facilities that could be implemented individually over about the next 5 years. Proposed projects considered under this Alternative include operations at facilities that are heavily engaged in experimental activities. Reducing high explosives testing operations by 20 percent, for example, could reduce all individual experiments, or it could entirely eliminate certain experiments and reduce other experiments from their full scope to achieve a 20 percent overall work reduction. The shutdown of LANSCE could be implemented separately from reductions to high explosives processing or testing operations although, to a certain extent, these two operations may be linked. Experimental operations at all LANL facilities receive funding from a variety of sources, and the level of operations at any time highly depends on the level of funding received for a particular year. Reductions due solely to a lack of funding could reach the level of reductions called for by this Alternative; however, choosing to implement this Alternative in whole or in part would permanently reduce the level of subject operations.

- *Whether to implement the Expanded Operations Alternative, either in whole or in part*. The Expanded Operations Alternative includes specific actions at separate existing facilities that could be implemented individually over about the next 5 years. Proposed projects considered under this Alternative include construction and demolition activities,

as well as the expansion of certain operations at existing LANL facilities. Environmental remediation actions for potential release sites subject to cleanup under the Hazardous Waste Amendments to the Resource Conservation and Recovery Act will be determined by the State of New Mexico in accordance with the provisions of the Consent Order (NMED 2005). NNSA, however, will need to make decisions regarding how to implement the remediation actions selected by the State of New Mexico. This SWEIS provides environmental impact information about the methods of remediation to facilitate the State of New Mexico's decisionmaking process for those decisions that it will make, and for the benefit of the reader with regard to understanding potential remediation action options in context with the overall operation of LANL over the next 5 years and beyond. NNSA intends to implement actions necessary to comply with the Consent Order regardless of whether other actions in the Expanded Operations Alternative are implemented. Similarly, the County of Los Alamos has made a decision to close the municipal landfill located at LANL but operated by the county; however, accommodating further necessary actions associated with this decision, such as monitoring actions around the landfill site and down-canyon from the site within the LANL boundary, may require implementation decisions by NNSA.

In addition to the environmental impact information provided by this SWEIS, other considerations that are not evaluated through the NEPA compliance process will also influence NNSA's final project decisions. These considerations include cost estimate information, schedule considerations, safeguards and security concerns, and programmatic considerations of impacts. In accordance with CEQ NEPA Regulations §1500.1 (c), "Ultimately, of course, it is not better documents, but better decisions that count. NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. These regulations provide the direction to achieve this purpose" (40 CFR Parts 1500 to 1508).

There are decisions related to the operation of LANL that NNSA will not make based on the Final SWEIS impact analyses. As already stated, decisions about the final remediation actions to be implemented at LANL MDAs and other potential release sites subject to the Consent Order will not be made by NNSA, but by the New Mexico Environment Department (NMED 2005). Similarly, the County of Los Alamos, as the landfill operator, has already made the decision to close the municipal solid waste landfill located at LANL.

NNSA will not make decisions to remove mission support assignments from LANL or alter the operational level of those capabilities that are ongoing at the site in favor of capabilities that have not been explicitly identified in the alternatives analyzed in this SWEIS. NNSA will not consider a LANL "shutdown" or "true No Action Alternative" or a "Greener Alternative" (alternatives considered but not evaluated further in this SWEIS are discussed in Chapter 3, Section 3.5). As noted previously, programmatic changes to the DOE nuclear weapons complex are the subject of a separate NEPA impact analysis. At this time, a shutdown alternative is not reasonable for NEPA analysis.

1.5 Relationships to Other Department of Energy National Environmental Policy Act Documents and Information Sources

Various NEPA compliance reviews undertaken since issuance of the *1999 SWEIS* and its associated ROD have resulted in decisions to implement proposed projects at LANL. Some of these actions have already been implemented, and some actions are proceeding through the detailed planning stages toward implementation in the near future. These NEPA compliance reviews were used to identify operational changes and environmental impacts for this new SWEIS impact analysis. Using the *1999 SWEIS* and its associated ROD as a starting point, these additional NEPA reviews include:

- *Supplement Analysis, Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Modification of Management Methods for Certain Unwanted Radioactive Sealed Sources at Los Alamos National Laboratory* (DOE/EIS-0238-SA-01) (2000). This SA was prepared to evaluate a proposal to modify the Off-Site Source Recovery Project from one that accepted the sealed sources and chemically reclaimed the radioactive material to one that accepted the sealed sources and managed them as radioactive waste.

- *Supplement Analysis, Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Modification of Management Methods for Transuranic Waste Characterization at Los Alamos National Laboratory* (DOE/EIS-0238-SA-02) (2002). This SA was prepared to evaluate a modification to the management methods for transuranic waste by installing and operating modular units for the characterization of this type of waste.

- *Supplement Analysis, Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Bolas Grande Project* (DOE/EIS-0238-SA-03) (2003). This SA was prepared to evaluate the cleanout and disposal of certain large containment vessels that were used for testing purposes. These vessels have been stored at TA-55 and would be taken to the Chemistry and Metallurgy Research Building for cleanout prior to being taken to TA-54 for disposal.

- *Supplement Analysis, Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Recovery and Storage of Strontium-90 (Sr-90) Fueled Radioisotope Thermal Electric Generators at Los Alamos National Laboratory* (DOE/EIS-0238-SA-04) (2004). This SA was prepared to evaluate a proposal to recover, store, and manage as waste certain radioisotope thermal electric generators containing sealed sources as part of the Off-Site Source Recovery Project.

- *Supplement Analysis, Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Proposed Horizontal Expansion of the Restricted Airspace up to 5,000 Feet at Los Alamos National Laboratory* (DOE/EIS-0238-SA-05) (2004). This SA was prepared to evaluate a proposal to slightly expand the horizontal extent of the restricted airspace up to 5,000 feet (1,500 meters) above LANL.

- *Final Supplement Analysis for Pit Manufacturing Facilities at Los Alamos National Laboratory, Stockpile Stewardship and Management Programmatic Environmental Impact Statement* (DOE/EIS-0236-SA/06) (2006). This SA was prepared to evaluate certain conditions and new information associated with proposed pit manufacturing at LANL.

- *Surplus Plutonium Disposition Final Environmental Impact Statement* (DOE/EIS-0283) (1999). This EIS was prepared to analyze environmental impacts with regard to disposition of surplus plutonium at locations around the DOE nuclear weapons complex, including LANL. Plutonium declared excess to national security needs could be stored and dispositioned in accordance with the strategy selected for implementation in the amended ROD for this EIS. LANL was identified as the site for fabrication of mixed oxide fuel to be used in testing.

- *Supplement Analysis, Fabrication of Mixed Oxide Fuel Lead Assemblies in Europe*, (DOE/EIS-0229-SA3) (2003). This SA evaluated the impacts of transporting plutonium oxide from LANL to France for fabrication into four mixed-oxide fuel lead assemblies for a nuclear reactor. The analysis also includes the return to LANL of excess mixed-oxide materials and out-of-specification materials loaded in fuel rods that are welded closed. These materials are to be stored at LANL until they are needed as feed for mixed-oxide fuel production in the United States.

- *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/EIS-0293) (1999). This EIS was prepared to analyze the environmental impacts associated with the future use of each of 10 tracts of land administered by DOE at LANL that were proposed for transfer to the Department of the Interior in trust for the Pueblo of San Ildefonso or conveyance to the County of Los Alamos in accordance with the provisions of Public Law 105-119.

- *Final Environmental Impact Statement for the Proposed Relocation of Technical Area 18 Capabilities and Materials at the Los Alamos National Laboratory* (DOE/EIS-0319) (2002). This EIS reviewed the environmental impacts expected from a proposal to relocate capabilities and materials from TA-18 at LANL to one of several locations around the Complex. The ROD issued as a result of this EIS was to transfer Security Category I and II nuclear equipment and related materials to the Device Assembly Facility at the Nevada Test Site. A decision on the disposition of Security Category III and IV materials was deferred and is addressed in the project-specific analyses of this SWEIS.

- *Final Environmental Impact Statement for the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico (CMRR EIS)* (DOE/EIS-0350) (2003). This EIS examined the potential environmental impacts associated with the Proposed Action of consolidating and relocating the mission-critical chemistry and metallurgy research capabilities from an aging building to a new modern building (or buildings). The ROD (69 FR 6967) selected a location for a Chemistry and Metallurgy Research Replacement Facility adjacent to the

Plutonium Facility Complex in TA-55. Design and construction of the radiological laboratory, administrative office, and support portion of the new facility is proceeding; however, decisions to be made by NNSA that will be supported by the *Complex Transformation SPEIS* could result in changes to the Chemistry and Metallurgy Research Replacement Facility as described in the 2003 *CMRR EIS* and its associated 2004 ROD. Specifically, NNSA will decide whether to construct the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility at LANL or incorporate the capabilities into a consolidated plutonium center or a consolidated nuclear production center either at LANL or another DOE site. Decisions reached by NNSA on Complex Transformation are anticipated to take 10 to 20 years to fully implement. During that period there will remain a continuing need for analytical chemistry and material characterization, and actinide research and development support capabilities and capacities that are currently housed in the Chemistry and Metallurgy Research Building at LANL. NNSA is continuing design efforts for the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility, but actions to proceed beyond the design stage will not occur until programmatic decisions regarding Complex Transformation are made.

