LA-UR-04-8964
Approved for public release; distribution is unlimited.

March 2006

Title

A Plan for the Management of the Cultural Heritage at Los Alamos National Laboratory, New Mexico

Prepared by

Ecology Group for the Department of Energy

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

Edited by Hector Hinojosa, Group IM-1

Prepared by Teresa Hiteman, Group ENV-ECO

Cover photo: Entrance into Los Alamos during the 1940s and early 1950s.

An Affirmative Action/Equal Opportunity Employer

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither The Regents of the University of California, the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by The Regents of the University of California, the United States Government, or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of The Regents of the University of California, the United States Government, or any agency thereof. The Los Alamos National Laboratory strongly supports a researcher's right to publish; therefore, the Laboratory as an institution does not endorse the viewpoint of a publication or guarantee its technical correctness.

LA-UR-04-8964
Approved for public release;
distribution is unlimited.

March 2006

Title

A Plan for the Management of the Cultural Heritage at Los Alamos National Laboratory, New Mexico

Prepared by

Ecology Group for the
Department of Energy

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

Executive Summary

The Los Alamos National Laboratory (LANL) Cultural Resources Management Plan (CRMP) is an **institutional** comprehensive plan that defines the responsibilities, requirements, and methods for managing its cultural resources. The CRMP provides an overview of the cultural resources program, establishes a set of procedures for effective compliance with historic preservation laws specific to the cultural heritage here and specific to the United States Department of Energy, National Nuclear Security Administration (DOE) mission, addresses land-use constraints and flexibility, and makes the public aware of the stewardship responsibilities and of and steps being taken by DOE for managing the cultural heritage of LANL.

A critical aspect of the CRMP is that of defining strategies by which to increase land-use flexibility in support of the DOE mission at LANL while at the same time effectively managing those cultural resources warranting long-term protection. The CRMP also provides a 10-year road map that summarizes and prioritizes the steps necessary for LANL and the Los Alamos Site Office of DOE (LASO) to manage these resources.

The Cultural Resources Team of the Ecology Group of the Environmental Stewardship Division is tasked with the responsibility of assisting LASO with meeting DOE historic preservation compliance mandates. This relationship and specific roles in the compliance process are defined in the CRMP.

The CRMP is divided into 25 numbered sections grouped into six thematic parts. These are summarized as follows.

Part I. Background. Sections 1–6 provide general background information in support of the CRMP.

Section 1 describes the purpose of the CRMP. **Section 2** discusses applicable historic preservation laws, regulations, guidelines, and policies. **Section 3** provides a glossary of terms commonly used in cultural resources management. **Section 4** briefly describes the physical and environmental setting of LANL. **Section 5** presents a summary of Pajarito Plateau culture from the earliest known occupations of the Paleoindian period 10,000 years ago through that of the Manhattan Project and the Cold War, defined here as ending in 1990.

Section 6 lists the numbers and types of historic properties at LANL and provides brief descriptions of each general type. As of October 2004, 86% of LANL has received systematic archaeological survey. The remaining unsurveyed lands are located in the undeveloped portions of Technical Area (TA) 5, TA-33, TA-68, TA-70, TA-71, and other scattered locations across the Laboratory.

- At LANL, 1933 archaeological sites have been recorded. This includes 1796 prehistoric archeological sites, most of which are Ancestral Pueblo dating to the 13th through 15th centuries.
- Of these 1796 prehistoric sites, 440 have been assessed for their eligibility for nomination to the National Register of Historic Places (Register) in consultation with the New Mexico State Historic Preservation Officer (SHPO). The SHPO determined that 378 were eligible, 61 sites ineligible, and one of undetermined status. Not yet formally assessed are 1356 sites.

- Thus, 1735 archaeological sites are eligible or await formal assessment to the Register and, therefore, must be treated as if they are eligible until evaluated.
- One-hundred-thirty-seven (137) historic archaeological sites have been recorded, representing combined Homestead period (ca. 1890 to 1943), Manhattan Project period (1942 to 1946), and that portion of the Cold War (1946 to 1990) dating before approximately 1963. Of this number, 55 sites have been assessed for Register eligibility in consultation with the SHPO. Thirty-five (35) were determined eligible for the Register and 20 sites determined ineligible. The remaining 82 sites have not yet been evaluated.
- Five hundred thirty-six (536) buildings and structures date to the Manhattan Project (1942 to 1946) or early portion of the Cold War (1946 to 1956). A total of 189 of these have been evaluated for Register eligibility, of which 108 have been determined eligible and 81 not eligible.

Part II. National Historic Preservation Act Compliance: Section 106. Sections 7–11 address how LANL accomplishes compliance with Section 106 of the National Historic Preservation Act (NHPA).

Section 7 presents an overview of Section 106 of the NHPA, the most powerful of the historic preservation laws. Section 106 requires Federal agencies to take into account the effects of their undertakings on historic properties and empowers SHPOs as regulators for compliance with the law.

Section 8 presents the details of a Programmatic Agreement (PA) between LASO and the SHPO, and co-signed by the Advisory Council on Historic Preservation (ACHP), that builds on an original PA executed in April 2000 and will be revised to authorize and implement the present CRMP. The PA together with the CRMP streamlines the NHPA Section 106 process.

Section 9 builds on the PA outlined in the previous section and lays out the revised and updated process by which to streamline and to comply with the requirements of NHPA Section 106 project review. The cultural resources project review system is outlined, including the LANL electronic Permits and Requirements Identification system, Excavation/Soil Disturbance Permit requests, and other review processes. Key components of the streamlined review include the following:

- A listing of property types exempt from review.
- Annual reporting to the SHPO of “No Property-No Effect” undertakings.
- Being able to immediately proceed with LANL project construction activities once a “No Effect Through Avoidance” undertaking has been determined. The determination will be reported to the SHPO by means of a letter report or other formal notification.
- Annual reporting to the SHPO of “No Adverse Effect” undertakings involving remodeling or modification to interior rooms of post-1945 administrative and support buildings.
- Reporting to the SHPO of archaeological surveys with negative findings on a case-by-case basis.

Section 9 also states the importance to LANL of moving forward with the formal SHPO assessment of the 1356 archaeological sites not yet evaluated for the Register.

Section 10 outlines in considerable detail the methods used to evaluate, document, and manage post-1942 historic buildings and structures, in compliance with the NHPA. It discusses the importance of the development of historic contexts, the manner in which historic significance and

integrity are assessed, and the development of Memorandums of Agreement with the SHPO by which to document and/or manage specific historic structures and buildings. A total of 26 Manhattan Project and early Cold War historic buildings and structures in 12 separate locations at the Laboratory have been identified as having exceptional significance and the development of Preservation Plans for their long-term management should be considered.

Section 11 outlines in considerable detail the conduct of archaeological resources management at LANL, addressing the methods used to evaluate, document, and manage archaeological sites, in compliance with the NHPA. It addresses the issues of standards, procedures, and goals. An outline of the LANL Significance Standards for Archaeological Sites is provided, and its application to specific project research designs, data recovery plans, and associated comprehensive agreements is discussed. The methods associated with archaeological survey, general fieldwork for excavations, and archaeological laboratory procedures are highlighted. Many of the details for archaeological resources management and other aspects of the cultural resources program are noted and referenced in Appendix B.

Part III. National Historic Preservation Act Compliance: Section 110. Sections 12–16 address how LANL accomplishes compliance with Section 110 of the NHPA.

Section 12 presents an overview of NHPA Section 110. Section 110 broadly sets out the historic preservation responsibilities of Federal agencies. The NHPA also establishes the ACHP as a Federal watchdog for compliance with the Act.

Section 13 discusses the conduct and status of archaeological survey. It is recommended that the remaining 14% of LANL unsurveyed land be scheduled for survey during the next several years. It is noted that the 86% surveyed lands include 14 archaeological surveys conducted during the period of 1991 to 1995 for which reports have not yet been completed and submitted to the SHPO. In addition, approximately 400 archaeological sites identified during archaeological survey as part of the Cerro Grande Rehabilitation Project have not been formally recorded in compliance with the NHPA. It is recommended that the Laboratory meet with the SHPO to discuss a process and schedule by which to complete the site records and submit the reports beginning in fiscal year (FY) 2006.

Section 14 describes issues and responsibilities for compliance with 36 CFR Part 79, Curation of Federally Owned and Administered Archaeological Collections. These collections include not only artifacts and samples that have been recovered from various survey, testing, and excavation programs, but also the field and laboratory records that are associated with these materials. Currently, the Laboratory of Anthropology at the Museum of New Mexico is the designated repository for LANL collections. However, sizable collections are also temporarily being held by the University of California at Los Angeles (representing survey and testing conducted in 1977–1985) and by the LANL cultural resources program based on the ongoing Land Conveyance and Transfer Project excavations scheduled for completion in FY 2007. Eventually the collections will need to be consolidated into a single repository. Some options for permanent curation are briefly discussed. Artifacts dating to the Manhattan Project and Cold War constitute an important exception to this collection policy. Such artifacts are collected, evaluated, and temporarily curated by the LANL cultural resources program in conjunction with the Bradbury Science Museum. These artifacts eventually may be loaned to other institutions and organizations, or accessioned by the Museum.

Section 15 recommends the establishment of two National Historic Landmark Districts at LANL based on the integrity, exceptional state, and national significance that these resources have.

The ***"Project Y" Manhattan Project National Historic Landmark District*** would contain five contributing sets of historic properties in an area estimated to be approximately 4 hectares (10 acres):

- "Trinity Test" V-Site in TA-16
- "Fat Man" Quonset Hut in TA-22
- "Little Boy" Gun Site in TA-8
- "Plutonium Recovery" Concrete Bowl in TA-6
- "Criticality Accident" Slotin Building in TA-18

The ***LANL Ancestral Pueblo National Historic Landmark District*** would contain four contributing sets of historic properties in an area estimated to be approximately 53 hectares (132 acres):

- Nake'muu Pueblo in TA-37
- Tsirege Pueblo in TA-54
- Sandia Pueblo and Mortandad Cave Kiva in TA-5
- Sandia Canyon Cave Kiva in TA-72

Section 16 recommends the establishment of the ***Los Alamos Archaeology National Register Historic District.*** This is complementary to but separate from the two National Historic Landmark Districts. In addition to important Archaic period and Ancestral Pueblo resources, the national register historic district also strives to preserve significant archaeological aspects of the Homestead period. The national register historic district is based on the integrity and the great significance that these resources have for the State of New Mexico and for the northern New Mexico pueblo communities. The national register historic district potentially includes 10 archaeological site complexes, including the remains of four homesteads or ranch structures dating between 1890 to 1943. The combined size of all 10 complexes is approximately 598 hectares (1496 acres).

Part IV. Native American Consultation and Outreach. A number of laws require various types of consultation with culturally affiliated, Federally recognized Native American tribes.

Section 17 provides information on the Native American consultation and outreach program. It provides a detailed discussion of cultural affiliation, in particular as it relates to Ancestral Pueblo archaeological sites and human remains at LANL. The Pueblo of San Ildefonso claims virtually all of LANL with the exception of the Fenton Hill parcel as being within their traditional boundaries. In addition, the Pueblos of Cochiti and Santa Clara claim at least portions of LANL, while the Pueblo of Jemez is recognized as being affiliated with the Fenton Hill parcel. It has also been established that the Jicarilla Apache Nation and possibly the Mescalero Apache Tribe are affiliated to a few archaeological sites in Rendija Canyon, and perhaps elsewhere at LANL. All of the northern New Mexico pueblos, along with the Hopi Nation in Arizona and the Pueblo of Ysleta del Sur in Texas, are considered affiliated to sites dating to the Archaic period. This section also considers issues relating to the Native American traditional cultural properties, the Native American Graves Protection and Repatriation Act, NHPA Section 106 consultation, and various outreach programs.

Part V. Strategic Planning and Long-Term Management Issues and Goals. Sections 18–22 address issues concerning the conduct of strategic planning and aspects of the long-term management of cultural resources at LANL.

Section 18 notes that cultural resources management must be integrated with strategic planning initiatives. This includes the Ten-Year Comprehensive Site Plan and the Site-Wide Environmental Impact Statement, both administered by LASO, as well as working with individual facility strategic planning efforts.

Section 19 discusses the importance of working with the SHPO to complete the Register eligibility determinations of those 1356 previously identified archaeological sites that have not yet been formally evaluated, and to potentially reassess the boundaries and integrity of a number of large artifact scatters that may no longer meet the modern standards for eligibility. The purpose of moving forward to complete these evaluations is to increase land-use flexibility in support of the DOE mission at LANL while at the same time to better focus efforts on those resources most needing long-term management and protection.

Section 20 outlines the rationale and steps for long-term monitoring and protection of key archaeological sites and historic buildings and structures, as is required under the Archaeological Resources Protection Act and Section 110 of the NHPA. This includes routine yearly monitoring of those resources noted in Section 15 as being worthy of National Historic Landmark status, as well as periodic monitoring of the Section 16 National Register Historic District. In addition, periodic monitoring would be performed on an as needed basis for sensitive sites such as complex plaza pueblos and traditional cultural properties, as well as other significant resources threatened by erosion or by vandalism.

Section 21 briefly discusses opportunities for public education, interpretation, and outreach. At least some interpretation and outreach may be the result of requirements necessitated by NHPA Section 106 consultation.

Section 22 outlines issues pertaining to emergency management at LANL. The May 2000 Cerro Grande Fire illustrated the need to be prepared for emergencies so that procedures and steps can be performed to reduce the likelihood of unintentional damage to archaeological resources.

Part VI. Safety, Security, and Quality Assurance. Section 23–25 deal with issues of safety, security, and the quality of processes and products associated with the cultural resources program.

Section 23 summarizes the steps taken by the LANL cultural resources program to make sure that all field, laboratory, and office work is conducted in a safe and secure manner.

Section 24 addresses the fact that an administrative record will be maintained for certain aspects of the cultural resources program above and beyond the normal archaeological and historic preservation records described in Sections 10, 11, and 14. These administrative records would include Native American consultation and formal consultation with regulators including the SHPO and the ACHP.

Section 25 emphasizes the fact that all work performed by and on behalf of the cultural resources program will be guided by specific standards and procedures and by a general Quality Assurance Program Plan. These are referenced in Appendix B.

Appendix A consists of an annotated 10-Year Road Map for the CRMP that lists key priorities on a year-by-year basis. These represent the steps felt necessary to successfully implement the CRMP and to best meet both DOE mission requirements while being effectively compliant with

historic preservation laws. The 10-Year Road Map will be reviewed on a yearly basis. It is emphasized, however, the implementation of the road map is contingent on available funding.

Appendix B is an annotated list of all documents on file with the LANL cultural resources program that support this CRMP and the daily activities of the program. These include standards, procedures, plans, guidance documents, laws, regulations, and all other related materials.

Upon acceptance of the CRMP by the SHPO and the ACHP, a PA will be executed between LASO, the SHPO, and the ACHP.

Contents

Executive Summary v

List of Acronyms xv

Part I. **Background** 1
Section 1. Purpose of the Cultural Resources Management Plan 1
Section 2. Cultural Resources Statutes, Executive Orders and Memoranda, Regulations, Policy, Standards, and Guidelines 3
Section 3. Glossary of Cultural Resources Acronyms and Terms 11
Section 4. LANL Physical and Environmental Setting 14
Section 5. A Brief Summary of Pajarito Plateau Culture History 16
Section 6. Numbers and Types of Historic Properties at LANL 25

Part II. **NHPA Compliance: Section 106** 28
Section 7. Overview of the NHPA Section 106 28
Section 8. April 2000 LASO/SHPO Programmatic Agreement for the Management of Historic Properties at LANL 31
Section 9. NHPA Section 106 Compliance Review Process at LANL 32
Section 10. Methods, Procedures, and Goals for Management of Post-1942 Historic Buildings and Structures at LANL 39
Section 11. Methods, Procedures, and Goals for Archaeological Resources Management at LANL 46
Part III. **NHPA Compliance: Section 110** 52
Section 12. Overview of the NHPA Section 110 52
Section 13. Archaeological Survey at LANL and Survey on Non-LANL Lands 53
Section 14. Archaeological Collections and Laboratory-Era Equipment and Artifacts 57
Section 15. Potential "Project Y" Manhattan Project and Los Alamos National Laboratory Ancestral Pueblo National Historic Landmarks 61
Section 16. Potential Los Alamos Archaeology National Register Historic District 73

Part IV. **Native American Consultation and Outreach** 79
Section 17. Native American Consultation and Outreach 79

Part V. **Strategic Planning and Long-Term Management Issues and Goals** 87
Section 18. Cultural Resources Management and LANL Strategic Planning 87
Section 19. Prioritization Strategy for National Register Eligibility Determinations for Potentially Eligible Archaeological Sites and the Reevaluation of Selected Sites Previously Determined Eligible 89
Section 20. Site Monitoring and Protection 90
Section 21. Educational Outreach and Interpretation 96
Section 22. Procedures for Emergency Situations 99

Part VI. **Safety, Security, and Quality Assurance** 102
Section 23. Archaeological and Historic Preservation Field and Laboratory Safety and Security 102
Section 24. Cultural Resources Management Administrative Record 103
Section 25. Cultural Resources Management Quality Assurance Program 103
Appendix A. 10-Year Road Map for the CRMP A-1
Appendix B. Annotated List of Documents on File in Support of the CRMP B-1

Tables

Table 1. Culture History Chronology for Northern Rio Grande Specific to LANL/Pajarito Plateau 16
Table 2. LANL Archaeological Survey Projects Lacking Reports as of October 2004 55
Table 3. Numbers of Archaeological Sites by Technical Area Potentially Subject to LANL Infrastructure Impacts 95
Table A-1. Tasks Included in the 10-Year Road Map A-2

Figures

Figure 1.1. Location of Los Alamos National Laboratory 2
Figure 4.1. Aerial view of part of the mesas and canyons of the Pajarito Plateau 15
Figure 5.1a. Artist rendering of Archaic period campsite. 18
Figure 5.1b. Typical lithic scatter representing the Archaic period. 18
Figure 5.2a. Coalition period habitation site 19
Figure 5.2b. Artist reconstruction of the site depicted in Figure 5.2a 19
Figure 5.3a. Athabaskan campsite 20
Figure 5.3b. Teepee ring suggesting Athabaskan occupation 21
Figure 5.4a. Homestead Era habitation on LANL land 22
Figure 5.4b. Homestead depicted in Figure 5.4a after the Cerro Grande fire.. 22
Figure 5.5. Remains of wooden protective cover used to shelter Manhattan Project bomb casings at the end of Word War II 23
Figure 11.1. Los Alamos County and homestead patent locations. 49
Figure 13.1. Unsurveyed areas at LANL 54
Figure 13.2. ER Project survey areas 56
Figure 13.3. Cultural resources staff surveyed and located archaeological sites before Cerro Grande rehabilitation activities 57
Figure 14.1. Projectile points from surveys conducted during Land Conveyance and Transfer Project 58
Figure 14.2. Sherds from surveys conducted during Land Conveyance and Transfer Project ...58
Figure 14.3. Flotation samples from surveys conducted during Land Conveyance and Transfer Project 59
Figure 14.4. “Flattop” criticality assembly apparatus at TA-18 60
Figure 14.5. Omega West Reactor Control Panel at TA-2 60
Figure 15.1. Potential “Project Y” Manhattan Project National Historic Landmark and LANL Ancestral Pueblo National Historic Landmark 62
Figure 15.2. Part of the “Trinity Test” V-site before the Cerro Grande fire 63
Figure 15.3. The same buildings as in Figure 15.2 after the Cerro Grande fire 64
Figure 15.4. V-site Buildings 16-516 and -517, which survived the Cerro Grande fire 64
Figure 15.5. Anchor Ranch Proving Ground 65
Figure 15.6. The Gun Site, chosen in 2002 for restoration and interpretation 65
Figure 15.7. The Quonset hut, Building 22-1, where ‘Fat Man’ explosive components were assembled 66
Figure 15.8. “Plutonium recovery” Concrete Bowl 66
Figure 15.9. Building 18-1, site of a fatal criticality accident 67
Figure 15.10. Nake’muu in 1915 69