- *Supplement Analysis, Environmental Impact Statement for the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos, New Mexico, Changes to the Location of the CMRR Facility Components* (DOE/EIS-0350-SA-01) (2005). This SA was prepared to evaluate placement of certain buildings related to the Chemistry and Metallurgy Research Building Replacement Project in the same vicinity, but at locations other than those detailed in the *CMRR EIS* ROD.

- *Special Environmental Analysis for the Department of Energy, National Nuclear Security Administration, Actions Taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/SEA-03) (2000). This special environmental analysis (SEA) documented the impacts of actions take by NNSA (or on behalf of NNSA or with NNSA funding) to address the emergency situation caused by the 2000 Cerro Grande Fire. This SEA describes actions and their impacts, mitigation measures taken for actions that rendered their impacts not significant or that lessened the adverse effects, and provides an analysis of cumulative impacts.

- *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216) (1999). This EA evaluated the activities necessary to fabricate 59.2 pounds (26.8 kilograms) of mixed-oxide fuel at TA-55 at LANL and ship it to the U.S.-Canada border. The mixed-oxide fuel would be used in a Canadian research reactor.

- *Environmental Assessment for the Proposed Construction and Operation of the Nonproliferation and International Security Center* (DOE/EA-1238) (1999). This EA analyzed construction and operation of a Nonproliferation and International Security Center at TA-3 at LANL that provides office and light laboratory space.

- *Environmental Assessment for Electrical Power System Upgrades at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1247) (2000). This EA analyzed the effects of upgrading the LANL electrical power supply system to increase its reliability for meeting current and future needs.

- *Environmental Assessment for the Proposed Strategic Computing Complex, Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1250) (1998). This EA analyzed the effects of the construction and operation of a three-story, 303,000-square foot (28,100-square meter) Strategic Computing Complex at TA-3 at LANL. Following construction, this building was renamed the Nicholas C. Metropolis Center for Modeling and Simulation.

- *Decontamination and Volume Reduction System for Transuranic Waste at Los Alamos National Laboratory, Los Alamos, New Mexico, Environmental Assessment* (DOE/EA-1269) (1999). This EA analyzed the environmental consequences of the construction and operation of a decontamination and volume reduction system for processing transuranic waste removed from underground storage at LANL.

- *Environmental Assessment for the Wildfire Hazard Reduction and Forest Health Improvement Program at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1329) (2000). This EA analyzed the environmental consequences resulting from implementation of a selected forest management practices program within the boundaries of LANL. Selected practices included mechanical and manual thinning of the forests. A subsequent FONSI added use of prescribed burns as a selected management practice.

- *Environmental Assessment for Leasing Land for the Siting, Construction, and Operation of a Commercial AM Radio Antenna at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1332) (2000). This EA analyzed the environmental impacts of leasing approximately 3 acres (1.2 hectares) of land located in the southeastern portion of TA-54 for the siting, construction, and operation of a commercial AM radio broadcasting antenna.

- *Environmental Assessment for the Proposed Construction and Operation of a Biosafety Level 3 Facility at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1364) (2002). This EA was prepared to assess environmental consequences resulting from construction and operation of a Biosafety Level 3 laboratory facility in TA-3 at LANL. Additional NEPA analysis is being performed to further evaluate the potential impacts of operating the facility.

- *Environmental Assessment for Construction and Operation of a New Office Building and Related Structures within TA-3 at Los Alamos National Laboratory* (NNSA/EA-1375) (2001). This EA was prepared to assess the environmental consequences resulting from construction and operation of a multistoried office building (the National Security Sciences Building) to house about 700 personnel who would move from Building 3-43; a one-story lecture hall; and a separate multilevel parking structure at TA-3 at LANL.

- *Environmental Assessment for the Proposed Construction and Operation of a New Interagency Emergency Operations Center at Los Alamos National Laboratory* (DOE/EA-1376) (2001). This EA was prepared to evaluate the impacts of the construction and operation of a new Interagency Emergency Operations Center at TA-69 at LANL. The new Center was designed to withstand, to the extent practical, any anticipated emergency such that emergency response actions would not be compromised by the emergency itself.

- *Environmental Assessment for Atlas Relocation and Operation at the Nevada Test Site* (DOE/EA-1381) (2001). This EA was prepared to assess the environmental consequences resulting from implementation of a proposal to relocate a hydrodynamic test machine, the Atlas Pulsed Power Machine, from LANL to the Nevada Test Site where it would be set up and operated.

- *Environmental Assessment for the Proposed TA-16 Engineering Complex Refurbishment and Consolidation at Los Alamos National Laboratory* (DOE/EA-1407) (2002). This EA was prepared to assess the environmental consequences of the proposed construction of new buildings and the remodeling of existing buildings to allow consolidation of the Engineering Sciences and Applications Division operations and offices in a "campus-like" cluster of facilities at TA-16. The Proposed Action also included infrastructure changes and the demolition or removal of older buildings and transportables.

- *Environmental Assessment for the Proposed Future Disposition of Certain Cerro Grande Fire Flood and Sediment Retention Structures at Los Alamos National Laboratory* (DOE/EA-1408) (2002). This EA was prepared to analyze the environmental impacts resulting from future disposition of certain flood and sediment retention structures built within the boundaries of LANL in the wake of the Cerro Grande Fire. Aboveground portions of these structures would be removed as the watersheds return to prefire conditions.

- *Environmental Assessment for the Proposed Issuance of an Easement to Public Service Company of New Mexico for the Construction and Operation of a 12-inch Natural Gas Pipeline within Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1409) (2002). This EA was prepared to analyze the proposed issuance of an easement to the Public Service Company of New Mexico to construct, operate, and maintain approximately 15,000 feet (4,500 meters) of 12-inch (30-centimeter) coated steel natural gas transmission mainline on NNSA-administered land within LANL along Los Alamos Canyon.

- *Environmental Assessment of the Proposed Disposition of the Omega West Facility at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1410) (2002). This EA was prepared to analyze the environmental consequences of removing the Omega West Facility, a research reactor, and the remaining support structures from Los Alamos Canyon in TA-2.

- *Environmental Assessment for Proposed Access Control and Traffic Improvements at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1429) (2002). This EA was prepared to analyze the environmental consequences resulting from the

construction of eastern and western bypass roads around the LANL TA-3 area and the installation of vehicle access controls and related improvements to enhance security along Pajarito Road and into the LANL TA-3 core area.

- *Environmental Assessment for the Installation and Operation of Combustion Turbine Generators at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1430) (2002). This EA was prepared to evaluate the environmental impacts of installing and operating two new simple-cycle, gas-fired combustion turbine generators, each with an approximate output of 20 megawatts of electricity, as standalone structures within the Co-Generation Complex at TA-3 (TA-3 Power Plant).

- *Environmental Assessment for the Proposed Los Alamos National Laboratory Trails Management Program, Los Alamos, New Mexico* (DOE/EA-1431) (2003). This EA was prepared to assess the potential environmental consequences of initiating a LANL Trails Management Program that would maintain existing trails, develop new trails, and reclaim closed trails, making them available for public use.

- *Environmental Assessment for the Proposed Consolidation of Certain Dynamic Experimentation Activities at the Two-Mile Mesa Complex, Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1447) (2003). This EA evaluated the environmental impacts of constructing and operating offices, laboratories, and shops within the Two-Mile Mesa Complex, located at the conjunction of TA-6, TA-22, and TA-40, where work would be consolidated from other locations at LANL.

- *Environmental Assessment for Proposed Corrective Measures at Material Disposal Area H within Technical Area 54 at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1464) (2004). This EA was prepared to assess the potential environmental consequences of implementing corrective measures at MDA H. The corrective measure options analyzed in this EA addressed a range of potential containment and excavation options and provided a bounding analysis of the potential environmental effects of implementing any corrective measure at MDA H.

- *Environmental Assessment for the Proposed Closure of the Airport Landfills within Technical Area 73 at Los Alamos National Laboratory* (DOE/EA-1515) (2005). This EA was prepared to evaluate a proposal to conduct a voluntary corrective action involving the closure of two former solid waste disposal areas at the Los Alamos Airport within TA-73 at LANL.

- *Final Environmental Assessment for the Proposed Consolidation of Neutron Generator Tritium Target Loading Production* (DOE/EA-1532) (2005). This EA analyzed the potential effects of a proposal to consolidate tritium production operations by relocating to Sandia National Laboratories, New Mexico, the tritium target loading operations conducted at LANL.