Figure 15.11. Nake'muu in 1999 69
Figure 15.12. Artist rendering of Tsirege Pueblo (K.M. Chapman) 70
Figure 15.13. Rock art petrophyph at Tsirege depicting the horned water serpent diety, *Awanyu* 71
Figure 15.14. Mortandad Cave Kiva 71
Figure 15.15. Steel grate in front of Mortandad Cave Kiva 72
Figure 16.1. Potential Los Alamos Archaeology National Register Historic District 74
Figure 16.2. Scattered shaped tuff blocks from an Ancestral Pueblo roomblock on Puye Mesa 75
Figure 16.3. General view of cavates along the southern slope cliff faces of Mesita del Buey 76
Figure 16.4. Petroglyphs on the southern slope of Mesita del Buey 76
Figure 16.5. Gomez homestead horno 77
Figure 16.6. Other features at the Gomez homestead 78
Figure 16.7. The Pond Cabin at TA-18 78
Figure 17.1. San Ildefonso tribal members visit an Ancestral Pueblo site at LANL 81
Figure 17.2. Santa Clara tribal members visit an Ancestral Pueblo site at LANL 82
Figure 17.3. Tribal consultation with the Jicarilla Apache 82
Figure 17.4. Pueblo of San Ildefonso members fence off an archaeological site along a fire road 86
Figure 17.5. Spreading native seed after the Cerro Grande fire 86
Figure 20.1. Snag removal at Nake'muu to decrease risk of possible damage to standing walls 91
Figure 20.2. Overhanging branches are removed from a snag at Nake'muu to minimize chance of damage to standing walls 91
Figure 20.3. LANL employees and San Ildefonso monitors stand behind electronic equipment used to measure vibrations during a test shot 93
Figure 20.4. This vibration sensor sits on the top of a standing wall at Nake'muu 93
Figure 20.5. Comparison to historic photographs helps illustrate the rate of the loss of parts of the standing wall 94
Figure 20.6. Periodic quantitative counts of chinking stones helps with the temporal assessment 94
Figure 21.1. The Romero Cabin at its original location 97
Figure 21.2. The same cabin rehabilitated and relocated next to Fuller Lodge 98
Figure 21.3. Candy kettles used to mix high explosives are seen here after the Cerro Grande fire 98
Figure 21.4. Manhattan Project candy kettle (see Figure 21.3, right side) and paintings on display at the Governor's Gallery at the State Capital Building 99
Figure 22.1. Cerro Grande fire moving onto LANL land 100
Figure 22.2. Archaeological site damaged by the Cerro Grande fire 100
Figure 22.3. Archaeological site after the Cerro Grande fire 101
Figure 22.4. The Pond Cabin was enclosed to protect it from possible flash flooding after the Cerro Grande fire 101
Figure 23.1. A tailgate safety briefing takes place before fieldwork begins 103

List of Acronyms

ACHP	Advisory Council on Historic Preservation
AEC	United States Atomic Energy Commission
AIRFA	American Indian Religious Freedom Act of 1978
APE	area of potential effects
ARMS	Archaeological Resources Management System
ARPA	Archaeological Resources Protection Act of 1979
CGRP	Cerro Grande Rehabilitation Project
DOE	United States Department of Energy, National Nuclear Security Administration
ENG-DCRM	Document Control and Records Management Group
ENV	Environmental Stewardship (Division)
ENV-ECO	Ecology Group
EO	Executive Order
EOC	Emergency Operations Center
ER	Environmental Restoration (Project)
ESA	Engineering Sciences and Applications (Division)
FM	Facility Manager
FMU	Facility Management Unit
FIRP	Facility Infrastructure and Revitalization Project
FS	Field Specimen
FY	fiscal year
GIS	geographic information system
GPS	Global Positioning System
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HSR-8	Safety and Industrial Hygiene Field Support Group
ISM	Integrated Safety Management
IWD	integrated work document
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LIR	Laboratory Implementation Requirement
MOA	Memorandum of Agreement
MOADs	‘Mother of All Databases’
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NCB LIR	NEPA, Cultural Resources, and Biological Resources Laboratory Implementation Requirement
NEPA	National Environmental Policy Act of 1969
NHL	National Historic Landmark (District)
NHPA	National Historic Preservation Act of 1966
NTS	Nevada Test Site
PA	Programmatic Agreement
PARP	Pajarito Archaeological Research Project
PM	Project Management (Division)
PR-ID	Permit Requirements Identification (system)

PRS	potential release site
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
S	Safeguards and Security (Division)
S-7	Classification Group
SALT	Strategic Arms Limitation Talks (I and II)
SHPO	State Historic Preservation Officer
START	Strategic Arms Reduction Treaty
SWEIS	Site-Wide Environmental Impact Statement
SWMU	solid waste management unit
TA	Technical Area
TCP	traditional cultural property
THPO	Tribal Historic Preservation Officer
TYCSP	Ten-Year Comprehensive Site Plan
UCLA	University of California at Los Angeles

Part I. Background

Section 1. Purpose of the Cultural Resources Management Plan

Los Alamos National Laboratory (LANL) is currently managed by the University of California for the United States Department of Energy, National Nuclear Security Administration (DOE). As of September 2003, LANL consisted of approximately 11,643 hectares (28,747 acres–44.9 square miles) of the Pajarito Plateau, adjacent to the Jemez Mountains in northern New Mexico (Figure 1.1). This land area began shrinking starting in October 2003 in response to a Congressionally mandated transfer of excess lands, and by 2007 it is anticipated that LANL will have an area of approximately 10,000 hectares (24,710 acres). An additional 6 hectares (15 acres) are situated at Fenton Hill, a discontiguous parcel located in the Jemez Mountains approximately 32 kilometers (20 miles) west of the town of Los Alamos.

This LANL Cultural Resources Management Plan (CRMP) is designed to provide a practical and user friendly set of steps and procedures for complying with Federal historic preservation laws and regulations and with DOE policies and directives relating to cultural resources at LANL. A critical aspect of the CRMP is that of defining strategies by which to increase land-use flexibility in support of the DOE mission while at the same time most effectively managing those cultural resources warranting long-term protection. Although historic preservation laws mandate that all cultural resources be properly evaluated for their integrity and significance, these same laws recognize that not all "historic properties" are eligible for listing in the National Register of Historic Places (Register) (described below) or are of equal significance and value.

There are about 2000 known archaeological sites at LANL. The great majority of these sites represent the villages, farmsteads, resource exploitation areas, rock art panels, trails, and shrines of more than 10,000 years of Native American use of the Pajarito Plateau, knowledge of which is still actively preserved in the living memory of modern Puebloan neighbors and other nearby tribes. The Ancestral Puebloan remains are themselves of such cultural richness and significance that in the early 1900s the lands now occupied by LANL were included in the then proposed "Pajarito Park," which, due to political pressures, was eventually scaled back to that of present Bandelier National Monument. The other archaeological sites at LANL represent the remains of homes, wagon roads, trails, trash scatters, fences, and fields of early 20th century Hispanic and Anglo homesteaders. In addition, the built environment includes hundreds of historic buildings and structures that represent locations where significant research and development activities took place—beginning with the Manhattan Project in 1943—that helped to define the recent history of the United States and many aspects of the modern technological world.

Cultural resources can be considered "heritage resources" in that they represent an inheritance or legacy from past peoples and events that provide a historical context for the present employees and managers of LANL, for neighboring communities (including homesteader descendants) and Native American tribes, and for the Nation. Therefore, the CRMP also provides some information about the nature of these resources and the rationale for why it is important to manage, protect, and preserve these resources. The CRMP is intended to be comprehensive, however, along with the road map outlined in Appendix A, the nuts-and-bolts details are largely left to supporting documents, listed in Appendix B, that help to guide LANL professional cultural resources managers in the daily conduct of their duties.

LANL is tasked with the responsibility of assisting the DOE Los Alamos Site Office (LASO) with meeting DOE historic preservation compliance mandates at LANL. This relationship and specific roles in the compliance process are defined in the CRMP.

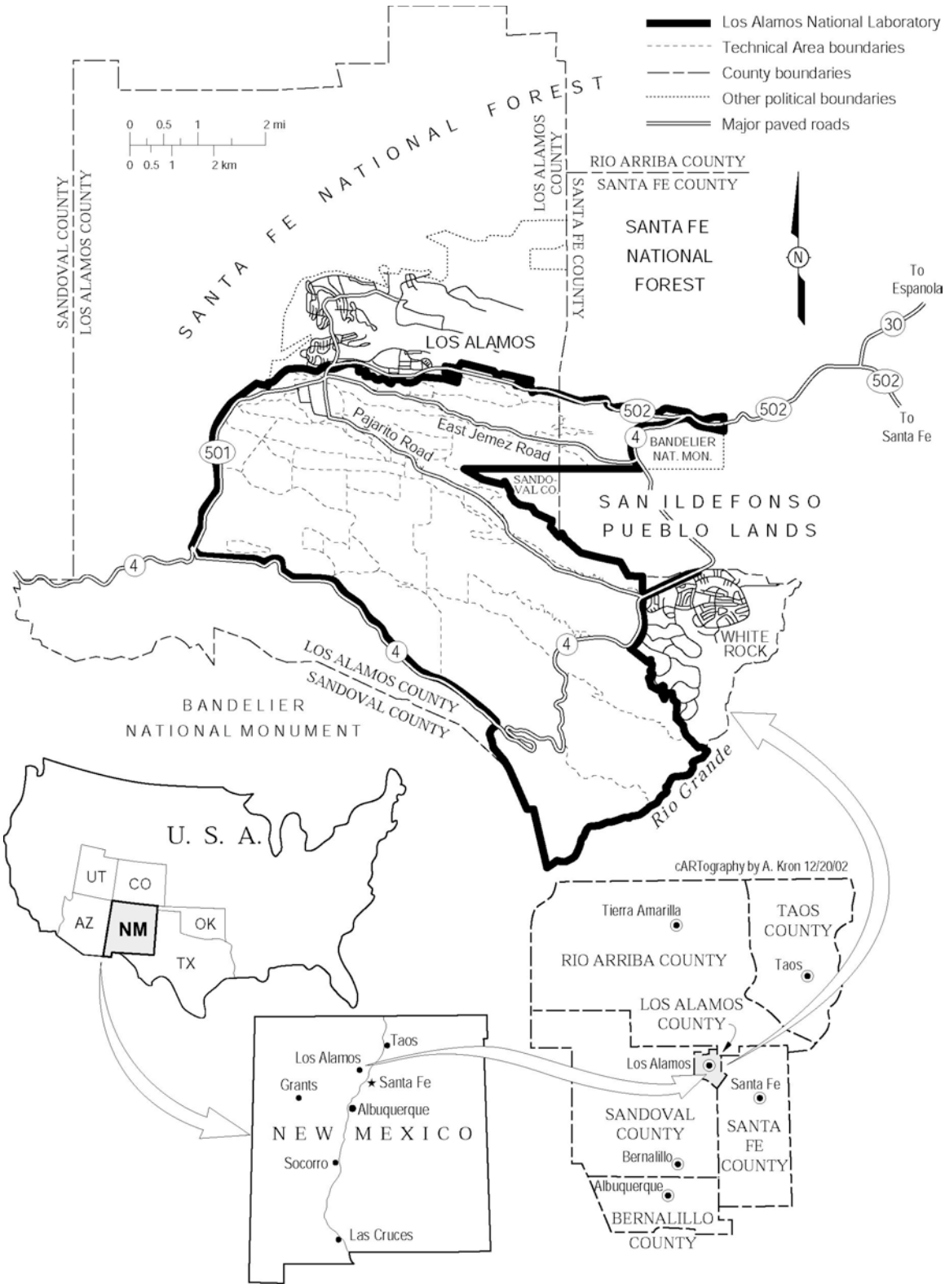


Figure 1.1. Location of Los Alamos National Laboratory.

The CRMP is organized according to six broad parts, each containing from one to six distinct topical sections. The overarching parts include background, compliance with Section 106 of the National Historic Preservation Act (NHPA), compliance with Section 110 of the NHPA, Native American consultation and outreach, strategic planning and long-term management and goals, and basic safety, security, and quality assurance procedures. The document contains a total of 25 specific sections and two appendices. Appendix A is a 10-year Road Map for the CRMP. Appendix B is an annotated list of plans, documents, and measures on file at LANL that support the CRMP and the cultural resources program. The Road Map will be reviewed on a yearly basis. It is emphasized, however, the implementation of the road map is contingent on available funding.

With approval of this Plan by LASO, the New Mexico State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP), the CRMP and its associated implementing Programmatic Agreement (PA) between these agencies and regulators replaces the original PA of April 2000.

Section 2. Cultural Resources Statutes, Executive Orders and Memoranda, Regulations, Policy, Standards, and Guidelines

There are more than two dozen Federal laws, executive orders (EOs), memoranda, and policies that touch upon historic preservation and cultural resources issues, however only about half of these have substantive application to the lands and operations at LANL itself. These are summarized below.

Statutes

Antiquities Act of 1906 (16 USC 432, 433)

The Antiquities Act was the first Federal law to provide protection of historic and prehistoric ruins and monuments and objects of antiquity on Federal lands. It authorized the President to establish national monuments to protect historic and prehistoric structures and objects of historic or scientific interest. It also established a system to permit examination and excavation by qualified researchers to increase knowledge and collect antiquities for permanent preservation in public museums. Penalties were established for unauthorized excavation and collection. Implementing regulations are codified at 43 CFR Part 3. It is notable that this law was created in part as a direct response to the richness of the archaeological resources on the Pajarito Plateau (including on present LANL lands) and the fact that these and other archaeological resources throughout the United States were being threatened with destruction from looters and development.

Historic Sites Act of 1935 (16 USC 461)

The Historic Sites Act declared a national policy to identify and preserve historic sites, buildings, objects, and antiquities of national significance. The law authorized the Secretary of the Interior to conduct surveys, collect and preserve data, and acquire historic and archaeological sites. The Historic American Building Survey (HABS) and Historic American Engineering Record (HAER) originated from this Act, as well as the National Park Service program of designating National Historic Landmark (NHL) Districts.

National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.)

The NHPA is the cornerstone of the current Federal cultural resource preservation program. It sets forth a general policy of supporting the preservation of historic and prehistoric buildings and properties by the Federal government for the benefit and education of the people of the United States. The law states that the Federal government will financially and technically assist efforts to preserve aspects of prehistoric and historic heritage in the United States and will administer Federally owned historic and prehistoric resources.

The Secretary of the Interior is authorized to expand and maintain a Register composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture.

The Secretary is empowered to establish criteria for nominating properties to the Register, designating properties as NHL Districts, considering appeals to recommendations and nominations, nominating historic properties to the World Heritage List, making determinations of eligibility of properties for inclusion on the Register, and notifying property owners and the public when property is being considered for nomination to the Register.

NHPA encourages the development of state preservation efforts and programs, including the establishment of a SHPO. The SHPO is required to identify and inventory historic properties in the state, nominate eligible properties to the Register, implement a statewide preservation program, communicate with the Federal and state agencies on matters of preservation, ensure that Register eligible properties are taken into account during planning and development, and provide information, technical assistance, and education to the public regarding preservation matters.

A grant program is provided through NHPA that provides funds for states for the purposes of identifying historic properties and for the preservation of Register properties. Grants are made available for the operation of the National Trust for Historic Preservation. Additional funds may be provided for the preservation of NHL Districts threatened with damage or destruction, public education and training in historic preservation, and to Native American tribes and nonprofit organizations representing ethnic and minority groups for the purpose of preserving their cultural heritage.

NHPA establishes the ACHP. This independent Federal agency is required to advise the President, the Congress, and other Federal agencies on matters relating to historic preservation, encourage public education and participation in historic preservation, and review policies and programs of Federal agencies in order to improve their effectiveness and efficiency.

Section 106 of NHPA requires Federal agencies to take into account the effect of any Federal or Federally funded undertaking on any district, site, building, structure, or object that is included in or is eligible for inclusion in the Register. The ACHP must be given an opportunity to comment on the undertaking's effect on historic properties unless it is determined by the Federal agency that there is no effect or no historic property involved in the undertaking. Federal agencies must take into account the effects of their undertakings on cultural resources at the planning stage and provide for protective measures or other mitigation and treatments for any affected resources. The implementing regulations for Section 106 are contained in 36 CFR Part 800.

Section 110 of NHPA requires the heads of all Federal agencies to assume responsibility for the preservation of historic properties located on or controlled by the respective agency. Each Federal agency is required to undertake a program to locate, inventory, and nominate to the Secretary of the Interior all properties owned or under control of the agency that appear to qualify for

inclusion on the Register. Historic properties must be recorded and documented in the event of their damage or destruction due to any Federal agency activity, including routine demolition as part of infrastructure development. Each Federal agency is required to designate a qualified official as a Preservation Officer who will coordinate preservation activities of the agency. Costs of preservation efforts may be included in the planning efforts of any agency undertaking. The Federal Preservation Officer currently resides at DOE Headquarters in Washington, D.C.

Section 112 of NHPA requires that any Federal agency responsible for the protection of historic properties shall ensure that all actions taken on these properties are done by people meeting professional standards developed by the Secretary of the Interior. This includes both agency and contract personnel. All data and records produced through historical research shall be permanently curated in appropriate databases and will be available for use by researchers. Finally, this section requires that Federal historic preservation include plans to promote protection and preservation of historic properties to the public.

Section 304 of NHPA allows an agency to withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if the agency determines that such disclosure may cause a significant invasion of privacy, risk harm to the historic resource, or impede the use of a traditional religious site by practitioners.

NHPA defines historic properties to include archaeological sites, buildings, structures, districts, and objects that are prehistoric or historic in age. In the southwestern United States, the break between prehistory and history occurred in the 16th century when written records were produced by Spanish explorers. Native American oral traditions also provide historical accounts of earlier periods. Historic properties ordinarily must be at least 50 years old, but younger properties of exceptional importance may also be included as cultural resources worthy of consideration for Register eligibility under NHPA.

Traditional cultural properties (TCPs) are a particular class of cultural resource, specifically recognized as such in the 1992 amendments to NHPA. TCPs are places of special heritage value to contemporary communities because of their association with the cultural practices or beliefs that are rooted in the histories of those communities. These resources are important in maintaining the community's cultural identity and are not limited by age or universal understanding. Sections 101(d)(6) and 101(d)(6)(B) state that properties of traditional religious and cultural importance to a Native American may be determined to be eligible for inclusion to the Register. Further, it directs Federal agencies, while carrying out their responsibilities under Section 106, to consult with any Native American group that attaches religious and cultural significance to properties that may be affected by a Federal undertaking.

In response to the 1992 NHPA amendments, a new policy statement, *Consultation with Native Americans Concerning Properties of Traditional Religious Cultural Importance*, was adopted by the ACHP on June 11, 1993. The policy contains guidelines for application of the amendments. In particular, the policy recommends that consultation efforts with Native American groups and other ethnic groups with traditional cultural values be identified using “culturally appropriate methods” and that participants in the Section 106 process learn how to approach Native Americans and others in “culturally informed ways” (ACHP 1993). Consultation with Native Americans must be conducted with sensitivity to cultural values, socioeconomic factors, and the administrative structure of the group. Specific steps are to be taken to address language differences and issues such as seasonal availability or lack thereof on the part of necessary participants. The ACHP’s policy statement reaffirms the Federal government's commitment to maintaining confidentiality regarding cultural resources and states that participants in the Section

106 process "should seek only the information necessary for planning in a manner that respects the Native American groups need for confidentiality" (ACHP 1993).

National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.)

The National Environmental Policy Act (NEPA) establishes a national policy that encourages harmony between humans and the environment. This policy states that the Federal Government shall use all practicable means to preserve the productive harmony of the environment while fulfilling social, economic, and other requirements of generations of Americans. Included in preserving the environment is the preservation of important historic and cultural aspects of national heritage. The aim of the Act is to have full disclosure of the decision-making process.

NEPA requires all Federal agencies to prepare a statement that assesses the impact of any proposed action on the environment, including any unavoidable adverse environmental effects, and alternatives to the proposed action prior to implementation of the proposed action. This statement shall be prepared as early in the planning process as possible and shall accompany the action's proposal through the agency review process, ensuring that environmental concerns are addressed in the decision-making process.

Implementing regulations issued by the Council on Environmental Quality are codified at 40 CFR 1500-1508. DOE has published counterpart regulations that are codified at 10 CFR 1021 and in DOE Order 451.1A, National Environmental Policy Act Compliance Program. These regulations encourage combining NEPA compliance with other regulatory requirements such as those of the NHPA, American Indian Religious Freedom Act of 1978 (AIRFA), and Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (discussed above and below).

American Indian Religious Freedom Act of 1978 (42 USC 1996)

The AIRFA reiterates the First Amendment recognition of religious freedom for the peoples of the United States. Specifically, it refers to the inherent right of indigenous peoples to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rites.

Federal departments, agencies, and other instrumentalities are directed to evaluate their policies and procedures in consultation with native traditional religious leaders to determine appropriate changes necessary to protect and preserve Native American religious cultural rights and practices. LANL tries to plan activities so that they do not disrupt or adversely affect the practice of traditional religions. Tribal groups receive advance notification of major construction activities and are requested to inform LASO if these activities would affect a TCP. We also provide access to resource collection areas for ceremonial activities and hunting.

Archaeological Resources Protection Act of 1979, as amended (16 USC 470aa et seq.)

The Archaeological Resources Protection Act (ARPA) establishes that archaeological resources on public and Indian lands, which are threatened by unauthorized excavation and looting, are a part of the Nation's heritage and should be preserved for the benefit of the American people. The law encourages cooperation between individuals possessing private artifact collections and the archaeological community.

ARPA specifically protects any material remains of past human life of archaeological interest and at least 100 years old, including pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the above located on public or Indian lands of the United States. Public lands include the national park system, national wildlife refuges, the national forest system, and all other lands the fee title which is held by the United States—such as LANL. Indian lands refer to lands of Native American tribes or individuals held in trust by the United States.