As already stated, decisions to implement projects based on these impact analyses, together with the decision to implement the Preferred Alternative analyzed in the *1999 SWEIS*, form the basis of the No Action Alternative analyzed in this SWEIS. As such, the impacts projected for each action either implemented or to be implemented at LANL based on these NEPA compliance

reviews are considered and incorporated by reference into this SWEIS impact analysis. Similarly, routine maintenance, construction, and support activities that are necessary to maintain the availability, viability, and safety of LANL, and that individually and cumulatively have negligible effects on the environment, are also incorporated into this SWEIS analysis.

Consideration of Future Projects and Emerging Actions Affecting Los Alamos National Laboratory

In addition to the actions for which NEPA analyses have been completed since 1999 and the project-specific actions that are analyzed in this SWEIS, there are interim actions that NNSA could implement for LANL during the time that this SWEIS is under development. In conformance with CEQ regulations regarding interim actions, these actions would be justified independently from the analyses in this SWEIS, would be supported by separate environmental analyses, and would not prejudice the decisions to be made regarding the level of operations at LANL by limiting alternatives (40 CFR 1506.1). Actions that are undergoing separate NEPA review while the SWEIS is being developed are summarized below. Additional actions that have not been sufficiently developed at this time could also be identified and would undergo the appropriate level of NEPA analysis.

- *Draft Environmental Impact Statement for the Operation of the Biosafety Level 3 (BSL-3) Facility at the Los Alamos National Laboratory* (DOE/EIS-0388D). In 2002, NNSA issued the *Environmental Assessment for the Proposed Construction and Operation of a Biosafety Level 3 Facility at Los Alamos National Laboratory, Los Alamos, New Mexico* (DOE/EA-1364), and reached a FONSI (DOE 2002c). The facility, containing two Biosafety Level 3 and one Biosafety Level 2 laboratories, was constructed in TA-3. Due to the need to consider new circumstances and information relevant to the actual construction of the Biosafety Level 3 Facility and its future operation, NNSA withdrew the 2002 FONSI as it applies to operating this facility. NNSA has since determined that an EIS should be prepared that reevaluates the proposed operations of the facility. The Draft BSL-3 EIS is currently being prepared. The outcome of that EIS would not affect NNSA's ability to implement any of the alternatives analyzed in this SWEIS.

- *Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems (Consolidation EIS)* (DOE/EIS-0373D). This Draft EIS evaluates the environmental impacts of the Proposed Action and alternatives for consolidating radioisotope power system nuclear operations at a single site to reduce the security threat in a cost-effective manner, improve program flexibility, and to reduce interstate transportation of special nuclear material. The nuclear operations infrastructure required to produce radioisotope power systems currently exists, or is planned to exist, at three separate locations: Oak Ridge National Laboratory in Tennessee, LANL in New Mexico, and Idaho National Laboratory in Idaho. The Proposed Action would consolidate radioisotope power system nuclear operations at Idaho National Laboratory, thus eliminating safety, security, and transportation issues. The Proposed Action also would remove radioisotope power system nuclear operations work from TA-55; under the *Consolidation EIS* No Action Alternative, the operations would remain at TA-55. However, the elimination of radioisotope power systems

operations would not be necessary to implement any of the alternatives analyzed in this SWEIS.

Future projects that could occur at multiple sites or throughout the complex may also undergo NEPA review during the timeframe of this analysis. Projects that could potentially affect activities at LANL include:

- *Complex Transformation Supplemental Programmatic Environmental Impact Statement (Complex Transformation SPEIS)* (DOE/EIS-0236-S4). On January 11, 2008, NNSA announced the availability of the Draft *Complex Transformation SPEIS* which analyzes the environmental impacts from the continued transformation of the United States' nuclear weapons complex over the next 10 to 20 years. NNSA's proposed action is to continue currently planned modernization activities: NNSA would select a site to consolidate plutonium research and development, surveillance, and pit manufacturing; consolidate special nuclear materials throughout the complex; consolidate, relocate, or eliminate duplicative facilities and programs and improve operating efficiencies; identify one or more sites for conducting NNSA flight test operations; and accelerate nuclear weapons dismantlement activities. With regard to future pit production at LANL, the *Complex Transformation SPEIS* assesses alternatives that could result in decisions to produce pits at LANL at higher levels than are assessed in the LANL SWEIS. Two options of an upgrade alternative for pit production are assessed: one that would produce 80 pits annually, and one that would produce 125 pits annually with a potential surge capacity of 200 pits annually. In addition, LANL is assessed as a potential location for a consolidated plutonium center or for a consolidated nuclear production center; either of which entails consolidation of special nuclear materials storage and production of 125 pits with a potential surge capacity of 200 pits annually. The impacts of constructing and operating a consolidated nuclear production center at LANL are included in the cumulative impacts section of this SWEIS.

  The *Complex Transformation SPEIS* also evaluates consolidating other activities that are currently part of the mission work assignments at LANL, including hydrotesting, high explosives research and development, tritium research and development, and major environmental testing. Depending upon decisions made for Complex Transformation, NNSA may decide to reduce certain operations at LANL, including its 2004 decision to construct and operate the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility at this site.

- *Global Nuclear Energy Partnership Programmatic Environmental Impact Statement (GNEP PEIS)* (DOE/EIS-0396). DOE issued a Notice of Intent for the *GNEP PEIS* on January 4, 2007 (72 FR 331). GNEP would encourage expansion of domestic and international nuclear energy production while reducing nuclear proliferation risks, and reduce the volume, thermal output, and radiotoxicity of spent nuclear fuel before disposal in a geologic repository. The PEIS includes evaluation of a proposed advanced fuel cycle facility that would support research and development associated with the GNEP program. LANL is one of the DOE sites being considered for the advanced fuel cycle facility. DOE held a scoping meeting for the *GNEP PEIS* on March 1, 2007, in Los Alamos, New Mexico. Another dozen scoping meetings were held across the country during the

scoping period, which ended June 4, 2007. DOE intends to issue a *Draft GNEP PEIS* in 2008.

- *Environmental Impact Statement for the Disposal of Greater-Than-Class-C Low-Level Radioactive Waste* (*GTCC EIS*). In July 2007, DOE issued an NOI to prepare an EIS to address disposal of low-level radioactive waste generated by activities licensed by the Nuclear Regulatory Commission or an Agreement State that have radionuclides in concentrations exceeding 10 CFR 61 Class C limits (72 FR 40135). This EIS would also consider DOE waste having similar characteristics. Currently there is no location for disposal of Greater-Than-Class C waste and DOE is responsible for such disposal under the Low-Level Radioactive Waste Policy Amendments Act (Public Law 99-240). LANL is being considered as one of eight candidate DOE disposal sites for Greater-Than-Class C waste in the *GTCC EIS*, along with a generic commercial disposal facility option in arid and humid environments. DOE is evaluating several disposal technologies in the *GTCC EIS* including geologic repositories, intermediate depth boreholes, and enhanced near surface disposal facilities. Certain sealed sources managed by LANL under the Off-Site Source Recovery Project could be candidates for disposal in a site selected by DOE following completion of the EIS. The Off-Site Source Recovery Project would continue to collect and manage sealed sources independent of any decisions that would result from the *GTCC EIS*.

1.6 Public Involvement

The process of preparing an EIS provides opportunities for public involvement (see **Figure 1–4**). These opportunities include the scoping process and the public comment period for the EIS. The scoping process is required by 40 CFR 1501.7 while the public comment period is required by 40 CFR 1503.1. Section 1.6.1 summarizes the scoping process, major comments received from the public, and changes made by NNSA in response to the public comments. Section 1.6.2 summarizes the public comment period process, major comments raised by the public, and NNSA's responses to those comments.

1.6.1 Scoping Process

As a preliminary step in the development of an EIS, regulations established by the CEQ (40 CFR 1501.7) and DOE require "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a Proposed Action." The purpose of this scoping process is: (1) to inform the public about a Proposed Action and the Alternatives being considered, and (2) to identify and clarify issues relevant to the EIS by soliciting public comments.

On January 5, 2005, NNSA published an NOI to prepare a Supplemental SWEIS in the *Federal Register* (70 FR 807) (see Appendix A). NNSA provided the public an opportunity to participate in the scoping process through a public scoping meeting held on January 19, 2005, in Pojoaque, New Mexico, and through receipt of comments via the U.S. Postal Service, a special DOE Internet address, a toll-free phone line, and a facsimile phone line. The public scoping period ended February 17, 2005. Approximately 225 comments were received from citizens, interested groups, local officials, and representatives of Native American Pueblos in the vicinity of LANL

during the scoping process. All comments received were reviewed for consideration by NNSA in proceeding with this NEPA analysis.

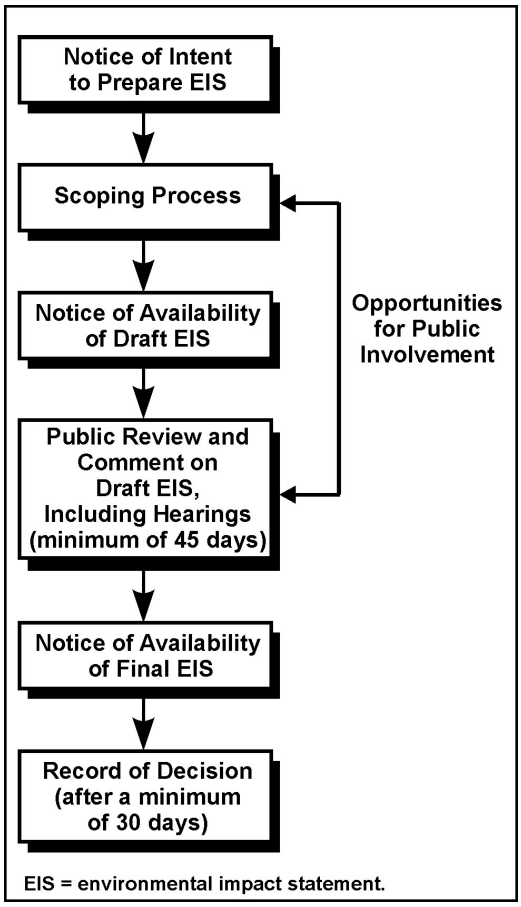


Figure 1–4 National Environmental Policy Act Process

Summary of Major Scoping Comments

Multiple comments were made regarding the type of NEPA document that NNSA should prepare. There were comments calling for development of a new SWEIS rather than a supplement to the *1999 SWEIS*. Justifications for a new SWEIS included changes in operations and the environment, issuance of the Consent Order (NMED 2005), concerns about inadequacies of the *1999 SWEIS*, contaminants in the environment, and others. Regarding the scope of the document, comments included the desire to see a Reduced Operations Alternative, a Greener Alternative, and a "true No Action Alternative". In response, NNSA prepared this SWEIS instead of a Supplemental SWEIS, as originally proposed. This SWEIS includes analysis of a Reduced Operations Alternative to assess the impacts of continued operation of LANL, with certain facilities operating at lower levels. Two alternatives that were suggested for inclusion in the new SWEIS are not analyzed. A "true No Action Alternative," understood to mean a cessation of LANL operations, is not included, nor is a distinct "Greener Alternative." The reasons these alternatives were considered and dismissed from further evaluation are discussed in Chapter 3, Section 3.5.

Other public comments focused on ensuring that certain facilities, processes, and activities at LANL were included in the SWEIS. In general, all facilities, processes, and other activities at LANL have been included. Operation of the Biosafety Level 3 Facility is being addressed in a separate EIS; however, a summary of the potential impacts is included in the cumulative impacts section of this SWEIS.

A range of comments on environmental changes since the release of the *1999 SWEIS* were also received, including general questions on New Mexico's drought and the impacts of the Cerro Grande Fire. Other comments stressed that the most recent environmental monitoring and hydrological data be incorporated and addressed. Chapter 4 summarizes the results of a number of studies performed following the Cerro Grande Fire to determine the impacts the fire had on the movement of contaminants. Appendix F presents a comparison of levels of environmental contamination based on composite samples of groundwater, stormwater runoff, sediments, and soil as measured over the years since the Cerro Grande Fire to similar sample results presented in the *1999 SWEIS*. In addition, the most recent publicly available environmental reports have been incorporated into the analyses of this SWEIS.

NNSA received comments from local Native American Tribes that reflected concerns related to LANL operations and human and environmental health problems in their communities. They believe health issues were not properly addressed in the *1999 SWEIS* or ROD and would like to see a more detailed analysis. NNSA believes this SWEIS conforms to the established NEPA requirements and practices for analyzing and presenting these impacts and made no specific changes in response to these comments.

Other concerns identified by commentors in the scoping process were related to analyzing the impacts of reduced air monitoring, improving the air quality and soil analysis, increasing the discussion of cleanup activities, addressing land conveyance and transfer, and questioning the scope of the accident analyses. NNSA addressed all of these topics in the Draft SWEIS and in this Final SWEIS.

Certain groups of comments from the scoping process were not included in the analysis of this SWEIS. These included comments regarding accountability of LANL management, the transfer of LANL management, worker turnover, and worker morale.

1.6.2 Public Comments on the Draft LANL SWEIS

Once the Draft EIS is completed, regulations require that it be issued publicly to obtain the comments of any Federal agency that has jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards; appropriate State and local agencies; Native American Tribal Governments, when the effects may be on a reservation; and the public, which consists of those persons or organizations who may be interested or affected (40 CFR 1503.1).

NNSA issued a notice of availability for the Draft SWEIS in July 2006 (71 FR 38638). The formal public comment period, originally scheduled for 60 days, lasted 75 days, beginning on July 7, 2006 and ending on September 20, 2006. During this comment period, public hearings were held in Los Alamos, Española, and Santa Fe, New Mexico. In addition, Federal agencies, state and local governmental entities, Native American Tribal Governments, and the general public were encouraged to submit comments via the U.S. mail, e-mail, a toll-free telephone number, and a toll-free fax line. Approximately 1,600 comments were received. NNSA considered all comments, including those received after the comment period ended, in evaluating the accuracy and adequacy of the Draft SWEIS and to determine whether its text needed to be corrected, clarified, or otherwise revised.

Upon receipt, all comment documents (e-mail, letter, telefax, transcribed phone messages) are entered into a tracking system for management during the comment response process. The transcript from each public hearing is also entered into the system as a comment document. All comment documents are included in the Administrative Record. The text of each comment document is delineated into individual, sequentially numbered comments and responses are developed for each comment, as appropriate. A copy of each comment document, including transcripts, along with NNSA's response to each comment, is included in Volume 3, *Comment Response Document*, Section 3, *Public Comments and NNSA Responses*, of the SWEIS.

Summary of Major Issues

Several topics raised by public comments on the Draft SWEIS are of broad interest or concern, or require a detailed response. The following discussion presents a summary of these major issues and NNSA's responses. Many of these issues are presented in more detail in the Comment Response Document, Section 2, *Major Issues*, of the SWEIS.

Opposition to Nuclear Weapons and Pit Production *– Commentors expressed general opposition to nuclear weapons and pit production. Nuclear weapons are seen as unnecessary, immoral, unethical, and violating international nonproliferation treaties, and should be eliminated. Some commentors also called into question the need for pit production because of the apparent long life of plutonium pits.*

NNSA acknowledges that there is wide-spread opposition to the production of nuclear weapons and their components; however, nuclear deterrence will continue to be an important element of national security policy for the foreseeable future. LANL's national security responsibilities are to support NNSA's core mission which includes ensuring a safe and reliable nuclear stockpile; a cessation of these activities would be counter to national security policy as established by the Congress and the President. Therefore, as discussed in Chapter 3, Section 3.5, ending these activities at LANL is not considered in the SWEIS. Maintaining an existing nuclear weapon stockpile for safety and security reasons is not in violation of any current nonproliferation treaty to which the United States is a signatory. Stockpile stewardship capabilities at LANL are currently viewed by the United States as a means to further the Nation's nonproliferation objectives. Continued confidence in the Nation's nuclear stockpile capabilities is likely to remain important in arms control negotiations as the size of the stockpile continues to be reduced in accordance with international treaties. Regarding pit lifetime, NNSA reviewed pit lifetime studies and concluded that the degradation of plutonium in the majority of nuclear weapons will not affect warhead reliability for a minimum of 85 years; however, the production rate of 80 pits per year analyzed in this SWEIS provides a bounding scenario and would, if implemented, give NNSA flexibility to meet current security needs.

NEPA Process *– Commentors expressed a variety of concerns related to the implementation of the NEPA process for the LANL SWEIS, including an inadequate scoping process, inadequate time to review the Draft SWEIS, inadequate timing and number of public hearings, lack of availability of references for public review, and the need to include not-yet completed technical studies.*

In implementing the NEPA process, NNSA provided reasonable opportunities for the public to provide input, including a scoping period following issuance of an NOI and a comment period following publication of the Draft SWEIS. NNSA announced a scoping period and scoping meeting based on the plans to prepare a supplement to the *1999 SWEIS*. Subsequently, NNSA determined that it would prepare a new SWEIS rather than a supplemental SWEIS, consistent with the sentiment expressed in some scoping comments. NNSA believes that the scoping comments apply equally to a supplement to the previous SWEIS or to a new SWEIS. For review of the Draft SWEIS, NNSA originally provided for a 60-day comment period; in response to requests for additional time, the comment period was extended by 15 days for a total of 75 days. The number and location of public hearings was consistent with prior public outreach for LANL

NEPA documents; in addition, all public announcements regarding the Draft SWEIS identified a number of other means by which the public could provide comments (U.S. mail, e-mail, fax, or toll-free phone message). References used in the Draft SWEIS were available to the public in reading rooms in Los Alamos, Santa Fe, and Albuquerque, New Mexico, also consistent with past practices. Commentors noted that the Draft SWEIS had referenced a draft public health assessment prepared by the Agency for Toxic Substances and Disease Registry; this study has since been finalized and is reflected in the Final SWEIS. Other concerns were that updates to seismic hazards analysis and the TA-54 Area G performance assessment should be included in the SWEIS. To the extent possible, the most recent technical documents, including an update to the seismic hazard analysis, completed in 2007, are considered in the Final SWEIS analyses. Information under development that is not available for use in the Final SWEIS, such as the updated Area G performance assessment, will be considered as it becomes available. In accordance with the NEPA process, the SWEIS impact analyses will be reviewed and supplemented as necessary in response to new information.