Unauthorized excavation, removal, damage, alteration, defacement, or attempts to injure any archaeological resource on public or Indian land are prohibited. No one may purchase, sell, or exchange any archaeological resource derived from public or Indian lands. The law provides criminal and civil penalties for any violation. One such case occurred in the late 1990s on LANL lands, and the individual was successfully prosecuted in accordance with ARPA.

Permits may be obtained from the appropriate Federal agency by qualified individuals who propose to excavate or remove archaeological resources from Federally owned or controlled land. The proposed work must be undertaken for the purpose of furthering archaeological knowledge for the benefit of the public. Archaeological resources recovered are to remain the property of the United States and must be preserved by a university, museum, or other qualified institution. The appropriate Federal land manager must contact any Native American tribe that has a cultural or religious interest in a site proposed to be excavated under permit.

Federal agencies may not disclose any information pertaining to the location of sites which would require an excavation or artifact removal permit unless the disclosure would further the purposes of ARPA or would not create a risk to the condition of archaeological resources on the site. A Governor of any state may request locational information from Federal agencies who control land within the Governor's state. Federal agencies must develop plans for surveying lands not scheduled for specific undertakings and implement a system for recording and reporting archaeological violations. Federal managers are required to establish a program to increase public awareness of and the need to protect archaeological resources.

The Secretary of the Interior is charged through ARPA to encourage cooperation and exchange of information among individuals who possess archaeological resources collected before the enactment of the Act, Federal authorities responsible for archaeological resource protection, and professional archaeologists.

Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001 et seq.)

The purpose and intent of the NAGPRA is to acknowledge the ownership of certain Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony by Native American tribes or organizations, and to treat these remains and objects in a way that is agreeable to these tribes or organizations.

The first provision of NAGPRA covers Native American remains or objects discovered on Federal or tribal lands after the date of enactment of NAGPRA. The Federal land managing agency must notify Native American tribes or organizations of the discovery, providing them an opportunity to issue a claim of affiliation to the remains or objects. The tribe or organization determined to have the right of ownership of the remains or objects may then consult with the

agency to determine what action should be taken with the remains or objects. The agency is responsible for carrying out these determinations.

The second provision of NAGPRA covers Native American remains or objects possessed or controlled by Federal or Federally assisted institutions, curation facilities, or agencies. The curation facility shall inventory all of these remains and objects and provide these inventories to Native American tribes or organizations. The tribes or organizations may issue a claim of affiliation to the remains or objects. The tribe or organization determined to have the right of ownership of the remains or objects may then consult with the curation facility to determine what action should be taken to repatriate the remains or objects. The curation facility is responsible for carrying out these determinations.

NAGPRA also makes provisions for the prosecution of those who knowingly sell, purchase, use for profit, or transport for sale or profit Native American human remains or objects covered in this Act, whether or not they derive from Federal or Indian lands.

Executive Orders and Memoranda

Executive Memorandum, September 23, 2004

This executive memorandum addresses government-to-government relations with Native American tribal governments. This complements and partially supersedes the similar executive memorandum of April 29, 1994. To ensure that the rights of sovereign tribal governments are fully respected, the memoranda set forth guidelines requiring Federal agencies to operate within a government-to-government relationship with Federally recognized tribal governments. This involves consultation with tribal governments before taking actions that affect those governments, as well as assessing the potential impact of plans, projects, and activities on tribal trust resources. Tribal government rights and concerns are considered during the development of such programs and activities by working directly and effectively with tribal governments on activities that affect trust properties or tribal governmental rights. Federal programs may be designed to provide unique solutions to address specific needs of tribal communities.

Executive Order 13007, May 24, 1996

EO 13007 concerns Indian Sacred Sites. In order to protect and preserve Indian religious practices, Federal land managers must accommodate access to and ceremonial use of Indian Sacred Sites by Indian religious practitioners and avoid adversely affecting the physical integrity of sacred sites. A “sacred site” as defined in EO 13007 is “any specific, discrete, narrowly defined delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Agencies, where appropriate, shall maintain the confidentiality of sacred sites, and will implement procedures to manage these resources.

Executive Order 13175, November 6, 2000 (superseded EO 13084 of the same title)

EO 13084 addresses consultation and coordination with Indian tribal governments. This document states that each Federal agency must establish a process for regular and meaningful consultation and collaboration with Native American tribal governments in the development of

regulatory matters that directly affect their communities. Policies will take into account tribal self-government, sovereignty, and treaty rights.

Executive Order 13287, March 3, 2003

EO 13287 states as policy that the Federal government is to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties (as defined under the NHPA) owned by the Federal government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.

Regulations

There are a number of regulations that help to implement the intent of the legislation described above. These are largely self-explanatory and will be listed simply by number and title in the Code of Federal Regulations:

36 CFR 60: National Register of Historic Places

36 CFR 63: Determination of Eligibility for Inclusion in the National Register of Historic Places

36 CFR 65: National Historic Landmarks Program

36 CFR 67: The Secretary of the Interior's Standards for Rehabilitation

36 CFR 68: The Secretary of the Interior's Standards for the Treatment of Historic Properties

36 CFR 78: Waiver of Federal Responsibilities under Section 110 of the National Historic Preservation Act

36 CFR 79: Curation of Federally Owned and Administered Archaeological Collections

36 CFR 800: Protection of Historic Properties

43 CFR 7: Protection of Archaeological Resources

43 CFR 10: Native American Graves Protection and Repatriation Act Regulations

DOE, LASO, and LANL Policy

DOE Order 1230.2, 1992, revised 2000

DOE's *American Indian Tribal Government Policy* provides general guidance for knowledgeable and sensitive management interactions with Federally recognized Native American tribes. The guidance recognizes and commits to a government-to-government relationship between DOE and Native American tribal governments and provides for proactive departmental consultations before actions or decisions that could affect tribes. It also encourages early communication and cooperation with other Federal agencies. DOE is required to encourage tribal governments and their members to participate fully in national and regional dialogues that concern DOE programs and issues. Each DOE field office with areas of cultural or religious concern must consult with Native American tribal governments about potential impacts of proposed DOE actions to those resources, while avoiding unnecessary interference with traditional religious practices. Consultation may include, but is not limited to 1) the exchange of information concerning the location and management of cultural resources; 2) repatriation or other disposition of objects and human remains; 3) access to sacred areas and traditional resources located on DOE lands in accordance with safety, health, and national security considerations; and 4) assessment of potential community impacts.

LASO Pueblo Accords, 1992

LASO and LANL have established a special relationship with the Pueblos of San Ildefonso, Jemez, Cochiti, and Santa Clara that recognizes all four as sovereign entities that can interact with each other on a government-to-government basis. Governors from each pueblo and the Assistant Secretary for Defense Programs (on behalf of DOE) signed an accord on behalf of each government. The accords provide a procedural framework for consultation, as well as committing to provide information and input in long-term planning and decision making.

LANL Pueblo Cooperative Agreements, 1994–1996

LANL has signed a similar set of agreements similar to the LASO Pueblo Accords that are referred as the LANL Pueblo Cooperative Agreements. These Pueblos include San Ildefonso, Jemez, Cochiti, and Santa Clara. The cooperative agreements provide a procedural framework for consultation, as well as committing to provide information and input in long-term planning and decision making.

LASO Management Procedure No. 0.5.09, Rev. 0, 2005

Management Procedure 0.5.09, issued by LASO Manager, defines the duties of the LASO Cultural Resources Program Manager and establishes the Manager's relationship with LANL cultural resources personnel assisting LASO with historic preservation laws compliance.

DOE Policy 141.1, approved May 2, 2001

DOE Policy 141.1 *Department of Energy Management of Cultural Resources*, issued by the DOE in 2001, is designed to ensure that DOE programs, including field elements (such as LANL), integrate cultural resources management into their missions and activities. The policy is also designed to raise the level of awareness and accountability among DOE contractors concerning the importance of the Department's cultural resource-related legal and trust responsibilities.

This policy states that preservation and protection of America's cultural heritage are important functions and responsibilities of the Federal government for properties under its control or jurisdiction. This policy helps ensure that DOE maintains a program that reflects the spirit and intent of the legislative mandates.

Standards and Guidelines

The National Park Service has published a number of documents relating to the establishment of standards and professional guidelines for the conduct of archaeological and historical preservation programs by Federal agencies. Included among these are "The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation." These standards and guidelines were first published in the Federal Register in 1983 (48 FR 44716) and have since been slightly modified and amended.

To the extent practicable, the conduct of archaeology and historic preservation at LANL will adhere to these standards and guidelines. A current list of LANL cultural resources staff members conducting archaeological and historic preservation activities at LANL, along with a brief description of their experience and qualifications, is maintained by LANL and by the LASO Cultural Resources Program Manager.

Section 3. Glossary of Cultural Resources Acronyms and Terms

ACHP	The Advisory Council on Historic Preservation is an independent Federal agency with statutory authority to review and comment on Federal actions affecting properties listed in or eligible for the National Register of Historic Places, to advise the President and the Congress on historic preservation matters, and to recommend measures to coordinate activities of Federal, state, and local agencies. Its members include Cabinet-level representatives from Federal agencies and presidential appointees from outside the Federal government.
Accord Pueblos	In 1992, a set of agreement documents were signed between LASO and the Pueblos of Cochiti, Jemez, San Ildefonso, and Santa Clara. These four Pueblos are often referred to as the Accord Pueblos. Between 1994 and 1996 a similar set of cooperative agreements were signed between LANL and these four Pueblos. The purpose of these agreements is for increasing communication and dialog between LANL and its Pueblo neighbors.
AIRFA	American Indian Religious Freedom Act.
APE	Area of potential effect, a term that refers to the sum total of all locations that could be impacted by project construction or other planned undertakings or activities.
ARPA	Archaeological Resources Protection Act.
Archaeological Resources	Any material remains of past human life or activities which are of archaeological interest, including (but not limited to) pottery, basketry, bottles, weapons, weapon projectiles, jewelry, tools and the chipped stone debris from tool manufacture, structures or portions of structures, pit houses, rubble mounds, rock paintings, rock carvings, intaglios, graves and grave associations, human skeletal materials, or any portion or piece of any of these items. The term also applies to agricultural sites and residue, resource collection sites and residue, and other materials that can provide information about past human lifeways. Under the guidelines of the ARPA these items must be at least 100 years in age.
CFR	Code of Federal Regulations.
CRMP	LANL Cultural Resources Management Plan.
CRPM	LASO Cultural Resource Program Manager
Cultural Heritage	A term referring to the cumulative set of historical properties and values of specific cultural groups.
Cultural Resources	Cultural resources include “historic properties” as defined in the NHPA “archaeological resources” as defined in the ARPA, and “cultural items” as defined in the NAGPRA.
Cultural Resources Team	The Cultural Resources Team, part of ENV-ECO, assists LASO with compliance with historic preservation laws and implementation of the LANL Plan.
DOE	Department of Energy, National Nuclear Security Administration.
ENV-ECO	Ecology Group at LANL, charged with assisting LASO and LANL with compliance and related actions concerning biological, cultural, and environmental planning issues at LANL.

ENV	Environmental Stewardship Division at LANL.
Excavation Permit	Part of the general environmental project review process at LANL in which proposed ground-disturbing activities are evaluated for potential impacts to the environment, including historic properties, as part of the Section 106 review process.
Flotation Sample	Sediment (soil) collected from an archaeological field context during testing or data recovery. It is processed in one or more water baths to separate plant specimens (light fraction) from animal bones, artifacts, and other materials (heavy fraction) for ease of subsequent analysis and identification.
HABS	Historic American Building Survey, a standardized system of records and record keeping for documenting historic buildings.
HAER	Historic American Engineering Record, a standardized system of records and record keeping that produces graphic and written documentation of historically significant architectural, engineering, and industrial sites and structures.
Heritage Resources	See "Cultural Heritage." Heritage Resources is an alternate term applied to cultural resources by some agencies.
Historic Properties	These are defined as prehistoric (before the arrival of Europeans) or historic districts, site, building, structure or object included in, or eligible for inclusion in, the National Register of Historic Places. The term includes artifacts, records, and remains that are related to and located in such properties.
Historic Structure	A building or other structure constructed after AD 1890, including both homestead structures and Laboratory-era buildings and structures that have been evaluated for eligibility.
IWD	Integrated work document. A product of the LANL Integrated Work Process system designed to ensure that construction and maintenance activities are carried out in a safe, transparent, and efficient manner.
LASO	Los Alamos Site Office, the local DOE organization charged with direct oversight of LANL operations and LANL compliance with Federal historic preservation laws and with DOE cultural resources policy.
LANL	Los Alamos National Laboratory, including all lands and facilities owned and operated on behalf of DOE at Los Alamos.
MAP	Mitigation Action Plan, a plan for mitigating impacts to cultural resources as an outcome of the preparation of documents in compliance with the NEPA.
MOU/MOA	Memorandum of Understanding/Memorandum of Agreement. A legal agreement prepared between two Federal agencies or a Federal agency and other entity (e.g., state or county government, Native American tribe) that specifies various actions and responsibilities on the part of each signatory party, typically for a single specific project for a specific period of time.
National Register of Historic Places	The Nation's master inventory of known historic properties worthy of preservation. The Register is administered by the National Parks Service on behalf of the Secretary of the Interior. Included are buildings, structures, sites, objects, and districts that possess historic architectural, engineering, archeological, or cultural significance at the national, state, or local level.
NAGPRA	Native American Graves Protection and Repatriation Act.

National Historic Landmark	This is a special category of landmark designated by the Secretary of the Interior because of its national importance in American history, architecture, archaeology, engineering, or culture.
NCO	NEPA Compliance Officer, the LASO official responsible for oversight of LANL compliance with the NEPA.
NEPA	National Environmental Policy Act.
NHPA	National Historic Preservation Act.
OUO	Official Use Only, a designation placed on many LANL cultural resources documents and maps indicating the presence of sensitive information (such as archaeological site locations) that must not be released to the general public.
PA	Programmatic Agreement. A legal agreement prepared between two or more Federal agencies or a Federal agency and other entities (e.g., state or county government, Native American tribe) that specifies various programmatic actions and responsibilities on the part of each signatory party, and which is typically subject to periodic review and update. The "April 2000 PA" specifically refers to the programmatic agreement prepared in April 2000 between LASO and the SHPO, and also signed by the ACHP that streamlined the management of historic properties at LANL and led to the creation of the present Plan.
PL	Public Law.
Plan	Cultural Resources Management Plan for LANL.
PR-ID	Permit Requirements Identification Process. This is an electronic system that facilitates the environmental, health, and safety review of proposed construction, remodeling, demolition, and maintenance activities at LANL. Cultural resources reviews through the PR-ID system must meet the standards of the Federal Section 106 review process of the NHPA.
Register	National Register of Historic Places (Register), a register of nationally significant historic properties authorized by the NHPA.
RRES	Risk Reduction and Environmental Stewardship, the former name for the present ENV Division.
Section 106	A review process established under Section 106 of the NHPA and administered by the ACHP under its regulations at 36 CFR 800.
Section 110	Section 110 sets out the broad historic preservation responsibilities of Federal agencies and is intended to ensure that historic preservation is fully integrated into the ongoing programs of all Federal agencies. It makes explicit the Federal agency's responsibility for identifying and protecting historic properties and avoiding unnecessary damage to them.
SHPO	The State Historic Preservation Officer, specifically that for the State of New Mexico, a regulator created by the NHPA and responsible for review and concurrence with agency undertakings under Section 106 of NHPA.
Sacred Site	Location of religious significance or ceremonial use by Native American religious practitioners and made known to the administering Federal agency by an appropriately authoritative representative of a Native American religion.
SWEIS	Site-Wide Environmental Impact Statement for LANL Operations.

TA Technical Area (at LANL).

TCP A traditional cultural property (or place), as established by the NHPA, is defined as a place of special heritage value to contemporary communities (often, but not necessarily, Native American groups) because of their association with the cultural practices or beliefs that are rooted in the histories of those communities and are important in maintaining the cultural identity of the communities.

Tuff Welded (consolidated and chemically bonded) volcanic ash from ancient pyroclastic flows (see Section 4).

USC United States Code.

Section 4. LANL Physical and Environmental Setting

The Jemez Mountains are located at the intersection of three major physiographic provinces: the southern Rocky Mountains, the Colorado Plateau, and the Rio Grande rift valley. The Valles Caldera is the dominant feature of the Jemez Volcanic Field, active during the past approximately 16 million years, and responsible for the immense quantities of rhyolitic ash that now cap the plateaus and mesas sloping outward from the caldera edge. Volcanic activity is also responsible for the basalt and other igneous materials, including obsidian outcrops located in the Valles Caldera vicinity.

Elevations range from 1676 meters (5500 feet) along the Rio Grande valley to over 3050 meters (10,000 feet) in the Sierra de los Valles and the Valles Caldera. The average growing season is from 120 to 160 days, with annual precipitation averaging from between 300 to 450 millimeters (12 to 18 inches). Moisture comes in the form of winter snows and summer monsoonal rainfall. Maximum summer temperatures at LANL average between 90 and 100°F, with minimum winter temperatures averaging between 15 and 25°F.

The Pajarito Plateau consists of a series of narrow mesas and deep canyons (Figure 4.1) that trend east-southeast from the Jemez Mountains to the Rio Grande Valley. The defining feature of the Plateau is that of the Tshirege Member of the Bandelier Tuff, a massive series of ignimbrites, or "ash-flow tuffs," that are the result of a series of large eruptions from the Valles and Toledo calderas, about 1.6 and 1.2 million years ago, respectively.

Mesa orientation, solar radiation, and differences in soils and moisture levels contribute to the presence of highly varied ecotones found throughout the Pajarito Plateau. The elevation gradient and the corresponding variable climatic conditions are reflected by the presence of five major vegetation types. These major types are defined by their dominant tree species and by their structural characteristics. These types are juniper savannas, piñon-juniper woodlands, ponderosa pine forests, mixed conifer forests, and spruce-fir forests.

Within these five general vegetation types, there are several specific vegetation communities, which are not primarily influenced by elevation or climatic gradients. These communities are the aspen forests, grasslands, scrublands, floodplains, open water, and nonvegetated lands. These communities are influenced by a variety of topographic features, including soils, geologic structures, and moisture conditions.

Ponderosa pine forests extend to as low as 1890 meters (6200 feet) in some of the topographically protected canyons such as Ancho and Water. In more open canyons, like Sandia and Los Alamos,

Figure 4.1. Aerial view of part of the mesas and canyons of the Pajarito Plateau.

ponderosa pine is not normally found below 1921 meters (6300 feet). On the mesa tops and the lower slopes of the Sierra de los Valles, ponderosa pine forests extend to 2378 meters (7800 feet) in elevation. The ponderosa pine is the only overstory species found throughout most of the higher elevation range. However, at lower elevations juniper is also present, and at higher elevations an occasional Douglas fir may be found. The understory characteristic of this community commonly consists of kinnikinnik, Colorado barberry, and Gambel's oak with numerous species of herbs and grasses in the forb layer.

Mixed conifer forests appear at higher elevations in the mountains and consist of trees that are at least 5 meters (16 feet) tall. Douglas fir, also known as white fir, is the dominant overstory species, although other tree species may also be present in the overstory or mid-story. On north aspects of canyons and on the canyon bottoms above 2104 meters (6900 feet), the mixed conifer forest intergrades with ponderosa pine communities. In flat areas or on eastern exposures, the mixed conifer forest extends to 2591 meters (8500 feet). In protected drainage bottoms and on southern exposures, mixed conifer forests extend to 2744 meters (9000 feet). Some limber pine may be present sporadically. The understory may consist of several shrubs, including ninebark, wild rose, cliff bush, and dwarf juniper with numerous species of herbs and grasses. The average annual precipitation ranges from 51 to 76 centimeters (20 to 30 inches).

There is an obvious relationship between the ecological and topographic characteristics of the area, these relationships impact the kinds of species inhabiting various areas of the Laboratory.

The following is a sampling of these species. Coyote, rattlesnake, bobcat, gray fox, red-tailed hawk, spiny lizard, mule deer, deer mouse, and desert cottontail are found in the lower elevation zone (1700 to 2000 meters; 5610 to 6600 feet). In the middle elevation zone (2000 to 2400 meters; 6600 to 7920 feet), particularly in the canyons, coyote, raccoon, mountain lion, American black bear, turkey vulture, American kestrel, golden eagle, gopher snake, rock squirrel, and mule deer can be found. In the same elevation zone (2000 to 2400 meters; 6600 to 7920 feet) on the mesa tops are the American black bear, mountain lion, common raven, pygmy nuthatch, Colorado chipmunk, pine squirrel, and mule deer. The upper elevations (2400 to 3200 meters; 7920 to 10,560 feet) are inhabited by the American black bear, mountain lion, green-tailed towhee, hairy woodpecker, Rocky Mountain elk, mule deer, western bluebird, and gray-headed junco.

Section 5. A Brief Summary of Pajarito Plateau Culture History

Occupation and use of the Pajarito Plateau began as early as 10,000 BC, as foraging groups used the area for gathering and hunting large game animals. The chronological sequence associated with the culture history for the northern Rio Grande was first developed by archaeologists in the 1950s and has been periodically updated and revised since. Table 1 depicts the sequence as currently understood for the central portion of the Pajarito Plateau where LANL is situated.

Table 1. Culture History Chronology for Northern Rio Grande Specific to LANL/ Pajarito Plateau

Culture	Period	Dates
Paleoindian	Clovis	9500 to 9000 BC
	Folsom	9000 to 8000 BC
	Late Paleoindian	8000 to 5500 BC
Archaic	Jay	5500 to 4800 BC
	Bajada	4800 to 3200 BC
	San Jose	3200 to 1800 BC
	Armijo	1800 to 800 BC
	En Medio	800 BC to AD 400
	Trujillo	AD 400 to 600
Ancestral Pueblo	Early Developmental	AD 600 to 900
	Late Developmental	AD 900 to 1150
	Coalition	AD 1150 to 1325
	Classic	AD 1325 to 1600
Native American, Hispanic, and Euro-American	Early Historic Pajarito Plateau	AD 1600 to 1890
	Homestead	AD 1890 to 1943
Federal Scientific Laboratory	Manhattan Project	AD 1942 to 1946
	Cold War (Early Cold War)	AD 1946 to 1990 (AD 1946–1956)

Paleoindian Period: 9500 BC to 5500 BC

During this early time period, small groups of highly mobile Paleoindian hunter-gatherer populations may have followed bison herds up and down the Rio Grande, making frequent trips onto the Pajarito Plateau where they were able to procure obsidian and a variety of subsistence resources. Jemez obsidian has been found at Paleoindian sites in northern Colorado. The time period is represented at LANL and elsewhere on the Pajarito Plateau by isolated projectile points.

Archaic Period: 5500 BC to AD 600

Archaic hunter-gatherer groups relied on a wide variety of small game and plant species, while hunting primarily with the spear and atlatl. The piñon-juniper woodlands on LANL land contain evidence of the temporary campsites left behind by these groups as they moved across the landscape (Figure 5.1a). Remains representing these campsites are in the form of lithic scatters (Figure 5.1b), consisting of obsidian tools, chipping debris, and diagnostic projectile points. These sites presumably reflect the seasonal use of upland settings during summer and fall months for pine nut collecting, hunting, and lithic procurement activities. During the last 1500 years of the sequence, cultigens (such as maize) slowly became the dominant food resource.

Developmental Period: AD 600 to 1150

Along the northern Rio Grande, maize horticulturists lived first in semi-subterranean pit structures and then in adobe surface structures. They began to make painted pottery with simple designs and continued to pursue hunting and gathering relying on the bow and arrow. Most habitation sites dating to this time period are located at lower elevations near the Rio Grande, and the Pajarito Plateau presumably was used on a seasonal basis. However, hunter-gatherer groups may have also continued to use these upland resource areas. The general lack of recorded Developmental period sites at LANL and elsewhere on the Pajarito Plateau may be indicative of a depopulation of the Plateau at this time. The Developmental period is generally thought by archaeologists to represent the earliest demonstrable link with modern Pueblo populations. This begins what used to be called the “Anasazi” culture, but is now more properly termed Ancestral Pueblo culture.

Coalition Period: AD 1150 to 1325

During the Coalition period there was a substantial increase in the number, size, and distribution of above-ground habitation sites, with year-round settlements expanding into upland areas throughout the Pajarito Plateau. A long-term process of site aggregation begins at this time, with early sites containing adobe and masonry rectangular structures with 10 to 20 rooms (Figures 5.2a and 5.2b). The remains of these sites are present in the hundreds of small mounds of shaped tuff blocks and dense artifact scatters commonly found throughout LANL. In contrast, later sites of this period consist of large masonry plaza pueblos that contain more than 100 rooms. A total of 31 of these large plaza pueblos have been identified at LANL. The construction of agricultural features associated with these sites, including terraces, gravel mulch gardens, and dams, suggests an even greater reliance on horticulture than previously evidenced in the region. Cavate structures, rooms dug into the compacted volcanic tuff cliffs, likely make their first appearance on the Plateau towards the end of the Coalition period. The increase in Coalition period site density is attributed both to population migration and local population growth.

Classic Period: AD 1325 to 1600

The Classic period is characterized by intensive maize agriculture. Ancestral Pueblo settlements on the Pajarito Plateau became increasingly aggregated into three large population clusters with sizeable numbers of associated outlying fieldhouses and farmsteads. The central site cluster consists of four temporally overlapping sites: Tsankawi (Bandelier National Monument), Tsirege (LANL), Navawi (San Ildefonso Reservation), and Otowi pueblo. The Otowi pueblo was transferred by LANL to the Pueblo of San Ildefonso in 2003. The initial occupation of these four pueblos may have occurred during the 14th century, with Navawi and Otowi continuing with Tsirege and Tsankawi into the early portion of the 16th century. Oral traditions from the contemporary Pueblo of San Ildefonso indicate that Tsankawi was the last of the Pajarito Plateau

Figure 5.1a. Artist rendering of Archaic period campsite. (Courtesy of Cory Dangerfield)

Figure 5.1b. Typical lithic scatter representing the Archaic period. (Pin flags indicate the location of individual artifacts.)

Figure 5.2a. Coalition period habitation site.

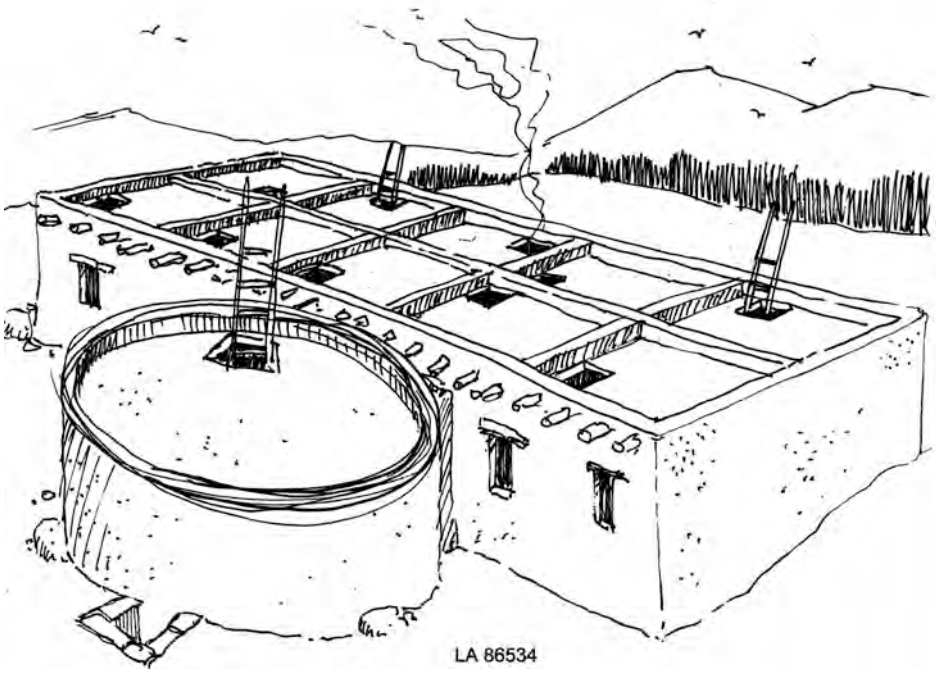


Figure 5.2b. Artist reconstruction of the site depicted in Figure 5.2a (Dave Brewer).

pueblos to be abandoned. This central group of four Classic period communities is ancestral to the Tewa speakers of the Pueblo of San Ildefonso. Tsirege, one of the largest of the Classic period pueblos, is also noted for its associated impressive cavate structures and rock art images (see Section 15).

Early Historic Pajarito Plateau Period: AD 1600 to 1890

Due to a series of droughts, the Pajarito Plateau was eventually abandoned as a year-round residential area during the mid-1500s. At this time, new pueblos were constructed and occupied along the Rio Grande Valley. Although the historic period in northern New Mexico begins with Coronado's exploratory expedition up the Rio Grande, most researchers date the period beginning

in AD 1600. This date corresponds with Juan de Oñate's settlement in New Mexico and imposition of the Spanish land grant ranch system into Rio Grande communities. In 1680, the Pueblo Indians revolted against the Spanish. At this time, several Ancestral Pueblo sites situated on the topographically isolated and elevated Pajarito Plateau (including LANL) were reoccupied, as they offered natural protection and defense for groups of refugees. With the conquest and resettlement of this area by de Vargas (1693 to 1696), the economic and settlement systems of the pueblos were completely overhauled and revamped. The large mission communities, characteristic of the earlier time period, disappeared, as did the large ranches. Instead, lands were granted to dozens of Hispanic families and other individuals who had worked the lands during previous years. Only one site dating to this time period, a Pueblo revolt refuge in a late Coalition period plaza pueblo, has thus far been identified at LANL.

Athabaskan groups from northern and western areas have occupied or utilized portions of northwestern New Mexico since the 15th century (Figure 5.3a); however, evidence for Navajos and Jicarilla Apaches in the northern Rio Grande begins with the Spanish Colonial period. The Navajo and Jicarilla made periodic visits to the Rio Grande Valley and Jemez Mountains for seasonal hunting and gathering trips, with the Navajo also conducting periodic raiding of the Pueblos. The only definable Athabaskan archaeological sites at LANL, a few stone tepee rings on lands being transferred to the County of Los Alamos in Rendija Canyon (Figure 5.3b), appear to relate to the Jicarilla and date to the last half of the 19th century.

Mexico declared independence from Spain in 1821, which brought about a more lenient land grant policy and an expansion of existing trade networks. Trade between Missouri and Santa Fe along the Santa Fe Trail began soon after independence and dominated many of the events in the area for the next quarter-century. Increased trade brought many comparatively inexpensive Euro-American goods into the northern Rio Grande region, a fact that is reflected in the increase of manufactured items identified at sites dating to this period. No sites dating specifically to this time period have been identified at LANL.

Figure 5.3a. Athabaskan campsite.

Figure 5.3b. Teepee ring suggesting Athabaskan occupation.

The lands that eventually came to be New Mexico remained a part of Mexico until the United States–Mexican war began in the mid-1800s. Troops led by Colonel Stephen W. Kearny raised the American flag in Santa Fe and took possession of these lands for the United States on August 18, 1846. Grazing and seasonal use of the Pajarito Plateau by non-Indians were common during the early Historic period, and the first homesteads were established on the Plateau during the early 1880s. New Mexico was provided with a territorial government in 1850, and it remained a territory until being granted statehood in 1912.

Homestead Period: 1890 to 1943

During the early 1900s, New Mexico saw a continuation of traditional farming strategies, cattle grazing, timbering, and a wide variety of cultural practices. However, large-scale sheepherding, timber, and mining activities during this period displaced some Hispanic communities. Seasonal homesteading continued to be prevalent on the Plateau. Wooden cabins, corral structures, and rock or concrete cisterns characterize Hispanic and Anglo Homestead Era sites (Figure 5.4a). Many of the wooden structures burned during the May 2000 Cerro Grande fire (Figure 5.4b). Artifact scatters, consisting of historic debris associated with household and farming/grazing activities, are also commonly found at this time period. Much of the evidence for homesteading at

LANL dates between 1912 and 1943, likely a reflection of changes relating to both the Enlarged Homestead Act of 1909 and the Grazing Homestead Act of 1916. The period of 1890 to 1943 is typically referred to as the Homestead period at LANL. Most of the central Pajarito Plateau homestead patents were filed by Hispanic peoples who maintained permanent homes in the Rio Grande Valley, using the Pajarito Plateau sites for seasonal farming and resource gathering. Notable exceptions to this pattern included the establishment of a few permanent Anglo commercial concerns such as the Anchor Ranch and the creation of the Los Alamos Ranch School, the latter of which was in operation from 1918 until the late spring of 1943. The end of the Homestead period coincides with the appropriation of lands on the Pajarito Plateau for the Manhattan Project in 1942–1943.

Figure 5.4a. Homestead Era habitation on LANL land.

Figure 5.4b. Homestead depicted in Figure 5.4a after the Cerro Grande fire.

Manhattan Project Period: 1942 to 1946

In 1942, Franklin D. Roosevelt gave his approval for the development of the world's first atomic bomb. The geographic and topographic isolation of the Pajarito Plateau that had been a benefit to Ancestral Pueblo peoples during the Pueblo Revolt was attractive to project developers, and Los Alamos, New Mexico, was selected as the site for design and construction of the atomic bomb. Manhattan Project (code-named "Project Y") activities at Los Alamos officially began with the closure of the Los Alamos Ranch School after the end of the graduating class of 1943, which had

an accelerated graduation in February. At the same time, additional lands were secured from government agencies, such as the Forest Service, and from the predominantly Hispanic homesteaders. Construction of Project Y began at the Los Alamos site in 1943 (Figure 5.5). The atomic age was ushered in with the detonation of the first atomic device at the Trinity test site in southern New Mexico on July 16, 1945. The detonation of the Los Alamos "Little Boy" design rapidly followed. On August 6, 1945, this device was detonated over the Japanese city of Hiroshima. The subsequent detonation of the "Fat Man" device over Nagasaki on August 9, 1945, led to the official surrender of Japan on August 14, 1945. During the period between the surrender of Japan and the middle of 1946, Project Y was downsized, with many Los Alamos scientists returning to their pre-Manhattan Project academic jobs. The primary mission of the Laboratory at that point became that of stockpiling and developing additional atomic weapons. The Manhattan Project officially came to an end at Los Alamos with the beginning of the atmospheric testing program in the Pacific and the development of the civilian United States Atomic Energy Commission (AEC). The AEC officially took over the operation of the Los Alamos site in 1947.

Figure 5.5. Remains of wooden protective cover used to shelter Manhattan Project bomb casings at the end of Word War II.

Cold War Period: 1946 to 1990

The Cold War lasted from 1946 until approximately 1990. At LANL, the Cold War can be divided into at least two components, an early Cold War period lasting between 1946 and 1956, and the remainder of the Cold War from 1957 until 1990.

Early Cold War: 1946 to 1956

The AEC made a commitment to retain Los Alamos as a permanent weapons facility. Research at the Laboratory during the period of 1946 to 1956 focused on the development of thermonuclear weapons. The simmering Cold War came to a full boil in late 1949 with the successful test of

"Joe I," the Soviet Union's first atomic bomb. In January of 1950, President Truman approved the development of the hydrogen bomb; Truman's decision led to the remobilization of the country's weapons laboratories and production plants. In 1952, the first completely thermonuclear device, "Mike," was detonated at Enewetak (Eniwetok) atoll in the Pacific. Other key research themes at Los Alamos during the Manhattan Project/early Cold War period included supercomputing, biomedical and health physics research, explosives research and development, early reactor technology, pioneering physics research, and the development of high-speed photography.

Post-1956 Cold War

The early Cold War period at Los Alamos ended around 1956, a date that marked the completion of all fundamental nuclear weapons design at the Laboratory. In 1957, the gates into the Los Alamos town site came down, thus ending the 14-year status of Los Alamos as a closed facility. The late Cold War era saw Los Alamos's continued support of the atmospheric testing programs in the Pacific and at the Nevada Test Site (NTS). In 1957, the first of many underground tests at NTS was conducted. In 1958, first the Soviet Union and then the United States and Britain suspended atmospheric testing. The tensions of the Cold War were exacerbated in 1961 by the sealing of the border between East and West Germany in preparation for the construction of the Berlin Wall and by the Cuban missile crisis in October 1962. In 1963, Britain, the Soviet Union, and the United States signed the Limited Test Ban Treaty, agreeing to outlaw tests in the atmosphere, under water, and in outer space. The United States formally engaged in the Vietnam War in 1965, a conflict lasting until the cease-fire and political settlement of 1973. In 1972, the Strategic Arms Limitation Talks I and II (SALT I and SALT II) resulted in a five-year treaty designed to limit the development of antiballistic missiles, and freezing in place the numbers of intercontinental ballistic missiles and submarine-launched ballistic missiles. In 1976, the United States and Soviet Union signed a peaceful nuclear explosions treaty limiting the size and nature of underground nuclear tests. The SALT II treaty was signed in early 1979 by the United States and the Soviet Union to limit long-range missiles and bombers, however, late that year President Carter called for a major military build-up to counter Soviet military power. In 1980, President Carter signed Presidential Directive 59 calling for capacity to wage limited and protracted nuclear war. During the 1980s, various renditions of the United States Strategic Arms Reduction Treaty (START) were proposed. In 1983, President Reagan proposed the Strategic Defense Initiative, popularly known as the Star Wars Defense. The Cold War can be considered as coming to its end around 1990. This period began with the 1989 opening of the borders between East and West Germany and the subsequent tearing down of the Berlin Wall. It ended with the 1991 creation of the Commonwealth of Independent States in the former Soviet Union and the signing of the START that began the process of reducing the size of strategic nuclear arsenals in Russia and the United States. Many significant historical events occurred over the four decades of the late Cold War period, including important research at Los Alamos. Defense mission undertakings during this time included treaty and test ban verification programs (such as using satellite sensors to detect nuclear explosions), research and development of space-based weapons, and continued involvement with stockpile stewardship issues. Nonweapons undertakings supported nuclear medicine, genetic studies, National Aeronautics and Space Administration collaborations, superconducting research, contained fusion reaction research, and other types of energy research.

Notable Historic Resources in the Vicinity of LANL

Neighboring Bandelier National Monument was established in 1916 in recognition of its outstanding Ancestral Pueblo archaeological resources. Three other sets of resources in the vicinity of LANL have been established as NHL Districts: The Bandelier CCC (Civilian Conservation Corps) Historic District on Bandelier National Monument (established in 1987); Puye Ruins on the Santa Clara Indian Reservation (1966); and the Los Alamos Scientific

Laboratory (1965). The latter is the location of former TA-1 in downtown Los Alamos, which includes Fuller Lodge, the Bathtub Row Houses, and the Ice House Monument at Ashley Pond. Additional resources of note in Los Alamos County listed in the Register include the Guaje Site (1982) and Chupaderos Mesa Village (1990), both large Ancestral Pueblo villages, the Chupaderos Canyon Small Structural Site (1990), and the Guaje Water/Soil Control Site (1990) all on Santa Fe National Forest lands; the White Rock Canyon Archaeological District (1990, 1992); Pajarito Springs Site (1982); and two historic wagon roads, Bayo Road (2003) and Grant Road (2004). In 2003, 10 "Homestead Era Roads and Trails of Los Alamos, New Mexico" were placed on the New Mexico Register of Historic Places.

Section 6. Numbers and Types of Historic Properties at LANL

As noted in the glossary, archaeological resources include any location exhibiting the traces of past human activity that can yield information through use of archaeological methods and principles. Homestead sites and features are included in the category of archaeological resources, along with trash deposits dating to the Manhattan Project and Cold War—however, more recent historic buildings and structures are excluded from consideration as archaeological resources. As of October 2004, a total of 1933 archaeological sites have been recorded at LANL. These are roughly divided into prehistoric resources versus historic resources. Prehistoric archaeological sites at LANL refer to locations containing items used or modified by people, or other physical evidence of the use of people, before the establishment of a European presence in the upper Rio Grande Valley in the middle of the 16th century. Historic archaeological sites at LANL include any archaeological resources dating after that date through the Homestead period, and including trash scatters and other nonstructural remains dating to the Manhattan Project and the Cold War.

As of October 2004, archaeological surveys have been conducted on approximately 90% of the land within LANL, with 86% having been intensively surveyed in compliance with Federal standards for complete survey coverage. A total of 1796 prehistoric archaeological sites have been recorded at LANL, most of which date to the 13th through 15th centuries. A total of 440 of these prehistoric sites have been formally assessed for eligibility for nomination to the Register in consultation with the SHPO. Of these 378 were determined to be eligible, 61 sites ineligible, and one of undetermined status. The remaining 1356 sites, which have not yet been formally assessed with respect to Register eligibility, legally are assumed to be eligible until assessed. Therefore, a total of 1735 sites are eligible or await formal assessment for nomination to the Register.

A total of 137 historic archaeological sites have been recorded at LANL, the majority of which (124) are structures or artifact scatters associated with the early Historic or Homestead periods. The remaining 13 sites are experimental areas and artifacts scatters dating from the Manhattan Project and Cold War periods. Of these 137 sites, 34 have been formally declared eligible for the Register.

In terms of the historic built environment (Manhattan Project and more recent), there are a total of 536 buildings and structures that date to the Manhattan Project and early Cold War. Of these, 56 date to the Manhattan Project. A total of 189 of these 536 buildings and structures have been evaluated for eligibility for inclusion in the Register, of which 108 have been determined eligible and 81 not eligible. These figures include a small number of structures younger than 50 years in age that are likely to be deemed of exceptional national significance and are thus eligible for inclusion in the Register despite not yet having achieved the 50-year-old age limit normally required for inclusion in the Register. These potentially exceptional structures are those identified

as the 15 "SWEIS Key Facilities" in the 1999 Site-Wide Environmental Impact Statement for Continue Operation of the Los Alamos National Laboratory (SWEIS).