Alternative Missions *– Commentors suggested changing LANL's mission of supporting stockpile stewardship activities to another, non-weapons related mission. Examples of alternative missions suggested by commentors include development of renewable resources including solar, wind, and biomass; development of environmental cleanup technologies; addressing global climate change; development of the use of hydrogen fuel cells; and development of anti-terrorism and nonproliferation tools.*

As indicated above, the purpose of the continued operation of LANL is to provide support for NNSA's core mission as directed by the Congress and the President, which includes maintaining a safe and reliable nuclear weapons stockpile. A cessation of these activities would be counter to national security policy and therefore, is not considered in the SWEIS. Certain of the research areas identified by commentors are currently performed at LANL and therefore are part of the No Action Alternative. These research activities, including research related to national health issues, waste minimization, and environmental issues, and international nuclear safety, would continue to be conducted regardless of the alternative selected.

Modernization of the Nuclear Weapons Complex *– Commentors requested to delay completion of the LANL SWEIS until the Complex Transformation SPEIS is completed because it has a broader view of the need for, and level of, pit manufacturing. Comments also included requests to address environmental impacts from implementation of the Reliable Replacement Warhead Program in this SWEIS since reliable replacement warheads would be produced at TA-55 within the next 5 years. Commentors also requested the removal of references to a modern pit facility from the SWEIS.*

This LANL SWEIS focuses on continuing site-specific activities and new projects that may be initiated within about 5 years at LANL, whereas the *Complex Transformation SPEIS* addresses programmatic issues of modernization and consolidation of the nuclear weapons complex over a much longer timeframe and across the nuclear weapons complex. As such, the timing of and analyses in the LANL SWEIS are largely independent of the *Complex Transformation SPEIS*. An exception is the nuclear facility portion of the Chemistry and Metallurgy Research Replacement Facility. In conjunction with its Complex Transformation planning, NNSA is reconsidering its previous decision to construct this facility. Regarding the analysis of

environmental impacts from producing reliable replacement warheads, the alternatives analyzed in this SWEIS are independent of any decision to produce a reliable replacement warhead. Capabilities such as production of plutonium components are required regardless of such a decision. If a reliable replacement warhead is approved by the President and funded by the Congress as part of a national strategy for providing a nuclear deterrent, it would enable a shift to production that requires fewer hazardous operations. The environmental impacts analyzed in the LANL SWEIS are based on the existing stockpile stewardship program and corresponding life extension programs. Since the reliable replacement warhead design is expected to reduce the use of radioactive and hazardous materials, analysis of the current stockpile should reasonably bound the potential impacts of the reliable replacement warhead if it goes into production.

When NNSA announced its intent to prepare the *Complex Transformation SPEIS*, it also announced cancellation of proposals to construct a modern pit facility. Consequently, analyses in this SWEIS no longer include a modern pit facility in the cumulative impacts analysis.

Water Resources *– Commentors expressed concern about the impacts of LANL operations on groundwater in the regional aquifer and surface water in the Rio Grande, and consequently, the safety of the drinking water to local and downstream users.*

Monitoring of groundwater has been performed at LANL for many decades and at numerous locations within and around LANL. The locations include springs, drinking water supply wells, shallow monitoring wells, intermediate-depth monitoring wells, and a variety of different monitoring well types for the regional aquifer. LANL, in consultation with the New Mexico Environment Department, will continue a phased approach to determining which wells are needed and in what locations to satisfy long-term monitoring needs. The information presented in the SWEIS relies on the best information available, and primarily on data from the types of wells and screens that have high quality results. Some contaminants are present onsite at levels above applicable standards and guidelines. Elevated levels are investigated to confirm the validity of the results, determine the source and extent of the contamination, and evaluate needed control and cleanup technologies. Confusion regarding the presence of contaminants in samples caused by the presentation of data in Appendix F of this SWEIS has been addressed by better explaining the purpose, development, and use of the data and contrasting them with the data on detected contaminants reported in the annual LANL environmental surveillance reports. There have been concerns regarding neptunium-237 in the regional aquifer. The values of neptunium-237 listed in Appendix F reflect the conservative statistical interpretation of the analyses. The minimum detectable activity for this radioisotope was found to be greater than the reported values using laboratory gamma spectrometry analytical methods. This indicates that neptunium was not present, and that the results were an artifact of the analytical method. An alternate analytical method, alpha spectrometry, has been shown to have a significantly lower minimum detection level for neptunium-237 and was used to measure groundwater samples in and around LANL in 2006. The results of these environmental sample measurements to date have shown no neptunium-237 present in regional aquifer groundwater. Plutonium-239, plutonium-240, and strontium-90 have been detected in samples from Los Alamos water supply wells taken on only one or two dates, indicating an error by the analytical laboratory. This conclusion was confirmed by reanalysis of numerous samples and contradictory results from field and laboratory duplicate samples.

Remediation of water resources containing or potentially containing contaminants is carried out consistent with DOE and external regulatory requirements. For example, the 2005 Consent Order requires investigations to fully characterize the nature, extent, fate, and transport of contaminants subject to the Consent Order that have been released to surface water, groundwater, and other environmental media. Following the investigations, corrective measures are evaluated, proposed, authorized, and implemented as needed, to meet quantitative surface water and groundwater cleanup levels prescribed in Section VIII of the Consent Order.

Sampling in 2005 and 2006 indicates that chromium contamination is present in the regional aquifer in a limited area beneath Sandia and Mortandad Canyons and in perched groundwater beneath Mortandad Canyon. Chromium contamination was not detected in water-supply wells. The LANL contractor has prepared an *Interim Measures Work Plan for Chromium Contamination in Groundwater* (LANL 2006d). An interim measures investigation report prepared in 2006 provides a basis for follow-on work (LANL 2006k). The report found that the main source of hexavalent chromium was chromium-treated cooling water from a TA-3 power plant at the head of Sandia Canyon during its operations between 1956 and 1972. Additional data collection from other regional groundwater monitoring wells is needed to further assess the extent of LANL-derived chromium contamination. Recommendations included additional data collection on chromium and other chemicals for use in risk assessments and the selection of corrective action remedies.

Despite the detection of polychlorinated biphenyls in stormwater runoff within the LANL site boundaries, available data show no discernible impacts on polychlorinated biphenyls concentrations in the Rio Grande.

Offsite Contamination *– Commentors expressed concern about offsite contamination from past and proposed LANL operations. Some commentors were concerned that increased activities would lead to new contamination. They questioned increasing pit production when LANL had not controlled releases in the past. Other commentors stated concerns that contaminants could appear outside the site boundaries and affect residents of nearby communities or those living down wind or down river from LANL, and others questioned the use of 50 miles as the range for evaluating offsite impacts.*

Chapter 6 of this SWEIS describes the environmental laws and regulations that apply to LANL operations. LANL operations do result in emissions to the air and discharges of surface water, but all of these emissions and discharges are in accordance with regulations established to protect public health and safety. The LANL contractor demonstrates compliance through environmental monitoring and reporting, which includes statistical analysis and other methods to determine which results are indicative of the actual presence of a contaminant. Chapter 4 describes the current environment and presents, for resource areas with annually measurable parameters, recent data that show compliance status with regulations and permits. Compliance status is based on data contained in the annual environmental surveillance reports that are required for DOE sites and are publicly available.

Contamination in Foodstuffs

Because ingestion of foodstuffs constitutes an important pathway by which radionuclides and other contaminants can be transferred to humans, a wide variety of domestically produced edible vegetables, fruits, grains, and animal products is sampled from the area surrounding LANL and analyzed for a variety of radionuclides. These samples are used to compare the levels of radioactive and nonradioactive contaminants in foodstuffs at onsite and perimeter locations to regional levels, to determine trends over time, and to estimate the radiation doses and chemical exposures to individuals who consume them. Foodstuff monitoring in the region regularly shows no contamination resulting from LANL operations.

LANL Impact on the Rio Grande

Waters and sediments along the Rio Grande historically have shown relatively small impacts from LANL operations. All base flow samples from the Rio Grande had pollutant concentrations below drinking water standards and standards for the protection of aquatic life, wildlife habitat, and irrigation. None of the radionuclides commonly associated with LANL operations was detected, except for uranium; uranium concentrations (0.5 to 2 milligrams per liter) were consistent with naturally occurring levels in regional waters and well below the Federal drinking water standard of 30 milligrams per liter. In 2005, radionuclide concentrations in bottom sediments from the Cochiti Reservoir, the first reservoir on the Rio Grande downstream from LANL, were lower than in other post-Cerro Grande Fire years. Plutonium-239, plutonium-240, and cesium-137 concentrations showed increases for 1 to 2 years following the Cerro Grande Fire, but concentrations in 2005 were comparable with pre-fire levels. Plutonium-239 and plutonium-240 concentrations in 2005 were near or below analytical detection limits. Metals concentrations in the bottom sediments were not sufficiently different from background concentrations to warrant discussion. The residual high-explosives organic compound 2, 4-dinitrotoluene was detected in Cochiti Reservoir bottom sediments at an estimated concentration of 2.8 milligrams per kilogram, considerably below the U.S. Environmental Protection Agency (EPA) Region VI soil screening level of 120 milligrams per kilogram. This compound was not detected in earlier analyses.