The following is a classification and brief description of the types of archaeological sites or features within sites and historic building and structure categories that are known to be present at LANL. The archaeological site types are defined on the basis of their size, morphological characteristics of associated features, and the nature of the associated artifact assemblages.

Administration building: A category of historic building that includes office buildings and facilities housing cafeterias and health and safety offices (the latter being change rooms and offices for monitoring staff).

Cavate: A room carved into a cliff face within the Bandelier Tuff geological formation. The category includes isolated cavates, multiroomed contiguous cavates, and groups of adjacent cavates that together form a cluster or complex.

Complex or plaza pueblo: One or more pueblo roomblocks partially or completely enclosing a plaza. Plaza pueblos typically are much larger (in both room numbers and site size) than single pueblo roomblock sites, often representing structures originally two or three stories in height.

Game pit: A cavity dug down into the tuff bedrock presumed to have been used as a passive hunting drop site for larger game animals (e.g., deer) or as concealment from which to lure and trap birds.

Garden plots: Small, formal agricultural areas, often bounded with cobbles and containing gravel mulch (e.g., grid gardens and/or terraces). This site category typically consists of square to rectangular-shaped rock alignments, with individual units being more than 3 meters in length (in contrast with one- to three-room structures, defined below).

Grinding slicks: Concave depressions in bedrock created by the sharpening of stone axes, the pulverizing and grinding of plants, or other related activities. These often occur in sets of multiple parallel depressions.

Historic artifact scatter/trash scatter: A concentration of items, including Euro-American artifacts, produced and deposited after AD 1600 (but most typically in the Los Alamos area deposited after about AD 1890).

Historic structure: A building or other structure constructed after AD 1890, including both homestead structures and Laboratory-era buildings and structures that have been evaluated for eligibility.

Isolated object or occurrence: Individual artifacts (such as a projectile point) or small clusters of a single type of prehistoric and historic artifact (e.g., pottery sherds from the same vessel; related chippings from the manufacture of a chipped stone tool), found outside the boundaries of defined archaeological site. While such items are treated differently from defined archaeological sites for management purposes, they can nevertheless inform on past human behaviors and occupations at LANL.

Kiva: An Ancestral Pueblo ceremonial room, typically circular in shape and partially or fully underground, in some cases being excavated deeply into bedrock. Most kivas are associated with habitation sites, but some can be found in isolation. "Cave kiva" is a term sometimes used for

unusually large cavate rooms exhibiting a squarish shape, substantial plaster, and other features such as petroglyph panels and floor loom holes.

Laboratory-processing building: A category of historic building in which laboratory and/or processing activities were conducted. This category includes scientific research laboratories or facilities that processed chemicals or other experimental materials (such as high explosives, tritium, plutonium, metals alloys, etc.).

Lithic scatter: Clusters of chipped stone tools and/or pieces of chipped stone produced during the manufacturing of chipped stone tools.

Lithic and ceramic scatter: A combination of ceramic sherds, chipped stone, and/or ground stone artifacts, but lacks identifiable surface structural remains or evidence of pit structures.

One- to three-room structures: The remains of a small surface structure constructed of adobe, jacal, or masonry. This site typically consists of square to rectangular-shaped rock alignments, with individual units being no more than 3 meters in length. The majority of these sites are identical to what many researchers term "fieldhouses" and "farmsteads." Also included in the one- to three-room structure category are examples of unusually large rectangular structures, along with several smallish structures that are unusual due to the presence of upright stones or because of locational considerations such as at the eastern tips of mesas. Some of these "unusual" structures may represent shrines or other purposes not directly related to agriculture.

Pit structure: Presumed habitation sites with evidence (e.g., depressions) of one or more structures built entirely or partially underground.

Plaza or complex pueblo: Contains one or more pueblo roomblocks partially or completely enclosing a plaza. Plaza pueblos typically are much larger (in both room numbers and site size) than single pueblo roomblock sites, often representing structures originally two or three stories in height.

Pueblo roomblock: The remains of a contiguous, multiroom habitation structure (four or more rooms with no enclosed plaza) constructed of adobe, jacal, or masonry. Somewhat amorphous mounds containing evidence of stone rubble ("rubble mounds") but no distinct alignments can be included in this category.

Rock art: This category includes several subtypes including petroglyphs, pictographs, and rock art panels. A petroglyph consists of a design or set of symbols scratched, pecked, or scraped into a rock or plastered surface, and which are distinguished from historic and modern graffiti. A pictograph consists of a design or set of symbols painted rather than pecked, scratched, or scraped. A rock art panel consists of series of petroglyphs (and, rarely, pictographs inside rockshelters and cavates) grouped together on a cliff face or boulder.

Rock/wood enclosure: A small area enclosed by loosely stacked rock or log alignments (e.g., corral or lambing pen). These are distinguished from one- to three-room structures by the nature of the stacking methods and often by the presence of historic artifacts in and around the enclosure.

Rock feature: Includes typically isolated examples of rock piles, amorphous rock concentrations, and/or upright stones. The latter sometimes are in the shape of a ring several meters in diameter

and are often referred to as "rock rings." Some of these rock features may be identical to what researchers refer to as shrines and boundary markers.

Rock ring: A circular arrangement of rocks. Some of these represent the residue from a dismantled tepee or wickiup. Another category of rock rings includes circular arrangements of shaped or unshaped tuff blocks, sometime with shaped stone uprights, that may represent Ancestral Pueblo shrines.

Rockshelter: An overhang, indentation, or alcove formed naturally in a rockface or large boulder, or alternatively, a partly enclosed area created by rockfalls leaning against a rockface or large boulder, and which exhibits evidence of human use. Rockshelters generally are not of great depth, in contrast to caves.

Security buildings and structures: A category of historic buildings and structures that includes guard stations, security lights, and fencing.

Stairway: A set of two or more steps carved into a steep section of tuff bedrock, typically associated with trails or access to cavates.

Support buildings and structures: A category of historic buildings and structures that includes warehouses, water tanks, utilities, and waste treatment facilities.

Trail: Prehistoric or historic path defined by use-wear or cutting into bedrock or soil surfaces, along with any revetments, embankments, or other structural components of the trail.

Wagon road: Rutted track in bedrock formed as a result of historic wagon use, along with revetments, embankments, or other structural components of the road.

Water control feature: A device (e.g., stone check dams) that controls the flow of water, particularly run-off.

PART II. NHPA Compliance: Section 106

Section 7. Overview of the NHPA Section 106

Section 106 of the NHPA

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties and affords the SHPO/Tribal Historic Preservation Officer (THPO) a reasonable opportunity to comment. In cases such as the finding of an effect by an undertaking, either adverse or not adverse, the ACHP will also be afforded the opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. The revised regulations, "Protection of Historic Places" (36 CFR Part 800), became effective January 11, 2001, and are summarized below.

Initiate Section 106 Process

The responsible Federal agency first determines whether it has an undertaking, defined as any activity that could affect historic properties. Historic properties are properties that are included in the Register that meet the criteria for the Register, or await Register eligibility determinations. If so, it must identify the appropriate SHPO/THPO, along with other appropriate tribal entities if

there is no THPO, to consult with during the process. It should also plan to involve the public and identify other potential consulting parties. If it determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

Identify Historic Properties

If the agency's undertaking could affect historic properties, the agency determines the scope of appropriate identification efforts and then proceeds to identify historic properties in the area of potential effects (APE). The agency reviews background information, consults with the SHPO/THPO and others, seeks information from knowledgeable parties, and conducts additional studies as necessary. Districts, sites, buildings, structures, and objects listed in the Register are considered; unlisted properties are evaluated against the National Park Service's published criteria, in consultation with the SHPO/THPO and any Indian tribe that may attach religious or cultural importance to them.

- **Criterion A** – Properties that are associated with events that have made a significant contribution to the broad patterns of history.
- **Criterion B** – Properties that are associated with the lives of persons significant in the past.
- **Criterion C** – Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D** – Properties that have yielded, or may be likely to yield, information important in prehistory or history.

In addition to these four criteria, there are seven criteria considerations that are taken into account in the evaluation of Register eligibility. Three of these are applicable to properties at LANL:

- **Criteria Consideration (B)** – A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event.
- **Criteria Consideration (E)** – A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived.
- **Criteria Consideration (G)** – A property achieving significance within the past 50 years if it is of exceptional importance.

All historic properties identified within the APE need to be evaluated for Register eligibility. Additionally, incomplete or prior evaluations may need to be reevaluated. If the criteria are met, then the property is considered eligible for the Register. If questions arise about the eligibility of a given property, the agency may seek a formal determination of eligibility from the National Park Service. Section 106 review gives equal consideration to properties that have already been included in the Register as well as those that have not been so included, but that meet Register criteria.

Documentation of the results of the historic property identification process must be provided to the SHPO and consultation conducted. If the agency official and the SHPO do not agree, the ACHP may be requested to arbitrate if the dispute cannot be resolved, in which case the Keeper of the Register will make the eligibility determination. Documentation of the results of the

historic property identification process must be provided to the SHPO and consultation conducted.

If the agency finds that no historic properties are present or affected, it provides documentation to the SHPO/THPO and, barring any objection in 30 days, proceeds with its undertaking.

If the agency finds that historic properties are present, it proceeds to assess possible adverse effects.

Assess Adverse Effects

The agency, in consultation with the SHPO/THPO, makes an assessment of adverse effects on the identified historic properties based on criteria found in ACHP's regulations.

If they agree that there will be *no adverse effect*, the agency proceeds with the undertaking and any agreed-upon conditions.

If they find that there is an *adverse effect*, or if the parties cannot agree and ACHP determines within 15 days that there is an adverse effect, the agency begins consultation to seek ways to avoid, minimize, or resolve the adverse effects.

Resolve Adverse Effects

The agency consults to resolve adverse effects with the SHPO/THPO and others, who may include Indian tribes, local governments, permit or license applicants, and members of the public. ACHP may participate in consultation when there are substantial impacts to important historic properties, when a case presents important questions of policy or interpretation, when there is a potential for procedural problems, or when there are issues of concern to Indian tribes.

Consultation usually results in a Memorandum of Agreement (MOA) or data recovery plan, which outlines agreed-upon measures that the agency will take to avoid, minimize, or resolve the adverse effects. In some cases, the consulting parties may agree that no such measures are possible, but that the adverse effects must be accepted in the public interest.

Implementation of MOA

If a MOA is executed, the agency proceeds with its undertaking under the terms of the MOA.

Failure to Resolve Adverse Effects

If consultation proves unproductive, the agency or the SHPO/THPO, or ACHP itself, may terminate consultation. If a SHPO terminates consultation, the agency and ACHP may conclude a MOA without SHPO involvement. However, if a THPO terminates consultation and the undertaking is on or affecting historic properties on tribal lands, ACHP shall comment as stipulated in 36 CFR Part 800. If the agency terminates consultation, it must submit appropriate documentation to ACHP and request ACHP's written comments. The agency head must take into account ACHP's written comments in deciding how to proceed.

Tribes and the Public

Public involvement is a key ingredient in successful Section 106 consultation, and the views of the public should be solicited and considered throughout the process. The regulations also place major emphasis on consultation with Indian tribes and Native Hawaiian organizations, in keeping

with the 1992 amendments to NHPA. Consultation with an Indian tribe must respect tribal sovereignty and the government-to-government relationship between the Federal government and Indian tribes. Even if an Indian tribe has not been certified by the National Park Service to have a THPO who can act for the SHPO on its lands, it must be consulted about undertakings on or affecting its lands on the same basis and in addition to the SHPO.

Section 8. April 2000 LASO/SHPO Programmatic Agreement for the Management of Historic Properties at LANL

In April 2000, a PA (MOU DE-GM32-00AL77152) was executed between what is now LASO, the ACHP, and the New Mexico SHPO for the purpose of specifying and streamlining the management of historic properties at LANL under the NHPA.

This document stated that the mission of LANL as a scientific laboratory, with its associated operation, maintenance, research, development, waste management, and decontamination and decommissioning activities, may have both direct and indirect effects on historic properties included in or eligible for the Register.

The LASO, the SHPO, and the ACHP also agreed that LANL activities that have the potential to affect historic properties included in or eligible for the Register can be administered in accordance to the stipulations stated in the PA. The PA was designed to be effective for five years or until the CRMP is accepted by the SHPO and the ACHP. As of June 2005, the programmatic agreement has been extended for one additional year by agreement of the signatory parties.

The PA addressed a subset of the historic properties present at LANL—prehistoric and historic archaeological sites, and buildings and structures dating to the Manhattan Project and early Cold War (1943 to 1956). The Manhattan Project and early Cold War resources to be identified and evaluated included, but were not limited to, buildings, structures, experimental areas, and discrete groupings of building, i.e., districts. Documentation for properties deemed eligible and ineligible for the Register was provided to the SHPO for comment.

The PA also required the development of historic contexts and themes for historic properties built from 1943 to 1956 (the completion of all fundamental nuclear weapons design work at LANL and the end of Los Alamos being a closed facility) at LANL, to eventually be included in the CRMP. In addition, properties constructed from 1956 to 1963 (the latter date representing the signing of the Limited Test Ban Treaty) also had to be evaluated for effects from proposed Laboratory undertakings, even though the historic contexts for these properties are still in development. Because of the nature of the work at LANL, it was recognized that certain properties less than 50 years of age would be eligible as exceptionally significant as defined in eligibility Criteria Consideration G.

Included in the PA was a list of property types that were exempt from identification and evaluation as well as a list of activities or undertakings that were deemed exempt from cultural resource management review. These and other aspects of the PA are contained in Section 9 and elsewhere in the CRMP. A copy of the original PA itself is available at LANL, as specified in Appendix B.

Section 9. NHPA Section 106 Compliance Review Process at LANL

The LASO and LANL integrate cultural resource concerns/reviews into program and project planning in a timely fashion in order to protect significant cultural resources and to avoid unnecessary delays, conflicts, and costs for its undertakings.

The LANL Cultural Resources Team conducts approximately 800 to 1000 reviews of proposed Laboratory projects each year. These projects range in size and complexity, from routine to specific actions like constructing new buildings, power lines, and utility corridors; repairing and replacing existing signs, paving, utility lines, fencing, and lightning protection; maintenance of dirt and paved roadways; installing storm water gauging stations; relocating sheds and trailers; environmental restoration (ER) sampling and cleanup of areas; and the designating of pertinent facilities as excess property for eventual demolition.

Compliance reviews and all other work conducted in support of the NHPA at LANL are performed by individuals meeting the professional qualification standards set forth in the Secretary of the Interior's Standard and Guidelines for Archaeology and Preservation (48 FR 44716).

How Laboratory Projects are Initiated

In order to properly understand the Section 106 compliance process at LANL, it is first necessary to briefly discuss and illustrate how the institution is currently organized, as of July 2005. The top of the Laboratory management chain is the Director's Office. Situated directly underneath are eight associate directors responsible for virtually all operations and management at LANL. These eight directorates include Administration, Nuclear Weapons, Security and Facility Operations, Technical Services, Strategic Research, Threat Reduction, Weapons Engineering and Manufacturing, and Weapons Physics. Nested under these directorates are a number of Divisions responsible for the day-to-day operations of LANL. Within each division are a number of Groups and within each Group are several teams.

For example, the LANL Technical Services Directorate contains eight divisions, including Environmental Stewardship (ENV). ENV Division comprises five groups, including Ecology (ENV-ECO), along with several additional programs. ENV-ECO breaks out into four teams, Cultural Resources, NEPA, Ecorisk, and Biological Compliance Assurance. The Cultural Resources Team maintains two programs: Historic Buildings and Archaeology.

In addition to ENV Division, other Divisions of considerable significance to the Section 106 process at LANL include Facility and Waste Operations (facility management and project review), Project Management (PM—planning), Health, Safety, and Radiation Protection (excavation permit review), and Security and Safeguards (S—document classification and emergency services) who along with ENV are in the Operations Directorate; Engineering Sciences and Applications (ESA), a major landholder in the Weapons Engineering and Manufacturing Directorate; and Dynamic Experimentation a major landholder in the Weapons Physics Directorate.

In terms of actual land use, LANL is divided into discrete geographical areas called Technical Areas (TAs), in part based on the specific type of work currently or formerly conducted in the area. The highest number designated for a TA is 74, but only about two-thirds of these 74 numbers are actually used due to changes in land use and TA function over the 60 years of LANL's existence. For management purposes the Laboratory is divided into nine facility

management units (FMUs) made up of one or more individual TAs or portions of TAs. These FMUs are nested within the Facility Operations Support Division of the Directorate for Security and Facility Operations.

Facility Managers (FMs) are responsible for managing and maintaining the facilities within their FMU. The FM is responsible for authorizing and directing all facility work (construction of new facilities, upkeep and upgrading of existing facilities, and all operations conducted within and surrounding the facilities), in accordance with the Integrated Safety Management (ISM) Program and the authorization basis of the facilities. FMs deal with the multifaceted requirements of LASO, LANL, and various laws governing environmental protection, occupational health and safety of workers and the public, radiation protection, facility safety codes, and fire protection. All of this work is in support of LANL's strategic mission.

How LANL Cultural Resources Personnel Receive Undertakings for Section 106 Compliance Reviews

LANL receives notification of Laboratory projects through several means. The most common are through the Laboratory's formal Permit Requirements Identification (PR-ID) System project profile process; Excavation/Soil Disturbance Permit Requests (Excavation Permits). Notifications are also occasionally received through phone calls and e-mail messages. All APEs for each of these projects are reviewed for accuracy and for potential impacts to both archaeological and historical resources, including historic buildings.

The PR-ID process is a LANL service, implemented and overseen by the Engineering Division Document Control and Records Management Group (ENG-DCRM) of the ISM Program. The PR-ID process is used to assist LANL personnel in identifying and managing environment, safety, and health Laboratory Implementation Requirements (LIRs) and potential impacts to proposed or ongoing projects. Among these are new construction, programs, and processes; ER projects; experiments; blading roads; maintenance and upgrading facilities; and the decontamination, decommissioning, demolition, or shutdown of a facility. ENG-DCRM and various ENV Division groups review the PR-IDs for potential impacts to the environment, cultural resources, threatened and endangered species, wetlands, and created outfalls; potential release sites (PRSs); solid waste management units (SWMUs); and also review the PR-IDs for the generation of airborne emissions, new waste streams, and impacts to water quality. A formal LIR has been established specifically for NEPA, cultural resources, and biological resources project review (thus referred to as the NCB LIR).

Project personnel complete a PR-ID form, which ENG-DCRM then posts on a web site for designated subject matter experts to review and post comments. The normal review period for a PR-ID is two weeks.

Another component of the ISM Program, as well as a part of the Facility Management Work Control Program, is the Excavation/Soil Disturbance Permit (Excavation Permit) review process. Excavation permits are, as with PR-IDs, reviewed for potential impacts to worker health and safety, the environment, cultural resources, utilities, PRSs, and SWMUs; or impacts that would result in unpermitted disposal of hazardous waste. Safety and Industrial Hygiene Field Support Group (HSR-8) and the general operations services contractor (KSL) initiate, evaluate, coordinate, and approve any activity requiring excavation and/or soil disturbance on DOE-designated property. All Laboratory ground-disturbing activities have to obtain an Excavation Permit Request from HSR-8. These documents go through a review process by subject matter

experts similar to that defined above for the PR-ID process. The normal review period for an Excavation Permit is two weeks.

A separate review system at LANL is that associated with the Integrated Work Management process—a process for doing work in a manner that protects people, the environment, property, and the security of the nation. This process is designed to accommodate work ranging from a preventative maintenance operation with a set of well-defined steps to a large, one-time research experiment, as well as all new construction at LANL. The review system is electronic and is set up in manner similar to that described for the PR-ID system. The primary review mechanism is referred to as the Job Hazard Analysis tool. Cultural resources review is fully integrated into this process.

Identification, Inventory, and Evaluation

Employing the criteria for listing in the Register, as well as historic contexts and themes developed at LANL, LASO will identify historic structures and properties using standardized field survey forms developed by LANL and reviewed by Parties. LASO will evaluate resources so identified for listing in the Register. These resources include archaeological sites, TCPs, buildings, structures, experimental areas, and discrete groupings of buildings or archaeological sites, i.e., districts. Documentation for properties deemed eligible and ineligible for the Register will be provided to the SHPO for comment.

LASO will also identify and evaluate resources that were constructed between 1942 and 1963 (signing of the Limited Test Ban Treaty) for proposed undertakings. Resources less than 50 years of age may be eligible as exceptionally significant as defined in 36 CFR Part 60, Criteria A, Consideration G.

Property Types and Undertakings Exempt from Section 106 Identification and Evaluation

The following property types are exempt from identification and evaluation:

- Structures with minimal or no visible surface manifestations (i.e., pits, underground storage tanks, underground vaults, buried material disposal areas, septic tanks, underground pipelines, sewer lines, and steam, storm water, acid, or electrical manholes)
- Above-ground fuel tanks
- Wells and bore holes
- Road-block barriers and siren poles
- Transformer and pressure relief valve stations
- Mobile trailers and modular buildings and enclosures—these structures are used either as mobile trailers that are moved on site, or premanufactured sides and roofs typically resting on poured concrete pads. They serve as temporary administrative support office space or storage facilities. Most have been brought on site over the last 25 years.

The following activities or undertakings are exempt from cultural resource management review, provided that (a) they do not affect those qualities that make a historic property eligible for the Register and (b) that they do not involve ground-disturbing activities.

- Replacement or removal of general equipment of facility components
- Installation, maintenance, repair, storage, relocation, removal, or replacement of process or laboratory equipment and associated systems
- Siting, installation, maintenance, repair, removal, and operation of plant water systems

- Siting, installation, maintenance, repair, removal, or replacement of plant and building electrical systems
- Siting, installation, maintenance, repair, removal, or replacement of communications and computer systems
- Routine service activities such as mowing and trimming grass, shrubs, or trees; moving furniture and equipment; snow removal; erosion control; housekeeping services; small-scale road, sidewalk, and parking lot repair; maintenance and repair of vehicles and equipment, fencing, signs; maintenance of safe/vaults and locks; and routine decontamination of tools, surfaces, and equipment
- Operation and maintenance of waste treatment, storage, and disposal facilities
- Maintenance, repair, modification, or direct in kind replacement or refinishing associated with structures or buildings
- Installation, maintenance, repair, or replacement of equipment used in current operations designed to maintain compliance with permits and Occupation Safety and Health Act regulations and Americans with Disabilities Act regulations
- Installation and maintenance of features for hazard prevention of equipment, buildings, and structures
- Installation, maintenance, removal, and repair of security systems
- Installation, maintenance, removal, repair, or replacement of heating and air conditioning systems
- Modification to steam condensate systems and chemical treatment systems
- Routine upgrades and modification to fire protection systems
- Removal of asbestos-containing materials from existing buildings and structures
- Removal of polychlorinated biphenyl contaminated items
- Installation or modification of personnel safety systems

“No Property-No Effect” Undertakings

Those undertakings determined to have no direct or indirect effect on historic properties because no properties are present in the APE (“no property no effect”) will be allowed to proceed and are to be reported on an annual basis to the SHPO with the documentation available for review and comment.

“No Effect Through Avoidance” Undertakings

Those undertakings determined to have no direct or indirect effect on historic properties because all eligible properties within the APE will be avoided by project activities will also be allowed to proceed and are reported to the SHPO on a project-by-project basis for review and comment. The SHPO may submit comments within 30 days and LASO and LANL will make a good faith effort to consider them. If the project has already been completed, the SHPO comments will be taken into consideration in the future when a similar “no effect through avoidance” project is proposed.

“No Adverse Effect” Undertakings

Unless specifically exempted, LANL undertakings involving the remodeling or modification to interior rooms of administrative or support buildings built after 1946 (the Manhattan Project) will be considered to have “no adverse effect” and allowed to proceed. Documentation and supporting justification for the determination will be provided by LASO to the SHPO on an annual basis.

Following guidance included in the Advisory Council on Historic Preservation’s *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities* (1991), and given the fact that adaptable design is an essential element of experimental facilities,

the remodeling or renovation of Register eligible technical laboratories, shops, and structures, where those modifications or renovations support the continued scientific mission of the property will also be considered to have "no adverse effect." Mission-related upgrades to technical buildings and structures will be allowed to proceed provided that the modifications are in keeping with the Laboratory's industrial vernacular style. Upgrades not exempted from Section 106 identification and evaluation will require 35mm black and white photographic documentation of the present condition, review of archival photographs and the collection of architectural plans and drawings. These documents and photographs will be compiled and maintained by LANL throughout the lifecycle of the property. An annual report of such undertakings will be provided to the SHPO. Documentation and supporting justification for the determination of "no adverse effect" will be provided by LASO to the SHPO on a case-by-case basis when requested. All other undertakings, including the demolition of properties, will be evaluated through the application of 36 CFR Part 800.5–800.6.

Modifications to technical laboratories, shops and structures that are protected under the NHPA, but have not received Register eligibility assessments will follow the procedures and requirements delineated in 36 CFR Part 800.4–800.6.

Undertakings that may have the potential to affect a prehistoric or historic property(s) will be evaluated, and if a determination of "no adverse effect" is made, it will be documented and submitted to the SHPO for review and comment.

"Adverse Effect" Undertakings

All undertakings determined to have an adverse effect to an eligible property will have a plan developed to resolve the adverse effect. This plan may include 1) modifying the undertaking to avoid the property, 2) modifying the undertaking to minimize the adverse effect, 3) completely documenting the property if a building or structure, and 4) partially or completely excavating an archaeological site.

For undertakings that may affect Register eligible historic and/or prehistoric archeological sites, LASO will follow the procedures contained in 36 CFR Part 800.5–800.6, with the following exceptions: Adverse effects to surface historic trash scatters, and prehistoric artifact scatters and rock features on bedrock and/or secondary contexts will be reviewed and resolved as outlined below. These data recovery procedures will be carried out in lieu of procedures set forth in 36 CFR Part 800.

- Isolated trash scatters are historic sites that are temporally associated with the Homestead Period occupation of LANL (1890 to 1942) but are not physically associated with any homestead feature or patented homestead site and may have limited information potential. Isolated trash scatters typically represent remote dumping activities and may even comprise a single dumping event. Data recovery will include a detailed recording of the site (if not already done) and the analysis of surface artifacts (carried out in the field unless additional information would be gained through subsequent laboratory analysis). Results of any data recovery project carried out under this provision will be reported to the SHPO.

- Prehistoric artifact scatters represent activity areas that on the Pajarito Plateau are primarily associated with the Archaic period (5,500 BC to 600 AD lithic scatters) or the Ancestral Pueblo period (AD 600 to 1600 lithic and/or ceramic scatters). Isolated rock features are frequently of unknown cultural affiliation. Prehistoric artifact scatters and

isolated rock features situated on bedrock will be mitigated through in-field data recovery. With the limited data potential resulting from the proximity to bedrock and/or secondary context, the information content of these sites will be exhausted through in-field analysis and site recordation. Data recovery for these artifact scatters will entail the detailed recording of the site including an infield analysis of artifacts. Should there be potential for additional information to be gained through subsequent laboratory analysis, limited numbers of artifacts may be collected. Data recovery of rock features will consist of a precise description of the feature, a site sketch, digital and 35mm and black and white photographs, and infield analysis of any associated artifacts. Collection and subsequent laboratory analysis may be conducted for artifacts with the potential to yield additional information. Native American organizations will be consulted concerning the potential of these sites to be TCPs. Results of any data recovery project carried out under this provision will be reported to the SHPO. Artifact scatters that have been totally collected by the Pajarito Plateau Archaeological Project that currently exhibit no surface evidence of cultural remains will also be considered exhausted for any further data collection.

Adverse effects to Register eligible buildings and structures will be resolved by implementing the procedures listed below, except for those historic buildings and structures deemed "exceptionally significant" including properties discussed in Section 10. The SHPO will be consulted on creative mitigation measures to augment traditional measures to minimize adverse effects to "exceptionally significant" properties on a case by case basis. Notification of the intent to implement these procedures will be sent to the SHPO and the Council for comment. This notification will include information related to the nature of the adverse effect and the property's level of historical significance. If the Council and SHPO do not comment on the proposed resolution of adverse effects, the procedures will be implemented 15 days after notification of intent.

Documentation conducted under 1 and 2 will be carried out according to the standards of the Historic American Building Survey/Historic American Engineering Record (HABS/HAER), Level Two, with original LANL construction drawings substituted for new drawings, and medium format black and white photographs substituted for large format, when appropriate.

1. Prior to demolition or major remodeling, the interior and exterior of the building or structure will be photographed. Archival quality, medium format black and white photographs will be produced in accordance with the standards set forth in the Secretary of the Interior's Guidelines for Architectural and Engineering Documentation.

2. A listing of all LANL drawings for the property will be compiled, and key drawings will be submitted. If available, drawings and technical schematic plans will be submitted depicting any significant instrumentation historically housed in the property. Documentation will include a map showing the location of the property relative to the entire Laboratory. Additionally, the general site area will be documented so that there will be a permanent archival record of the history and appearance of the technical area where the property is located. A site map will also be generated depicting, at a sufficient scale, the footprint of each eligible and non-eligible building or structure within the associated technical area as they appear today. A series of historic site maps, representing the technical area's construction history, will also be included.

3. A written history will be prepared and will include a use history of the eligible property supplemented with information from oral interviews. This use history will include a

discussion of the associated technical area's role at LANL, its historical significance, and a comparison of its mission with similar missions historically conducted at Los Alamos or at other Department of Energy Manhattan Project or Cold War facilities, as applicable. LANL historic building survey forms, with representative drawings and photographs, will also be included.

4. Undertakings affecting historic properties will commence only after drawings have been compiled and medium format photographs have been produced. A final report will be submitted to the SHPO after the undertaking is complete.

5. Copies of all documentation, including historical and architectural information, will be provided to the New Mexico SHPO. The New Mexico State Records Center and Archives, Santa Fe, New Mexico, will be the designated repository. Original negatives will be curated at LANL's photographic archives.

Historically significant equipment and "artifacts" associated with historic properties will be identified prior to removal or demolition action. These artifacts may have interpretive or educational value as exhibits within local, state, or national museums and will be curated, as appropriate, at LANL. Museums will be notified of the availability of artifacts.

Documentation of Section 106 Compliance Review Field Checks and the Marking of Sites for Avoidance

In order to properly review and evaluate project undertakings, it is often necessary for qualified resource managers to conduct field checks. In a similar vein, if a project undertaking has associated activities that are performed in the vicinity of a known historic property, it is often deemed necessary to clearly mark for avoidance (with string and flagging tape) the boundaries of the property. These field checks and site marking activities are documented in field activity logs that accompany individual site and project files.

Negative Archaeological Surveys

Archaeological surveys conducted in a previously unsurveyed portion of the Laboratory may result in a negative finding. LANL does maintain spatial, and tabular site and survey data in its corporate database, and will provide information in a compatible format to the SHPO on a biannual basis.

Recommended Changes in Register Eligibility Status or Changes in the Boundaries of Register Eligible Sites

Recent major survey and excavation projects at LANL have brought into question the status and/or size of a substantial number of archaeological sites at LANL previously determined eligible for listing in the Register. For example, some sites were not adequately studied in terms of the integrity of subsurface deposits or the nature of local geomorphic processes (such as bedrock and alluvial settings). Other sites, such as large artifact scatters, may have been unsystematically surface mapped and therefore sizable areas without artifacts and likely without subsurface deposits were inadvertently included within the site boundaries.

Archaeological sites that warrant reevaluation include Archaic period lithic scatters (both on mesa tops and in canyon bottoms), Ancestral Pueblo artifact scatters, one- to three-room structures, and other rock features (including agricultural features) that are on bedrock with little likelihood of intact subsurface deposits.

A separate boundary problem warranting reevaluation is the fact that a number of previously determined Register eligible "sites" represent the arbitrary separation of related features in proximity to one another or, in some cases, the arbitrary lumping of a number of spatially and perhaps chronologically discrete features.

Any requested change of boundary or eligibility status will be thoroughly documented and will be presented to the SHPO as part of the normal Section 106 review process. Reevaluation involving actual formal subsurface testing (as opposed to probes to determine the depth of subsurface deposits in bedrock locations), such as might be required for large Archaic period sites in canyon bottoms, will first be reviewed as part of the normal Section 106 process by the SHPO and appropriate culturally affiliated Native American tribes prior to actual testing.

Section 10. Methods, Procedures, and Goals for Management of Post-1942 Historic Buildings and Structures at LANL

Goals for the Management of Historic Buildings and Structures at LANL

Beginning in 1943 and continuing to the present, a large number of buildings and structures have been constructed at LANL, many of which have been renovated, moved, or demolished. The distinction between buildings and structures is that buildings are designed for sheltered occupancy by humans, animals, and materials, while structures are architectural and engineering features not meant to be occupied (e.g., berms, firing pits, utility corridors, landscape elements). Together these are commonly referred to as the "built environment."

The April 2000 PA between LASO and the New Mexico SHPO defined a number of steps and goals for evaluating and managing the post-1942 historic built environment at LANL in compliance with Section 106 and Section 110 of the NHPA. Key elements of the agreement included the development of appropriate historic context statements, the development of an oral history program, the development of public outreach and interpretation options, and the continuation of a LANL-wide historic properties identification and evaluation effort, prioritized by the risk to historic properties from mission-related activities.

LANL's management of its post-1942 historic built environment through this CRMP is intended to be flexible, subject to periodic review and revision. The CRMP functions as a framework for both short- and long-term management actions related to historic properties. Reference to specific compliance guidance and standards on file at LANL is contained in Appendix B. It includes property listings, methods, and examples of LANL historic property documents, eligibility assessment reports, historical contexts, and preservation plans.

LANL Historic Buildings and Structures Assessment Process

Under the April 2000 PA, there are several types of buildings and structures that are exempt from evaluation requirements. These include mobile and modular trailers and buildings, premanufactured buildings resting on poured concrete pads, structures with minimal or no visible surface manifestations (i.e., pits, underground storage tanks, material disposal areas, septic tanks, underground pipelines, and manholes), above-ground fuel tanks, wells and bore holes, road-block barriers and siren poles, and transformer and pressure relief valve stations.

Only a subset of LANL's nonexempt buildings and structures, those dating from 1942 to 1956 (Manhattan Project and early Cold War Era) and from 1957 to 1963 (the signing of the Limited

Test Ban Treaty), are currently being identified and evaluated for effects from proposed Laboratory undertakings. Properties less than 50 years of age may also be identified and evaluated for their exceptional significance as defined in NHPA eligibility Criteria Consideration G. These include what has been called "key facilities" in the LANL SWEIS. Assessments of the historic built environment at LANL include, but are not limited to, buildings, structures, experimental areas, and discrete groupings of built environment features considered together as being part of a potential historical district.

Using the LANL Ten-Year Comprehensive Site Plan (TYCSP) list of excess buildings (i.e., buildings no longer deemed necessary for LANL mission activities) and the LANL cultural resources database of historic Laboratory buildings, an inventory of properties subject for evaluation for inclusion on the Register was developed. It is noted that certain types of properties are exempt from review, as specified in the April 2000 PA, and were excluded from the inventory list (see Section 9).

As of October 2004, of the approximately 536 historic properties on the inventory, 255 are in the process of being evaluated for their historic significance and eligibility for inclusion on the Register. Of the remaining 281 properties, 189 have been evaluated (108 eligible and 81 not eligible), with 92 properties still to be evaluated.

Register Eligibility Assessments

As mentioned above, Register eligibility assessments are being conducted for buildings and structures built between 1942 and 1963. Initial eligibility assessments include both historical background information and property descriptions. The assessment reports also include location maps, photographs, and current floor plans of properties. The documentation of historic properties and associated equipment is conducted in two stages: field visits and historical research (specific methods are detailed below). During the initial field visit, cultural resource management staff document each property's architectural and engineering elements. The exterior and interior of the properties are described following the format of LANL's historic building survey form (Appendix B). Moreover, representative views of the properties are digitally photographed, significant equipment is noted, and a determination of overall physical integrity is made.

In addition to the field visits, cultural resources staff conduct research regarding the history of operations at each property. Research sources include as-built and historic engineering records, information provided by current and former site workers, documents housed at LANL's records center and archives, and historic LANL photographs. Photographic resources may include general facility photographs, aerials, and photographs of experiments. Preliminary historical information is often available from LANL's RFI [Resource Conservation and Recovery Act (RCRA) Facility Investigation] work plan reports. The background information contained in these reports was gathered by LANL's ER Project during the 1990s in support of the characterization of LANL TAs.

Evaluation efforts are based on the application of the criteria for eligibility established in 36 CFR Part 60. Additional evaluation guidance with special relevance to LANL's cultural resources program is included in the ACHP's *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities* (1991). In general, buildings and structures must be 50 years old or older and meet at least one of the four criteria of eligibility to be eligible for inclusion on the Register. Occasionally, a property, although less than 50 years old, is associated with an event of exceptional significance and can be eligible for the Register under Criteria Consideration G, "exceptionally important properties that have achieved significance within the last fifty years."

See Appendix B, "Documenting Historic Buildings," for a more in-depth discussion of the criteria for eligibility.

In compliance with Section 106 of the NHPA (as amended), eligibility assessment reports are submitted to LASO for transmittal to the SHPO for review and concurrence. All documents that the Cultural Resources Team produces are reviewed by S Division Classification Group (S-7) prior to release.

Integrity

The LANL Cultural Resources Team has developed four integrity codes to assess potentially eligible buildings and structures: (1) Excellent, (2) Good, (3) Fair, and (4) Poor. These are described in more detail below. The integrity requirements for properties eligible under Criterion A of 36 CFR Part 63, Determinations of Eligibility for Inclusion in The National Register of Historic Places, are less stringent than for those properties eligible under Criterion C. A historically significant property with a level 3 integrity could still be eligible, especially if an element of historical uniqueness is involved. Properties eligible under Criterion C should have no lower than a level 2 integrity. Level 4 integrity properties are not eligible for the Register.

The Role of Historical Contexts in Eligibility Assessments

LANL cultural resources managers are currently conducting multiple property evaluations of Manhattan Project and Cold War Era facilities in support of the LASO's NHPA compliance process. Recent evaluations have included an assessment of all properties under the administrative control of LANL's ESA Division and an assessment of the Laboratory's remaining Manhattan Project properties. Short- and long-term planning decisions at LANL—coupled with the scheduled demolition of aging and obsolete facilities—are key factors in the decision to evaluate LANL's historic properties as a contextually related grouping of buildings and structures and not, as has been carried out in the past, on an individual basis.

A key element of the multiple property documentation format is the development of a historical context. Context statements provide information about historical patterns and trends and identify themes, geographical areas, and chronological periods (U.S. NPS 1999). In order to determine Register significance, LANL properties are viewed in light of their associated historical contexts and themes. The multiple property documentation format and its contextual emphasis is an even more important evaluation tool when a determination of "exceptional significance" is being considered for a property built in the last 50 years (Criteria Consideration G)—assessing the historical significance of recent properties is often difficult because the reviewer lacks the historical perspective that comes with the passage of time.

DOE has identified several corporate-level Cold War contexts. Some of the context topics have little connection to LANL operations, such as Milling and Mining, Fissile Material Production, and Power Administrations. DOE site-wide contexts that have strong associations with LANL's Cold War mission include Nuclear Weapon Components and Assembly; Nuclear Weapon Design and Testing; Nuclear Propulsion; Peaceful Uses: Plowshare, Nuclear Medicine, Nuclear Energy, and Nuclear Science; and Energy and Environment. LANL is in the process of developing a context statement for the Cold War period. Due to the complexity of subthemes associated with LANL's primary Cold War context (Nuclear Weapons Research and Development), this context statement will be written in two phases: 1) an "umbrella" context document and 2) specific thematic documents. The umbrella context will present general chronological and geographical information, identify historical trends, and place local activities in a broader national context. The umbrella document will also list properties that are potentially associated with the overall context

statement and, most importantly, identify the key LANL themes. Thematic documents are more in-depth historical discussions of identified themes, emphasizing local historical patterns, trends, and interrelationships. Ultimately, specific local themes will also be placed within the broader history of LANL, the DOE, the nation, and the world.

Identified LANL themes and subthemes, many spanning both the Manhattan Project and Cold War periods, are listed below.

- **Weapons Research, Development, Testing, and Stockpile Support:** Atomic Bomb, Hydrogen Bomb, Technical Development (High Explosives, Initiators, Detonators, Limited Production), Pacific Testing, NTS Testing, Treaty Verification, and Nuclear Safety and Security
- **Super Computing:** ENIAC, Monte Carlo, MANIAC, Stretch
- **Reactor Technology:** Clementine, LOPO, SUPO, HYPO, Omega West, LAMPRE, UHTREX, Kivas, Godiva, Rover/Nuclear Propulsion
- **Biomedical/Health Physics:** Radiation Effects on Humans/Animals, Fatalities, Standards, Exposure Limits, Shielding, Bioassay, Remote Handling, Medical Isotopes
- **Strategic and Supporting Research:** Nuclear Science, Pioneering Physics, Energy Research
- **Environment/Waste Management*:*** Material Disposal Practices, Waste Management, Clean-up, Demolition and Decommissioning
- **Administrative and Social History:** General Administration of Facility, Social Organization of Laboratory and Town, Security Practices, Civil Defense
- **Architectural History:** Construction and Demolition History, Architectural Styles

Detailed Procedure for Documenting the Historic Built Environment

Property Databases and LANL Facility Management Information

The LANL cultural resources building database and the ENG-DCRM databases are accessed to gain initial information about a building. Available information usually includes construction dates, names of properties, original and current functions and lists of schematic drawings for each property. The 'Mother of All Databases' (MOADs) also has information about the original name and number of a property (if it has changed through time), the builder, construction type and material, and additions and their construction dates.