Use of 50-Mile (80-kilometer) Radius Region of Influence

A 50-mile (80-kilometer) radius is commonly used in EISs because this distance has been shown to encompass the significant impacts to the public. Samples measured at varying distances from emissions sources show that the concentration of radionuclides decreases with the distance from the source.

Waste Management *– Commentors were concerned about the large quantities of wastes projected in the SWEIS, particularly for the Expanded Operations Alternative. Commentors questioned the continued generation of waste, particularly when significant legacy waste remains onsite and remediation work is incomplete; where the ultimate disposition of the waste would occur; and the impacts associated with waste storage and disposal, including the impacts from potential accidents. Commentors also questioned the continued practice of onsite disposal of low-level radioactive waste in unlined trenches, citing its impacts on water resources and a general opposition to onsite disposal.*

Although LANL has instituted a pollution prevention and waste minimization program (see Chapter 4, Section 4.9), operation of LANL in support of DOE's core missions will generate radioactive and other wastes. NNSA will continue to manage waste in a manner that minimizes environmental and human health impacts and complies with regulatory requirements and DOE policies and procedures. Mixed low-level radioactive waste and solid and chemical wastes will be shipped to offsite treatment or disposal facilities. Disposal capacity is adequate for these wastes. Low-level radioactive waste may be disposed of onsite or at offsite commercial or DOE disposal facilities, while transuranic waste will be disposed of at WIPP. Increased pit production, as analyzed in the Expanded Operations Alternative, would not result in a significant increase in the volume of waste. The primary contribution to the large increase in waste volume under this alternative would be from environmental remediation involving complete removal of buried wastes located in MDAs and other contaminated media. In this case, the transuranic waste volume projected from postulated removal of all MDAs could increase the volume beyond that assumed to come from LANL in the WIPP Supplemental EIS. Decisions about disposal of this transuranic waste, if generated, would be made within the context of the needs of the entire DOE complex. Regarding the use of unlined pits, future use of lined pits rather than unlined pits for low-level radioactive waste disposal at LANL is being evaluated as part of the required review and update of the Area G performance assessment.

Some wastes would be managed at LANL that cannot be accepted at WIPP or other currently operating and authorized disposal facilities, including commercial sealed sources containing radionuclides in concentrations exceeding the Class C limits in 10 CFR Part 61 and DOE sealed sources containing non-defense transuranic isotopes with similar characteristics. These wastes would be safely stored until they can be disposed of pursuant to the Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240). DOE has issued an NOI to prepare an *Environmental Impact Statement for the Disposal of Greater-Than-Class-C Low-Level Radioactive Waste* (72 FR 40135). Several options for disposal of this waste and other DOE waste having similar characteristics are being considered, including disposal at LANL.

***Water Use** – Commentors expressed concerns that implementation of the Expanded Operations Alternative would require the use of too much water and could exceed available water rights.*

Total and consumptive water use at LANL have actually decreased since 1999, in part due to water conservation efforts. DOE transferred 70 percent of its water rights for LANL, and leases the remaining 30 percent, to Los Alamos County. DOE is now a County water customer, and is billed and pays for the water it uses in accordance with a water service contract. LANL operational water demands would remain within DOE's water use target ceiling quantity. Water demands at LANL combined with the larger and growing demands of other Los Alamos County users could require up to 98 percent of the currently available water rights.

***Consent Order and Environmental Restoration** – Noting that activities to implement the March 2005 Compliance Order on Consent (Consent Order) were included only in the Expanded Operations Alternative, commentors were concerned that NNSA considered compliance with the Consent Order optional. Commentors doubted that cleanup was being addressed and thought that cleanup should be completed before NNSA contemplated increased pit production or generated additional waste at LANL.*

NNSA does not consider compliance with the Consent Order to be optional and is not linking Consent Order compliance with decisions about pit production, proposed new projects or activities, other increased operational levels, or waste generated from other LANL activities. NNSA could choose to implement the alternatives analyzed in this SWEIS either in whole, in part, or in combinations. NNSA intends to implement actions necessary to comply with the Consent Order regardless of decisions it makes on other actions analyzed in this SWEIS. Chapter 2, Section 2.2.6, summarizes the progress made in environmental restoration since 1999. Appendix I analyzes options related to future cleanup actions that could be undertaken.

Depleted Uranium and the Dual Axis Radiographic Hydrodynamic Test Facility *– Commentors expressed concern about open burning of uranium and the effects this would have on air, water, soil, and human health. Some commentors mentioned that large amounts of depleted uranium have been used in the past and might remain in the environment, and that a more comprehensive monitoring program to monitor open burning and detonation sites is needed. Others questioned the use of foam and its effect on emissions.*

There are no experiments or activities at LANL that would involve the burning of depleted uranium. High explosives and explosives-contaminated materials (not including depleted uranium) are burned or detonated in accordance with a Resource Conservation and Recovery Act (RCRA) permit as a hazardous waste treatment to render the materials safe for disposal. The State of New Mexico open burning permits that would allow a variety of experiments and testing have been withdrawn. Experiments at the Dual Axis Radiographic Hydrodynamic Test Facility are subject to specific monitoring requirements. Sampling is performed to better understand the levels of contamination at the firing sites, the success of decontamination efforts, and the success of mitigation techniques that are applied to specific experiments. LANL monitoring programs are regularly reviewed and adjusted to take into account the latest trends in results. Past emission levels analyzed through the existing LANL monitoring programs and those projected in this SWEIS would not be expected to cause adverse impacts on human health or the environment. The use of aqueous foam was implemented at the Dual Axis Radiographic Hydrodynamic Test Facility to reduce the amount of particulates released. The use of foam is estimated to reduce fine particulates by 50 to 95 percent depending on the individual shot. The foam breaks down and is rinsed to a sump from which it is pumped and sent to the Radioactive Liquid Waste Treatment Facility for treatment. This additional, non-hazardous waste was included in the waste analysis in this SWEIS.

Environmental Justice *– Commentors expressed concerns about the adequacy of the Environmental Justice analysis in the SWEIS, indicating that it does not meet the requirements of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. They also were concerned that environmental justice was not properly addressed in cumulative impacts and that the special pathways were not adequately analyzed. Some commentors took exception to statements in the SWEIS that there are no disproportionately high and adverse impacts to low-income and minority populations.*

NNSA acknowledges that different approaches can be used to assess the environmental justice impacts from continuing to operate LANL. As discussed in Chapter 5, Section 5.11, Environmental Justice, 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. An analysis of the radiological doses from emissions associated with normal operations at LANL to minority and low income populations and individuals was added to the Environmental Justice impacts section of the SWEIS. Under all of the alternatives the doses to members of minority populations or low-income populations were slightly less than for the members of the population that do not belong to these groups. In response to comments on the Draft LANL SWEIS, NNSA added additional discussion to Chapter 5, Section 5.13, to address the potential for environmental justice cumulative impacts. As discussed in Chapter 5, Section 5.11, and Appendix C, NNSA looked at potential exposures through special pathways as part of its human health impacts analysis. The special pathways analysis considers ingestion of native vegetation (pinyon nuts and Indian Tea [Cota]), locally grown produce and farm products, groundwater, surface water, fish (game and non-game), game animals, other foodstuffs and incidental consumption of soils and sediments (on produce, in surface water, and ingestion of inhaled dust); adsorption of contaminants in sediments through the skin; and inhalation of plant materials. Even considering these special pathways, NNSA did not find disproportionately high and adverse health impacts to minority or low-income populations. While NNSA recognizes commentors objections to the conclusion that the analysis in this SWEIS has not identified any disproportionately high and adverse human health or environmental impacts on minority or low-income populations under any of the actions or alternatives analyzed in the SWEIS, NNSA believes this is the correct conclusion. Chapter 5, Section 5.11, has been expanded to include more detailed discussion of the environmental justice analysis.

Comparison to Rocky Flats Plant *– Commentors oppose continued or expanded levels of pit production and associated activities at LANL, concerned that these activities would result in health and safety problems. Commentors cited past performance at the Rocky Flats Plant as being indicative of NNSA's continued and future operations, inferring that similar activities at LANL would result in similar environmental contamination and human health effects.*

A number of factors including much lower pit production levels, a heightened awareness of safety and environmental issues, newer facilities and technologies, more stringent environmental and nuclear safety regulations, a higher level of scrutiny by regulators and independent oversight organizations, and more controlled operational and management practices support the conclusion that LANL operations are not comparable to operations at the Rocky Flats Plant. The Rocky Flats Plant produced thousands of pits per year until it ceased operation in 1989. Under the SWEIS Expanded Operations Alternative, LANL would produce a maximum of 80 pits per year.