Engineering Drawings

Using the drawing lists from the MOADs, building plot plans, elevations, floor plans, structural sections, roof details, and building additions are copied if available. Some of the building drawings that are used in documenting a building are classified as "official use only" documents. Prior to the inclusion of these drawings in written compliance documentation, they are reviewed by S-7 to ensure that there is nothing "classified" in the drawings and that they are releasable to the public. Copies of the original as-built elevations and floor plans and the most current as-built elevations and floor plans are obtained for use during field visits to record and verify the building architectural characteristics.

Initial Background Research

ER Project RFI work plans are consulted for information pertaining to the original function of a property, including any PRSs in the area that are also indicators of the operations in the building or structure. The ER Project has conducted historical research on the operations taking place at

different outdoor experimental areas as well as buildings. The RFI work plans and associated references are used as initial sources for historical background information.

Field Visits

Once initial background information is gathered, a walk-through of the facility is conducted. If possible, the walk-through is done in the company of a person knowledgeable of the history of the facility, such as a current or former site worker, as well as personnel from the Facility Infrastructure and Revitalization Project (FIRP) Office. Digital photographs of the facility's exterior and interior are taken and reviewed by an Authorized Derivative Classifier or personnel from S-7 to make sure there are no classification issues. The digital photographs are used in the initial historic building eligibility assessment report. Occasionally, photography is not allowed for security reasons.

An assessment of existing original equipment is conducted during the field visit. Digital photographs are taken and reviewed by S-7. In the event that historically significant project equipment exists in a building, a walk-through of the facility is scheduled with representatives from the Bradbury Science Museum to see if there is anything that should be retained for future exhibits. Such equipment is stored at LANL's cultural resources facilities or the museum's warehouse. Personnel from S Division evaluate items of interest for public display or loan to other institutions. Items removed from facilities are screened for contamination in accordance to the policies of the FIRP Office and current facility management.

LANL Historic Building Survey Forms

Using information from field visits, historical research, and engineering drawings, a historic building survey form is completed. Much of the information contained in the survey form is architectural in nature (i.e., material types, doors, windows, foundations, walls, roofs, etc.), and consulting architectural and engineering specialists gather this information as well as verify LANL's as-built elevations and floor plans.

Historic Photographs

The Laboratory's photographic archives are searched for historic building photographs. These photographs are used in the eligibility assessment reports and in the final documentation reports. Historic photographs of particular interest are those showing the building(s) under construction and in operation, associated experiments, and equipment.

Geographic Information System Maps

Cultural resources staff prepare Geographic Information System (GIS) maps as part of the building documentation process. These maps show the location of the building(s) within their specific LANL TA and in relationship to the rest of the Laboratory.

Oral History Program

Whenever feasible, oral history interviews are conducted to supplement the historical documents, drawings, and photographs associated with the activities carried out in a historic property. Oral interviews of current and former site workers are conducted according to LANL security protocols and following professional oral history standards. Unless otherwise requested by the participant, interviews are recorded and notes are also taken. The recorded interviews are retained and archived at LANL, and interviews may be transcribed. Some of the information contained in the interviews may not be available for public dissemination. If appropriate, verbatim transcripts

or interview notes are included in the appendices of the final documentation reports. In most cases, information from the interview is also incorporated into the text of the report. All interviewees sign a release form prior to being interviewed [see Appendix B]. This form stipulates that, although LANL retains recordings and notes, the interviewee can request copies of recordings, notes, transcriptions, or other documents arising from the interview.

Historical Significance

In evaluating the historical significance and integrity of LANL properties, the Cultural Resources Team looks at (1) the use history (the original and current function), (2) the building's architecture, (3) the presence of any additions or modifications, and (4) the building's physical integrity. Oral interviews are conducted with site workers to evaluate historical significance and integrity. Information gathered through oral interviews conducted with site workers is also used in the evaluation of historical significance and integrity.

Eligibility Criteria

Evaluation efforts are based on the application of the criteria for eligibility established in 36 CFR Part 60. Additional evaluation guidance with special relevance to LANL's cultural resources program is included in the ACHP's *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities* (1991). These criteria are detailed in Section 2. The National Park Service has written several publications that list the criteria for eligibility and provide guidance for the assessment of historic properties. Register Bulletin 15 explains how to apply the Register Criteria for Evaluation. Selection criteria for recent properties are given in Register Bulletin 22: *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance Within the Last Fifty Years*.

There are four general property types associated with LANL's historical themes:

1. Laboratory-Processing Buildings such as high explosives and tritium processing and research facilities.
2. Administration Buildings such as office buildings and facilities housing cafeterias and health and safety offices (change rooms and offices for radiological monitoring staff).
3. Security Buildings and Structures such as guard stations, security lights, and fencing.
4. Support Buildings and Structures such as warehouses, water tanks, utilities, and waste treatment facilities.

Integrity Review for Buildings

The Cultural Resources Team has defined four integrity levels to assess potentially eligible properties: 1) Excellent, 2) Good, 3) Fair, and 4) Poor.

1. Excellent Integrity—the property is still closely associated with its original function and retains integrity of location, design, setting, workmanship, materials, feeling, and association. Little or no remodeling has occurred to the property and all remodeling is in keeping with its associated historic context and significant period of use.
2. Good Integrity—the property's interior and exterior both retain historic feeling and character but some of the original significant equipment may be gone. The property may have had minor remodeling.

3. Fair Integrity—a property in this category should retain original location, setting, association, and exterior design. All associated interior significant equipment may be absent but the essential question is "Is this property still recognizable to a contemporary of the building's historic period?" This question can be answered by reference to historic photographs and by conducting visits with former occupants who had seen the building in its original functioning condition.
4. Poor Integrity—the property has no connection with the historically significant setting, feeling, and context. Major changes to the property have occurred. The property would be largely unrecognizable by reference to historic photographs and by conducting visits with former occupants.

The integrity requirements for properties eligible under Criteria A and B are less stringent than for those properties eligible under Criterion C. A historically significant property with a level 3 integrity could still be eligible, especially if an element of historical uniqueness is involved. Properties eligible under Criterion C should have no lower than a level 2 integrity. Level 4 integrity properties are not eligible for the Register.

Curation of Artifacts, Records, and Photographs

In accordance with Federal legislation 36 CFR Part 79, "Curation of Federally Owned and Administered Archaeological Collections," significant historical artifacts and architectural elements, if not contaminated, are retained and curated at an appropriate LANL facility. Historic artifacts, including scientific equipment and building fixtures, are curated at LANL's Bradbury Science Museum and at LANL's cultural resources facilities. Those items at the Bradbury Science Museum become the responsibility of the Museum. LANL drawings are usually archived on microfiche cards and stored at the LANL engineering records office, although some hard copies of drawings have been archived at LANL's archives and records center. LANL photographs, including original negatives, are archived at both the main photographic facility and at the LANL archives and records center. The largest single repository for historic LANL documents is the archives and records center; however, pertinent historical documents are sometimes retained by individual LANL organizations and are also located off-site at other DOE facilities, Federal records repositories, and at the National Archives II in College Park, Maryland.

Exceptionally Significant Historic Buildings and Structures to be Retained and Managed

Development of Preservation Plans for Identified Properties

Twenty-eight (28) exceptionally significant historic buildings and structures in 14 separate locations at LANL have been identified as candidates for long-term retention and management. These include the following:

- TA-6-37 "Concrete Bowl"
- TA-6 "Bomb Cover" (LA 131234-C)
- TA-8-1, Gun Site "Little Boy Design Building," along with an associated "Shop and Storage Building" [TA-8-2] and "Laboratory Building" [TA-8-3]
- TA-12-4, "Hexagonal Firing Pit"
- TA-16-58 "HE Magazine"
- TA-16-430, "HE Pressing Building," with associated rest houses and corridors [TA-16-435, -437]
- TA-16-516, V-Site "Trinity Assembly Building" and an associated "Equipment Building" [TA-16-517]

- TA-16-1451, “Back Gate Guard Station”
- TA-18 Complex: TA-18-1, “Slotin Criticality Accident Building;” TA-18-2, “Battleship Building Control Bunker;” TA-18-23, “Critical Assembly Building, Casa 1;” TA-18-26, “Hillside Vault;” TA-18-29, “Pond Cabin”
- TA-22-1, “Fat Man Assembly Building”
- TA-33-27, “Guard House;” TA-33-28, “Water Tower”
- TA-41-1, -2, -6, and the north half of -4, “Underground Vault/Ice House Complex”
- TA-60-17, -19, “Assembly Building and Rack Tower Complex”
- TA-73-15, “East Gate Guard Tower”

Several of these properties are discussed below in Section 15 in relation to a potential Manhattan Project National Historic Landmark District.

Preservation plans for identified properties will be developed by LANL staff and reviewed by the SHPO. These plans will identify regular inspection and maintenance schedules, funding sources, property managers, and acceptable reuse functions. While repairing or maintaining the properties, LANL will follow guidance published by the Department of Interior: *The Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (1990).

Strategies for Adaptive Reuse

In accordance with Section 110 of the NHPA, other uses for historically significant, noncontaminated properties should be developed as an alternative to demolition. Alternate uses could include office space, storage, and interpretative areas. Other alternate uses at LANL are being examined. For example, the "back gate" guard station is being considered for use as a visitor information center in the summer months, and the "front gate" guard tower has been proposed for use as the focal point for an improved Los Alamos County Gateway park.

Identification of Long-Term Maintenance Requirements for Exceptionally Significant Buildings and Structures

Buildings and structures at LANL that are considered to be of exceptional historic significance, such as those included in the potential Manhattan Project National Historic Landmark described below, will each be maintained in accordance with individual preservation plans as described above. Because of the special long-term maintenance and protection requirements engendered by their status as historic properties of exceptional significance, it may be prudent to assign these buildings and structures to the oversight of a single entity at LANL. This individual’s organization would arrange to have the duties of long-term maintenance and monitoring of these buildings and structures performed by appropriate LANL staff and technical consultants (such as a historical architect) in coordination with the cultural resources program.

Section 11. Methods, Procedures, and Goals for Archaeological Resources Management at LANL

All archaeological work conducted at LANL is accomplished within a rigorous set of standards, procedures, and goals. This includes archaeological fieldwork [survey, excavation, field checks, the monitoring of project activities, and the use of a Global Positioning System (GPS)], laboratory work [washing, labeling, analysis, and long-term storage of artifacts], compliance review, the preparation of archaeological reports, and other aspects of cultural resources management involving the use of archaeological skills and personnel.

Significance Standards for Register Evaluation of Archaeological Sites at LANL

A general research design (significance standards) for the conduct of archaeological work at LANL was developed in association with excavations and laboratory analyses as part of the ongoing DOE Land Conveyance and Transfer Project. This overarching research design was reviewed by the SHPO and the ACHP and was provided to culturally affiliated Native American tribes. This general research design will be modified as may be necessary after the Land Conveyance and Transfer Project is completed in 2007.

The general archaeological research design includes the following elements and numbered chapters listed below. A set of research questions is provided at the end of each chapter and is discussed in relation to the following time periods: Paleoindian, Archaic, Developmental, Coalition, Classic, Historic Pajarito Plateau (1600–1890), and Homestead (1890–1943):

RESEARCH CONTEXT

1. Introduction
2. Purpose and Scope of the Research Design
3. Bedrock Geology
4. Natural Environment
5. Culture History
6. Previous Archaeological Research at LANL

RESEARCH DOMAINS

7. Chronometrics
   - Relative
     - Stratigraphy and soil development; Projectile point typology; Ceramic seriation and cross-dating
   - Chronometric
     - Radiocarbon; Dendrochronology; Archaeomagnetism; Obsidian hydration; Luminescence
8. Geoarchaeology
   - Geomorphic and site formation processes
   - Geophysical studies
9. Paleoenvironment
   - Tree-rings
   - Pollen
   - Phytoliths
   - Packrat middens
   - Archaeological sites
   - Faunal remains
   - Stable carbon isotopes
   - Soil development and geomorphic history
10. Settlement Patterns
    - Land use
    - Community patterns
    - Site layout (including construction history)
    - Site structure (room, feature, activity area, middens, etc.)
11. Subsistence and Seasonality
    - Plant remains
    - Pollen remains
    - Faunal remains

- Coprolites
- Blood residue analysis
- Artifactual: chipped stone, ground stone, ceramic

12. Technology
    - Chipped stone
    - Ground stone
    - Ceramics
    - Architecture
    - Features
13. Characterization of Raw Materials
    - Embedded, direct or indirect procurement
    - Trace-element analysis: x-ray fluorescence, neutron activation analysis
    - Petrographic analysis
    - Microprobe analysis
14. Temporal Indicators of Cultural Interaction
    - Paleoindian, Archaic, Developmental, Coalition, Classic, early Historic Pajarito Plateau, and Homestead periods
15. Implementing the Research Design

REFERENCES CITED

LANL-Specific Excavation Project Research Designs and Data Recovery Plans and Associated Comprehensive Agreements

In addition to the general archaeological research design described above, each individual excavation project will have a research design and data recovery plan that addresses those issues and questions pertinent to the sites and features being excavated. These research designs are reviewed by the SHPO.

Along with the archaeological research designs and data recovery plans, comprehensive agreement(s) for intentional excavation under NAGPRA will be prepared for all culturally affiliated tribes.

LANL Archaeological Baseline Studies

A series of baseline studies have been prepared, or are in the process of being prepared, that serve to support the ongoing Land Conveyance and Transfer excavations, but which will also aid in the formulation of the general and specific archaeological research designs. In each case the baseline study has been prepared by a recognized expert.

These baseline studies are listed in Appendix B. Because they have considerable application to Pueblo neighbors and to land-holding agencies outside of LANL, they will be placed together into a separate volume as part of the DOE Land Conveyance and Transfer Project excavation series.

Homestead Contexts

A historical context study dealing with the homesteads at LANL will be prepared in 2006. This context study will detail the background of homesteading on the Pajarito Plateau, and will highlight issues and recommend methods for the treatment of these resources at LANL. A map showing patented homestead locations at LANL in depicted in Figure 11.1.

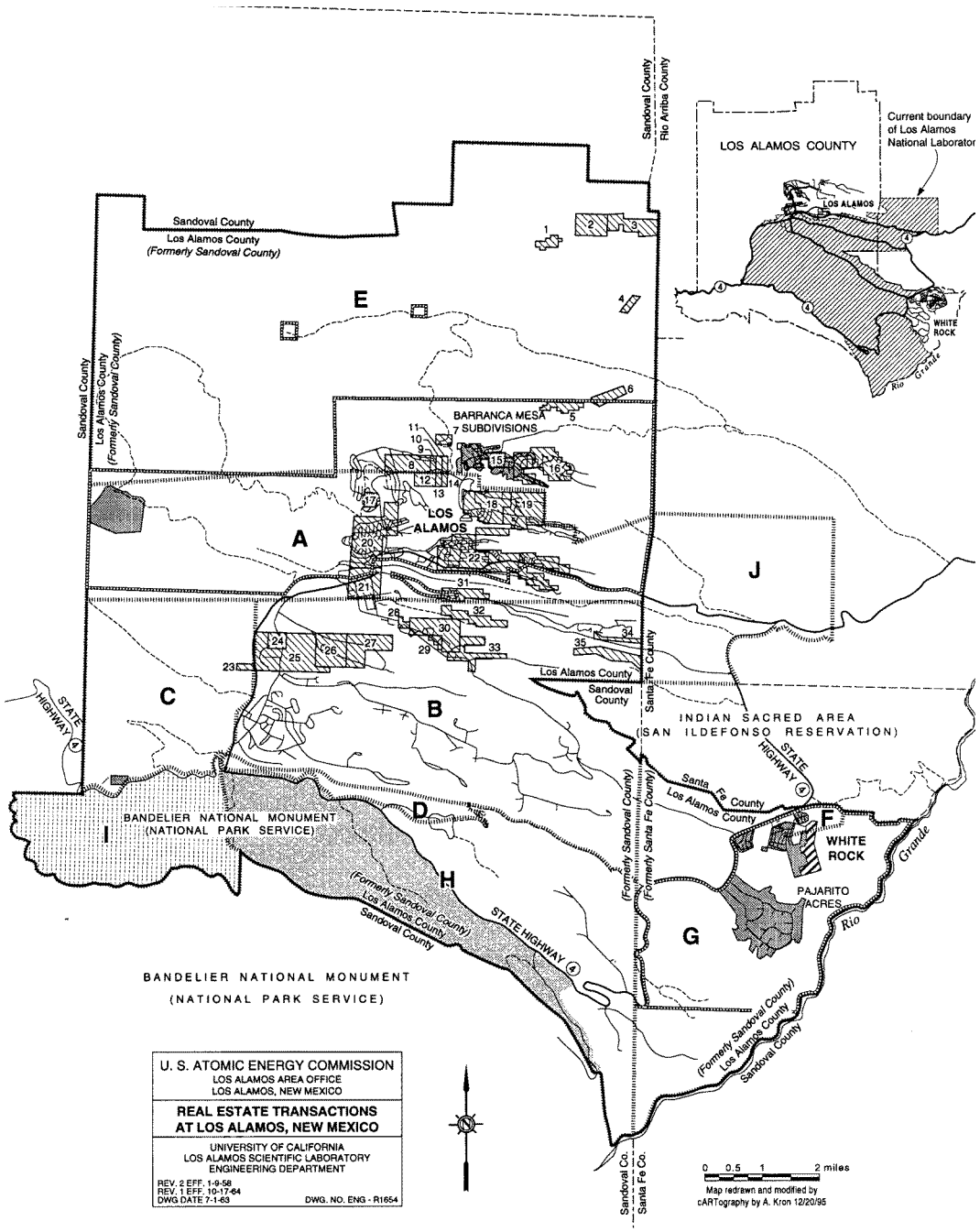


Figure 11.1. Los Alamos County and homestead patent locations (The numbered and hatched areas indicate homestead patents).

Archaeological Field Survey Manual

A manual has been prepared to guide the conduct of archaeological survey at LANL, similar in scope and purpose to the building assessment process described in Section 10. The manual covers both archaeological materials and general safety considerations. The manual includes the following sections:

- Prefield Review
- Field Operating Procedures
  - Survey Technique
  - Cultural Property Definitions
  - Site Recording Procedures
- Laboratory Procedures
- Postfield Reporting
- Appendix A: GPS Procedures
- Appendix B: Infield Artifact Analysis Coding Sheets
- Appendix C: Lithic Artifact Dictionary
- Appendix D: Site Forms
- Appendix E: Site Map Conventions
- Appendix F: Style Guide Sheet

Aspects of the manual are covered in the Heritage Resources Archaeological Survey implementing procedure (see Section 25 and Appendix B).

Archaeological Excavation—Field Procedures Manual

A general field procedures manual was prepared for use in the Land Conveyance and Transfer Project excavations, and serves as the basis for excavation projects at LANL. The Land Conveyance and Transfer Project included the excavation of Archaic period lithic scatters, Ancestral Pueblo roomblocks, fieldhouses, artifact scatters, and agricultural sites.

Prefield work procedures include evaluations to assess geomorphic context and integrity and may include the installation of a series of humidity sensors at specified depth intervals a year prior to project fieldwork, such as was conducted for excavations in the White Rock and Rendija Canyons tracts. In addition, ground-penetrating radar surveys are conducted at selected sites to identify subsurface features.

A series of recording forms were devised for use with the excavations and are applicable to most sites at LANL. These forms include

- Area Definition Form
- Area Log
- Auger Form
- Burial Form
- Daily Field Journal
- Field Specimen (FS) Catalog
- Feature Form
- Feature Log
- GPS Form
- Grid Level Excavation Form
- Instrument Mapping Form
- Room Summary Form
- Sample Log
- Stratigraphy Log
- Stratigraphy Unit Summary Form

The field procedures explain the purpose and proper use of these forms. In addition, the field procedures manual describes techniques specific to each of the four main site types: artifact scatters, roomblocks, fieldhouses, agricultural sites. The manual concludes with a statement on the Native American Monitors present during the excavations. It refers the reader to the

NAGPRA intentional excavation agreement for relevant policies and procedures when potential NAGPRA discoveries are made.

Aspects of the manual are covered in the implementing procedure for Cultural Resources Archaeological Excavation and Laboratory Procedures (see Section 25 and Appendix B).

General Laboratory Procedures

Archaeological laboratory analyses are currently performed in Building 14 in TA-21, in proximity to the offices of the LANL cultural resources staff. A general set of laboratory procedures was prepared for use in the Land Conveyance and Transfer Project excavations. They will be modified and updated as needed for future projects. The laboratory procedures include the following elements:

- Checking artifacts in
- Washing
- Computer versions of the FS catalogs
- Re-bagging and creating new bags
- Photographs
- Flotation samples processing
- Human remains and NAGPRA items

As with the fieldwork, a number of record logs are necessary for data tracking and for quality control as part of the duties of laboratory personnel. These include logs for processed flotation samples, a log listing bags or samples created in the laboratory (as opposed to field bags and samples), a daily log listing data conflicts and questions requiring consultation and resolution with field personnel, and logs to track human remains and NAGPRA-related grave associations and objects. And of course, one of the more important tasks of the archaeological laboratory is to maintain an inventory and tracking system for all notebooks and accompanying paperwork that comes in from the field.