The Plutonium Facility in TA-55 is a newer facility than those at the Rocky Flats Plant. The Plutonium Facility has increased safety margins, stronger structural components, firebreaks and automatic fire suppression systems, and more automatic alarms and process controls. Specifically with respect to filtration of process emissions and the problems with the Rocky Flats design, the Plutonium Facility has implemented structural designs for fire containments, multiple stages of high-efficiency particulate air (HEPA) filtration, and firebreaks to prevent, isolate, and confine potential fires from spreading through air filtration systems, thus minimizing potential releases to the environment. Additional upgrades, repairs, and replacements of equipment and components are proposed under the TA-55 Refurbishment Project as part of the SWEIS Expanded Operations Alternative to ensure the facility safety envelope is maintained as the facility and its systems and components age.

Recommendations of the Defense Nuclear Facilities Safety Board (DNFSB) *– Commentors expressed their opinion that LANL is not in compliance with DOE and DNFSB safety regulations and recommendations; some commentors claimed that some LANL facilities are up to six years behind on preparing and submitting their safety documentation to DOE; and certain commentors stated that such lack of compliance poses an unacceptable risk to workers, the public and the environment. Commentors stated that the draft SWEIS should fully incorporate, analyze, consider, and resolve the serious safety issues raised by the DNFSB.*

The DNFSB was created by the Congress in 1988 as an independent oversight organization within the Executive Branch to provide advice and recommendations to the Secretary of Energy regarding protection of public health and safety at defense nuclear facilities. As such, the DNFSB independently oversees activities affecting nuclear safety within the nuclear weapons complex. DNFSB reviews safety issues and formally reports its findings and recommendations to the highest levels of NNSA regarding the safety of nuclear weapons complex facilities. Procedures are in place for NNSA to review and respond to DNFSB recommendations, and to implement recommendations at the sites as appropriate. NNSA and the LANL contractor have reviewed DNFSB reports and responded with commitments to update and improve safety basis documentation. The Los Alamos Site Office Safety Authorization Basis Team assures the development and approval of adequate controls to support operations at LANL in a safe manner. LANL nuclear facility operations are authorized and approved by NNSA based on its evaluation of the acceptability of existing relevant safety documentation.

The environmental impacts of potential accident scenarios, including accidents caused by human error during the performance of high hazard operations, as well as from other types of initiating events, are analyzed in the SWEIS. Safe operation is an intrinsic part of the activities proposed and analyzed in the SWEIS. Nonetheless, NNSA identifies possible operational accidents, natural events, or intentional destructive acts and analyzes their impacts of as part of the NEPA process so that this information is available to NNSA in deciding whether to proceed with a proposed action. NNSA has recently revised its oversight practices at LANL to increase the focus of its resources on nuclear safety and security.

Plutonium Inventory Discrepancies *– During the scoping process and again during the review of the Draft LANL SWEIS, commentors contended that there were historical differences in plutonium inventories, leading to the conclusion that there was a loss of control of the plutonium materials and that inventory systems were inaccurate.*

The issue of historical differences in the plutonium inventories has been raised previously. DOE addressed this issue in a 1996 report that notes there are differences in the quantity of plutonium according to the accounting books and the quantity measured by a physical inventory.[13] The report explains that inventory differences are primarily due to various measurement uncertainties

[13] *In 1996 DOE issued the report Plutonium: The First 50 Years (DOE 1996). This report notes that there are differences in the quantity of plutonium according to the accounting books and the quantity measured by a physical inventory. It explains that "inventory differences are not explained as losses but are explained as follows: (1) high measurement uncertainty of plant holdup (plutonium materials remaining in process tanks, piping, drains, ventilation ducts, and other locations); (2) measurement uncertainties because of the wide variations of material matrix; (3) measurement uncertainties due to statistical variations in the measurement; (4) lack of measurement technology to accurately measure material; (5) measurement uncertainties associated with waste due to material concentration and matrix factors; (6) unmeasured material associated with accidental spills; and (7) recording, reporting, and rounding errors."*

(DOE 1996). More recently, NNSA addressed allegations of plutonium discrepancies at LANL. The letter responding to this issue states that "the apparent discrepancy is related to the different tracking and reporting procedures for site security and waste management organizations." The letter concludes that "because of the differences between the tracking and reporting of the site security and waste management organizations, comparisons of the information contained in these two systems cannot be used to draw conclusions concerning the control and accountability of special nuclear material" (NNSA 2006a).

1.7 Changes from the Draft Environmental Impact Statement

In preparing the Final LANL SWEIS, NNSA made revisions in response to comments received from other federal agencies, state and local government entities, Native American Pueblos, and the public. In addition, the SWEIS was changed to provide additional environmental baseline information, include additional analyses, correct inaccuracies and make editorial corrections, and clarify text. NNSA also updated information due to events or notifications made in other documents since the Draft SWEIS was provided for public comment in July 2006. The following summarizes the more important changes made to the SWEIS.

Incorporation of the Updated Environmental and Other Information

Information was updated in the Final SWEIS to reflect the most recent environmental data from *Environmental Surveillance at Los Alamos during 2005 (*LANL 2006h) and information from the 2005 SWEIS Yearbook (LANL 2006g). Data from these reports were incorporated into Chapters 2, 3, 4, and 5 as well as certain appendices. Resource areas most affected include air emissions and water discharges, human health, infrastructure (including electrical and water usage), and waste management. Other new information incorporated into the SWEIS analyses include a biological assessment, an update to the seismic hazard analysis, and new NMED stream water quality standards.

Appendix F was revised to more clearly indicate the purpose and use of the data included and how they relate to the information reported in annual environmental surveillance reports. The data analysis in Appendix F is for the purpose of providing perspective relative to similar data presented in the *1999 SWEIS* and for use in SWEIS impacts analyses. Affirmed detection of contaminants in the environment is presented in the LANL environmental surveillance reports. Appendix F was updated to include an additional year of radionuclide measurements in environmental media in and around LANL. In addition, Appendix F discusses the monitoring results for nonradiological chemicals that are part of the LANL environmental surveillance program. Information on nonradiological contaminants for the period of 2001 through 2005 has been provided for hexavalent chromium, 1,4-dioxane, and polychlorinated biphenyls. In addition, the perchlorate environmental surveillance information was updated to include the results from the most recent year of reporting.

Chapter 5, Section 5.8.2.3 was updated to include 2005 water use data in the trend analysis. The projected demand on available water rights administered by Los Alamos County decreased from 101 percent to 98 percent, leading to the conclusion in the Final SWEIS that the water rights would not be exceeded if the Expanded Operations Alternative were implemented. A more detailed discussion regarding water use is provided in Chapter 4, Section 4.8.2.3.

Presentation of Impacts from Consent Order Activities

The summary of impacts in Chapter 3 has been revised to more readily show the impacts associated with activities necessary to comply with the Consent Order. Under the Expanded Operations Alternative, in addition to showing the impacts for the entire alternative, where practical, the impacts from implementing the Consent Order have been shown separately and could be added to each alternative; the impacts for the balance of the Expanded Operations Alternative are also shown. This presentation of the impacts makes it possible for a reader to see how alternatives compare without the influence of Consent Order activities and reinforces the idea that the NNSA can select all or part of the Expanded Operations Alternative; however, NNSA does not consider compliance with the Consent Order to be optional.

Environmental Justice

The Environmental Justice analysis in Chapter 5 was expanded to include radiological doses from LANL operations for the following populations within 50 miles (80 kilometers) of LANL: white (non-Hispanic), all (total) minorities, American Indians, Hispanic of any race, and low-income populations. These data show that the total minority, American Indian, Hispanic, and low-income populations would not be subjected to disproportionately high and adverse dose impacts from operations at LANL.

Removal of References to a Modern Pit Facility

References to a modern pit facility in the Draft LANL SWEIS were made in the context of ensuring that reasonably foreseeable future actions were addressed in accordance with the CEQ NEPA regulations regarding cumulative impacts. In October 2006, NNSA issued an NOI to prepare the *Complex Transformation SPEIS*. In addition to announcing its intent to prepare an assessment of the environmental impacts from the continued transformation of the nuclear weapons complex, NNSA announced cancellation of the previously planned *Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility* (DOE/EIS-236-S2). Therefore, the Final LANL SWEIS does not include a modern pit facility in the discussion of cumulative impacts in Chapter 5, Section 5.13.

Accident Analyses

The accident analysis has been revised to account for 2006 updates to accident scenarios for certain nuclear facilities that resulted in higher consequences and risks than the previous scenarios. Revising the accident analysis also addressed a comment received regarding an accident scenario involving a fire in the Plutonium Facility Complex. Details of the revised scenarios are included in Appendix D. The new accident scenarios were for the Radioassay and Nondestructive Testing Facility, the Waste Characterization, Reduction, and Repackaging Facility, and the Plutonium Facility Complex. The new accident scenarios included one scenario for each of the individual facilities, two scenarios involving the Waste Characterization, Reduction, and Repackaging Facility and the Plutonium Facility Complex during a seismic event, and one scenario involving the Waste Characterization, Reduction, and Repackaging Facility in the event of a wildfire. Relevant results of these new accident scenarios are reported in Chapter 5, Section 5.12.

The discussion of the site-wide seismic accidents was revised to account for new information from the updated seismic hazard analysis (LANL 2007a). The new study indicates that the seismic hazard is higher than previously understood; that is, the likelihood of earthquakes capable of producing strong ground shaking at the LANL site is greater than previously estimated. This would result in changes to the maximum risks to the maximally exposed individual (MEI), the noninvolved worker and the offsite population under the two seismic accidents.

Terrorism

The SWEIS has been revised to more fully address the issue of terrorism. Chapter 4, Section 4.6 has been expanded to include a description of the safeguards and security that are in place at LANL to protect facilities and special nuclear materials from malevolent acts. Chapter 5, Section 5.12, has been revised to include a discussion of the process of assessing vulnerabilities of facilities to hostile acts. These vulnerability assessments guide the enhancement of safeguards and security at the site. A classified appendix to the SWEIS assesses the potential impacts of terrorist acts.

Transportation Analysis

The transportation analysis was revised to address three specific areas. Responding to comments expressing concerns regarding increased pit production, the SWEIS transportation analysis was revised to provide a clearer distinction between the shipment requirements for production rates of 20 and 80 pits per year. In addition, the impact analysis was revised to bound the impacts of transporting uranium-233 between Oak Ridge National Laboratory and LANL and between LANL and the Nevada Test Site in support of the criticality safety program. A unit basis transportation impacts assessment is also included in Appendix J to provide a basis for assessing impacts of the future transport of sealed sources to and from LANL in support of the Off-Site Source Recovery Project.

Alternatives for Upgrading the Radiography Facility

The Appendix G, Section G.6, project-specific analysis for providing a radiography facility in TA-55 has been revised to remove any options that considered use of all or part of the previous Nuclear Materials Storage Facility (Building 55-41). Based on evaluations of the structure of Building 55-41, a determination was made that extensive and costly structural upgrades to the building to bring it into compliance with requirements for managing special nuclear material would be needed – roof panel members would need to be replaced and other structural components would need to be repaired, replaced, or reconfigured. This structure was never used for storage of nuclear materials and a determination was made in 2006 to demolish the structure. As an uncontaminated structure, the resulting demolition debris could be reused as fill or sent to a solid waste landfill. In addition to the no action option, Section G.6 analyzes an option of constructing a new radiography facility in TA-55.

Location of the Proposed TRU Waste Facility

The impacts analysis included in Appendix H, Section H.3, Waste Management Facilities Transition, has been revised with respect to the TRU Waste Facility. The function of the facility would primarily be to support operations at the Plutonium Facility Complex, including managing transuranic waste from the Radioactive Liquid Waste Treatment Facility. Therefore, a number of locations along the west end of the Pajarito Road corridor near the waste-producing facilities are being considered. The analysis has been revised to evaluate the impacts of a range of locations in the TAs along Pajarito Road. For certain resource areas such as human health impacts, releases from normal operations, and facility accident impacts, analyses account for the largest impacts that would be expected. For other impacts that would be more site specific such as land use, visual impacts, and effects on ecology and cultural resources, the analyses distinguish among the group of TAs being considered.

Revision of the Reduced Operations Alternative

The Reduced Operations Alternative and impacts analyses were revised to include a possible reduction in scope of the Chemistry and Metallurgy Research Replacement Facility as described in the 2003 *CMRR EIS* and NNSA's subsequent 2004 ROD (69 FR 6967). The Chemistry and Metallurgy Research Replacement Facility would be limited to the construction and operation of the radiological laboratory, administrative offices, and support facility building. The decision whether to construct the nuclear facility portion will be postponed until completion of the *Complex Transformation SPEIS*. Under this scenario the existing Chemistry and Metallurgy Research Building would continue to operate beyond 2010 to provide analytical chemistry and materials characterization research and development activities.

1.8 Content of this New Site-Wide Environmental Impact Statement

As indicated in earlier sections of this chapter, the body of this SWEIS focuses on the rollup of past and future operational impacts and tiers from the *1999 SWEIS*. Information used in the SWEIS analyses also tiers from *LANL SWEIS Yearbooks* prepared for the years 1998 through 2005 to track LANL operational impacts. The *SWEIS Yearbooks* are published annually to compare impact projections from the *1999 SWEIS* with actual operations data. The purpose of the *Yearbooks* is to provide facilities and upper management at LANL with a guide for evaluating whether activities are expected to remain within the SWEIS operating envelope, and to facilitate the preparation of this SWEIS, subsequent 5-year review impact analyses, and other NEPA compliance reviews. Additional LANL documents and information sources identified and discussed in detail later in this SWEIS have also been used to support the review of LANL operational impacts. These data sources include *LANL Environmental Surveillance Reports*, LANL site planning processes, various studies and reports generated for the environmental restoration activities at LANL, information from the post-Cerro Grande Fire recovery efforts, and similar sources of information. Various NEPA reviews for proposed LANL actions that have been categorically excluded or were analyzed through EAs and EISs have resulted in actions undertaken since 1999 or in commitments for project implementation over about the next 5 years. These NEPA reviews were also used to identify past and projected operational changes and environmental impacts. A list of the pertinent EAs and EISs affecting LANL operations is provided in Section 1.5.

Chapter 2 of this SWEIS contains summary descriptions of changes at the site and its facilities and facility performance in implementing the 1999 ROD for continuing operations at LANL. Chapter 2 also includes updates and recharacterizes the status of the facilities and their activities that were first identified in the *1999 SWEIS* to establish a comprehensive LANL site operations baseline for the impact analyses presented later in this SWEIS. This chapter also sets the stage for the impacts analyses in this new SWEIS by comparing LANL operational impacts since 1999 to the projected operational impacts in the *1999 SWEIS*. This comparison of projected and actual impacts provides a benchmark for understanding the percentage of total impacts that have already occurred in those instances where impacts were aggregated for the full 10-year period of interest.

Chapter 3 presents the alternatives analyzed in this SWEIS along with projections of LANL operations for the No Action and Action Alternatives, thereby further defining the alternatives for the reader. A summary of the impacts associated with each alternative is also presented in this chapter.

Chapters 4 and 5, respectively, describe the affected environment at LANL as it appears today and the environmental consequences of continued LANL operations. Environmental consequences are addressed under natural and cultural resource topics for both the No Action and the Action Alternatives. They include the following resource areas:

- Land use and visual resources;
- Geology and soils, including paleontological resources;
- Water resources, including surface and groundwater – this includes updating information on the understanding of the groundwater regime;
- Air quality and noise;
- Ecological resources, including terrestrial resources, wetlands, aquatic resources, and threatened and endangered species;
- Radiological and hazardous chemical impacts on human health during routine normal operations and accidents;
- Cultural resources, including archaeological resources, historic buildings and structures, and traditional cultural properties;
- Socioeconomics, including regional economic characteristics, demographic characteristics, housing and community services, and local transportation;
- Site infrastructure;
- Waste management and pollution prevention;
- Transportation;
- Environmental justice.

In addition to these areas, Chapter 5 addresses cumulative impacts, mitigation, unavoidable impacts, irreversible and irretrievable commitment of resources, and impacts on long-term productivity.

The remaining chapters contain supporting information. Chapter 6 of this SWEIS updates information on applicable laws, regulations, other similar requirements and consultations. Chapters 7, 8, and 9 provide a list of references, the glossary, and an index, respectively. The list of preparers and the SWEIS distribution list are presented in Chapters 10 and 11.

As already discussed, Appendix A to this SWEIS contains the full text of the LANL SWEIS ROD issued in 1999 and the *Federal Register* NOI to prepare the Supplemental SWEIS; it also contains the Notice of Availability for the Draft LANL SWEIS, the notice of comment period extension, and the NOI for preparing the *Complex Transformation SPEIS* (then called the *Supplement to the Stockpile Stewardship and Management Programmatic Environmental Impact Statement – Complex 2030).* Appendices B, C, and D, respectively, discuss the methodologies used to assess air quality impacts, human health impacts anticipated from normal operations, and projected impacts from facility accidents. Appendix E updates information on groundwater in the vicinity of LANL, and Appendix F updates information on environmental contamination in a manner that allows comparison to similar information in the *1999 SWEIS*. Appendices G through J provide detailed project-specific information and impact analyses for the projects listed previously as part of the Expanded Operations Alternative. Appendix K presents the methodology and results of the transportation analyses, and Appendix L describes types of activities that are routinely conducted at LANL and are categorically excluded from the need for an EA or EIS.

Volume 3 is the Comment Response Document for this LANL SWEIS. Section 1 of Volume 3 provides an overview of the Draft SWEIS public comment process. Section 2 identifies the major issues from the public comments and NNSA responses. Section 3 shows the public comment documents with the individual comments delineated and corresponding NNSA responses in a side-by-side format. Section 4 presents the references for this volume.