Once artifact analyses and data recording are completed—including sketches and photographs as appropriate—artifacts are placed into appropriate containers for long-term curation and storage. Other duties performed by laboratory staff include the maintenance of field vehicles logs and the maintenance and updating of lists of vendors from which to purchase necessary field and laboratory supplies.

The Laboratory was tasked with the respectful processing, analysis, and curation of human remains and other NAGPRA-related items. Under the terms of the NAGPRA intentional excavation comprehensive agreement for the Land Conveyance and Transfer Project, culturally affiliated tribes (in this particular case the Pueblos of San Ildefonso and Santa Clara, and potentially also the Jicarilla Apache Tribe) had the right to request an in-the-laboratory or on-the-archaeological-site review of NAGPRA remains and objects at any time they so desired. Actual analyses of the human remains were performed by a qualified professional human osteologist, and human remains and other NAGPRA items were stored in a safe, clean, and secure area within the laboratory facility. The NAGPRA remains and objects will then be repatriated to the culturally affiliated tribe when agreed upon with the tribe and with LASO and after publication of a notice to repatriate in the Federal Register.

Aspects of the manual are covered in the implementing procedure for Cultural Resources Archaeological Excavation and Laboratory Procedures (see Section 25 and Appendix B).

PART III. NHPA Compliance: Section 110

Section 12. Overview of the NHPA Section 110

Section 110 of the NHPA

Section 110 of the NHPA sets out the broad historic preservation responsibilities of Federal agencies and is intended to ensure that historic preservation is fully integrated into the ongoing programs of all Federal agencies. It makes explicit the Federal agency's responsibility for identifying and protecting historic properties and avoiding unnecessary damage to them. Section 110 also charges each Federal agency with the responsibility for considering projects and programs that further the purposes of the NHPA, and it declares that the costs of preservation activities are eligible project costs in all undertakings conducted or assisted by a Federal agency.

The 1992 additions to Section 110 of NHPA set out some specific benchmarks for Federal agency preservation programs:

- Historic properties under the jurisdiction or control of the agency are to be managed and maintained in a way that considers the preservation of their historic, archeological, architectural, and cultural values.
- Historic properties not under agency jurisdiction or control but potentially affected by agency actions are to be fully considered in agency planning.
- Agency preservation-related activities are to be carried out in consultation with other Federal, state, and local agencies, Indian tribes, and the private sector.
- Agency procedures for compliance with Section 106 of the Act are to be consistent with regulations issued by the ACHP.
- An agency may not grant assistance or a license or permit to an applicant who damages or destroys historic property with the intent of avoiding the requirements of Section 106, unless specific circumstances warrant such assistance.

Seven specific standards for Section 110 were published in the Federal Register in April 24, 1998, along with recommendations for the implementation of these standards. These standards recognize that the preservation and use of historic properties and their careful consideration in agency planning and decision-making are in the public interest, are consistent with the declaration of policy set forth in the NHPA, and must be a fundamental part of the mission of any Federal agency. These standards and guidelines are intended to assist Federal agency personnel and the agency head in carrying out their policies, programs, and projects in a manner consistent with the requirements and purposes of Section 110 of the NHPA, related statutory authorities, and existing regulations and guidance.

An agency should use these standards and guidelines, and consultation with the Secretary and others, to ensure that the basic individual components of a preservation program called for in Section 110 are in place. The preservation program should also be fully integrated into both the general and specific operating procedures of the agency. The agency's preservation program should interact with the agency's management systems to ensure that historic preservation issues are considered in decision-making. The program should try to ensure that the agency's officials, employees, contractors, and other responsible parties have sufficient budgetary and personnel resources needed to identify, evaluate, nominate, manage, and use the historic properties under agency care or affected by agency actions.

These standards are listed below:

Standard 1. Each Federal agency establishes and maintains a historic preservation program that is coordinated by a qualified Preservation Officer and that is consistent with and seeks to advance the purposes of the NHPA. The head of each Federal agency is responsible for the preservation of historic properties owned or controlled by the agency.

Standard 2. An agency provides for the timely identification and evaluation of historic properties under agency jurisdiction or control and/or subject to effect by agency actions.

Standard 3. An agency nominates historic properties under the agency's jurisdiction or control to the Register.

Standard 4. An agency gives historic properties full consideration when planning or considering approval of any action that might affect such properties.

Standard 5. An agency consults with knowledgeable and concerned parties outside the agency about its historic preservation related activities.

Standard 6. An agency manages and maintains historic properties under its jurisdiction or control in a manner that considers the preservation of their historic, architectural, archeological, and cultural values.

Standard 7. An agency gives priority to the use of historic properties to carry out agency missions.

Section 13. Archaeological Survey at LANL and Survey on Non-LANL Lands

Approximately 86% of LANL has been systematically surveyed for archaeological resources. In descending order of acreage, the TAs with portions lacking survey include TA-33, TA-5, TA-71, and TA-68.

It would be prudent to proactively survey the remaining unsurveyed 14% of LANL land so as to enhance land-use planning and so as to prevent unwelcome delays in project execution due to lengthy SHPO and Native American consultations, and cultural resources mitigation measures that may be required by the SHPO and the ACHP. Figure 13.1 depicts the unsurveyed areas and divides them into seven separate parcels. In ascending acreage these include a combined parcel including portions of Pajarito and Two Mile Canyons along with Mesita del Buey (165 acres); a combined TA-58 and TA-62 parcel (176 acres); a TA-71 parcel (245 acres); a TA-68 parcel (291 acres); a combined parcel containing portions of Sandia and Mortandad Canyons (318 acres); a survey of several areas around the Los Alamos Neutron Science Center in and around TA-53 (411 acres); a TA-33 parcel (953 acres); and a TA-70 parcel (1150 acres). In addition to these seven survey parcels, there is a considerable need to resurvey an area of approximately 52 acres in and around Tsirege Pueblo that has not been completed to modern standards.

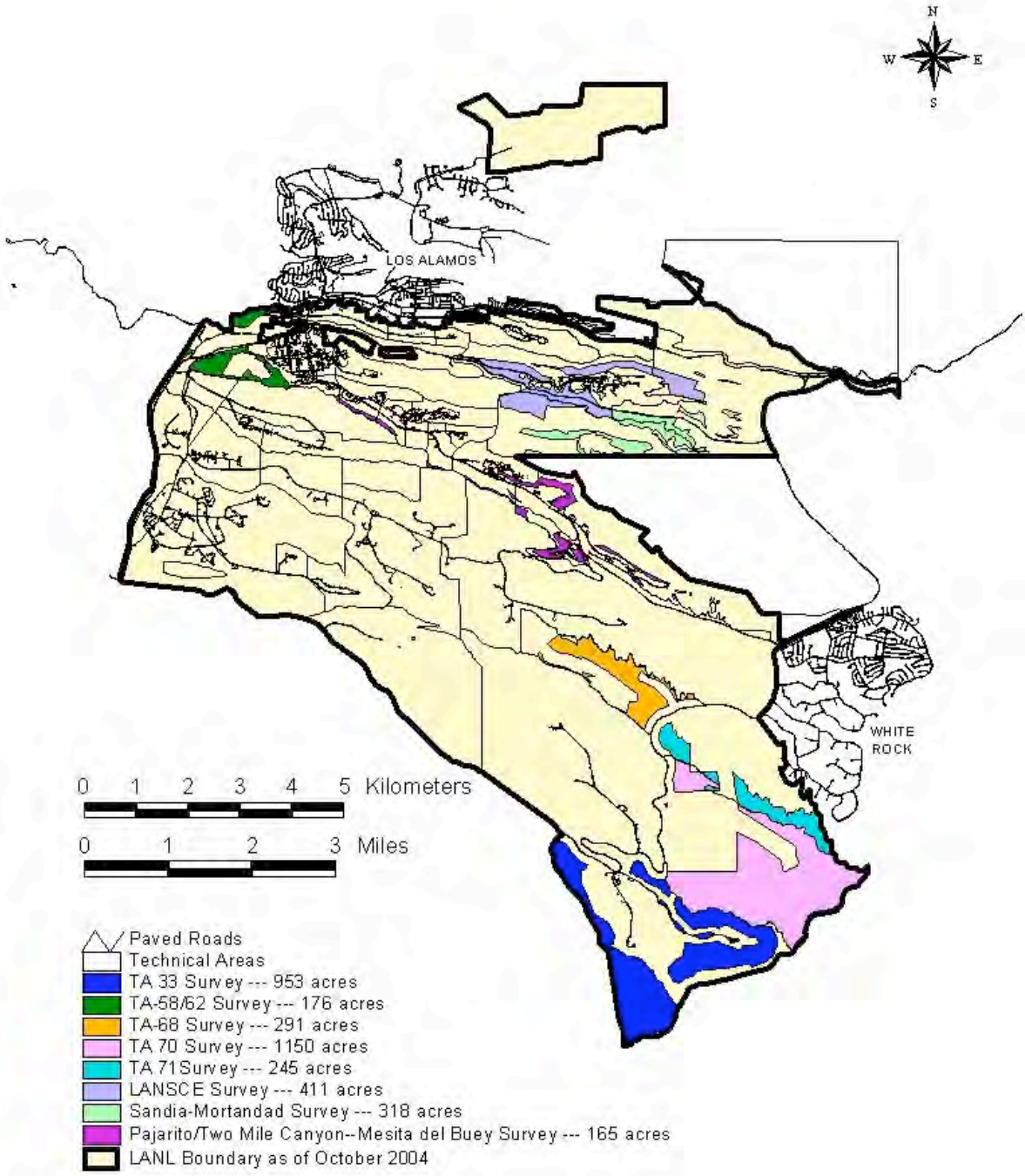


Figure 13.1. Unsurveyed areas at LANL.

It is noted that the 86% survey coverage at LANL includes a number of surveys conducted as part of the LANL ER Program primarily between 1991 and 1995. While these survey project areas and their associated sites are included as part of the overall survey database for LANL project review, reports have not yet been completed and submitted to SHPO for 13 of these surveys. A similar situation exists for a survey conducted on behalf of the LANL RCRA program. These survey projects are listed in Table 2 by affected TA, associated ER Operable Unit number, and the approximate number of associated archaeological sites. A map depicting these survey areas is provided as Figure 13.2. It is noted that some of the sites have since been included as part of other projects and project reports.

Table 2. LANL Archaeological Survey Projects Lacking Reports as of October 2004

Technical Area/Location	ER Operable Unit No.	Site Numbers (approx.)
TA-6, -22, -40	1111	12
TA-8, -9, -69	1157	28
TA-14, -67	1085	9 (+5 Bldgs)
TA-15	1086	101
TA-16	1082	39
TA-36	1130	69
TA-39	1132	39
TA-49	1144	84
TA-53	1100	20
TA-54	1148	19
Los Alamos/Pueblo Canyons	1049	30
Lower Los Alamos Canyon	1049	8 + Otowi Bridge Nat. Register Historic District
Mortandad Canyon	1049	3
TA-14, -15, -67	RCRA	27 (3 tested)

LASO will meet with the SHPO to discuss and schedule the completion and submission of these survey reports, a task anticipated to begin in FY 2006.

Any future project undertakings at LANL proposed for the 14% of unsurveyed areas must first be subject to systematic archaeological survey as described in Section 11. A detailed report will be submitted to the SHPO, including the evaluation of discovered sites for the Register, and a determination of the effects of the proposed project on these sites, as required by 36 CFR 800. The results of this consultation must be taken into account in project planning, and any adverse effects will require consideration by the SHPO and the ACHP and will likely require resolution.

A similar situation exists for archaeological survey that was conducted in support of the Cerro Grande Rehabilitation Project tree thinning activities during the period of FY 2001 through FY 2004. Because of the urgency of tree thinning and other post-Cerro Grande fire rehabilitation measures, an arrangement was made with the SHPO under the emergency provisions of the NHPA. This strategy allowed LANL archaeologists to survey and locate archaeological sites in advance of rehabilitation activities and to mark archaeological sites for avoidance during these activities. The sites were marked with string and flagging tape, were located using GPS technology, and brief notes regarding the nature of the sites were put on a single page field form (Figure 13.3). The agreement with the SHPO was that detailed archaeological site recording and reporting of the sites using New Mexico Archaeological Resources Management System standards and their reporting to the SHPO would be delayed until after the rehabilitation project

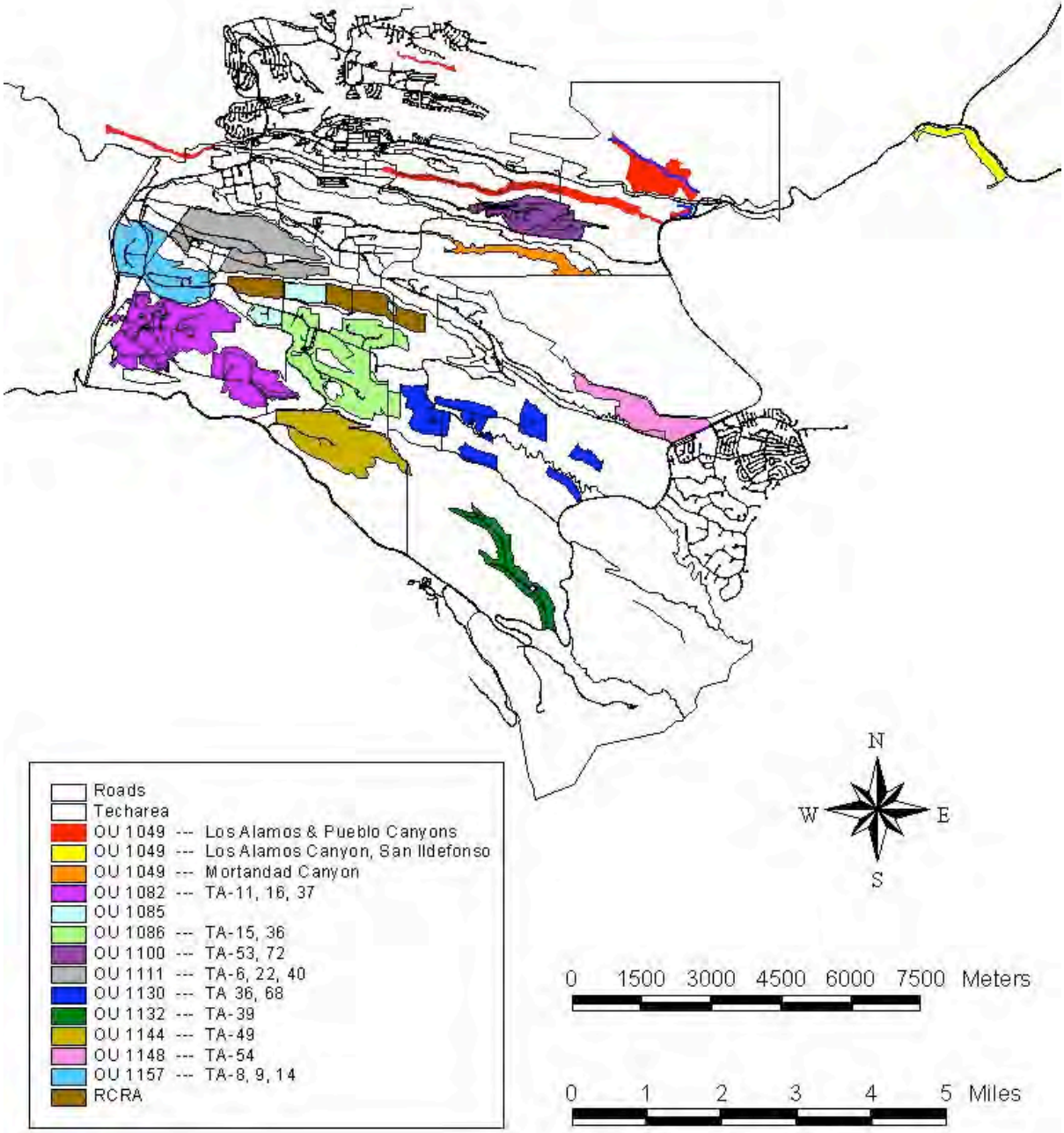


Figure 13.2. ER Project survey areas.

Figure 13.3. Cultural resources staff surveyed and located archaeological sites before Cerro Grande rehabilitation activities.

had been completed. A total of 60 of the approximately 460 newly identified archaeological sites have been fully recorded as of October 2004. It is anticipated that the remaining 400 sites will be satisfactorily recorded and submitted to the SHPO during the next several years.

Occasionally the LANL cultural resources management staff is tasked to perform archaeological surveys on adjacent Federal, state, municipal, or tribal lands in support of LANL initiatives. Examples include surveys for specific locations on U.S. Forest Service land proposed for studies of paleoseismic hazards, and the placement of characterization wells within reservation lands of the Pueblo of San Ildefonso. Since these surveys are Federal undertakings, they are performed to LANL standards.

Section 14. Archaeological Collections and Laboratory-Era Equipment and Artifacts

In accordance with Federal legislation 36 CFR Part 79, "Curation of Federally Owned and Administered Archaeological Collections," significant historical artifacts and architectural elements, if not contaminated, are retained and curated at an appropriate facility, such as a museum. With five major exceptions, all archaeological collections from LANL are currently maintained and curated in the Laboratory of Anthropology at the Museum of New Mexico. The first exception includes collections made prior to the creation of LANL in 1943, which are housed at the Smithsonian Institution and other repositories. These earlier collections are outside of the Federal legal mandate of DOE.

The second exception is collections gathered at LANL during the course of a major survey conducted throughout the Pajarito Plateau during the course of the Pajarito Archaeological Research Project (PARP) by the University of California at Los Angeles (UCLA) during the period of 1977 through 1985. These collections are still housed at UCLA. However, the PARP collections from LANL land are the responsibility of LASO and will be reacquired when UCLA has completed its ongoing studies of the collection.

The third exception includes collections obtained during archaeological excavations conducted at LANL in support of the DOE Land Conveyance and Transfer Project. These excavations began in FY 2002 and are scheduled for completion in FY 2006. The collections (Figures 14.1 and 14.2) and associated field and laboratory records are currently housed in Building 14 in TA-21. In addition to artifacts, these collections include faunal and macrobotanical specimens, processed flotation samples (Figure 14.3), and other similar materials.

Figure 14.1. Projectile points from surveys conducted during Land Conveyance and Transfer Project.

Figure 14.2. Sherds from surveys conducted during Land Conveyance and Transfer Project.

Figure 14.3. Flotation samples from surveys conducted during Land Conveyance and Transfer Project.

The fourth exception includes field survey forms, maps, and other actively used records created during LANL cultural resources management activities since the 1950s. These and a small number of exhibited artifacts and unprovenienced artifacts and other materials serving as teaching and comparative collections are presently housed in Building 210 at TA-21.

The fifth exception concerns post-1943 Laboratory artifacts (Figures 14.4 and 14.5). Appropriate laboratory artifacts and equipment associated with historically significant activities, buildings, and structures at LANL are identified, recorded, and occasionally removed prior to the removal or demolition of the property (see Section 10). Such artifacts and equipment are typically evaluated and collected in conjunction with the Bradbury Science Museum. Currently, a small number of such artifacts are being curated in a transportable container adjacent to Building 210 at TA-21. The Museum assumes management responsibilities for those items it chooses to display or curate. These items may have interpretive or educational value as exhibits within local, state, or national museums, including for the Bradbury Science Museum and other contexts at LANL. For example, the Bradbury Science Museum has loaned two Project Rover engines to the NTS Atomic Testing Museum. These engines, named Phoebus and Kiwi, were part of an experimental program during the 1950s to 1972 to design a nuclear reactor capable of powering rockets in space.

Both the PARP and the Land Conveyance and Transfer Project excavations created large archaeological collections. These and other collections are permanently curated in the Laboratory of Anthropology at the Museum of New Mexico. There are also small collections of historic Manhattan Project and Cold War artifacts presently being curated at LANL itself. These are currently being evaluated by the Bradbury Museum and the LANL Cultural Resource Team for significance and for their potential use in displays at LANL.

Figure 14.4. "Flattop" criticality assembly apparatus at TA-18.

Figure 14.5. Omega West Reactor Control Panel at TA-2.

Section 15. Potential "Project Y" Manhattan Project and Los Alamos National Laboratory Ancestral Pueblo National Historic Landmarks

NHL Districts are designated by the Secretary of the Interior under the authority of the Historic Sites Act of 1935, which authorizes the Secretary to identify historic and archaeological sites, buildings, and objects which "possess exceptional value as commemorating or illustrating the history of the United States." In the nearly 70 years (2004) since the enactment of the Historic Sites Act, approximately 2500 properties nationwide have been designated as NHL Districts, with 43 of these being in New Mexico.

As eloquently noted in the U.S. Department of the Interior guide entitled *National Historic Landmarks: Illustrating the Heritage of the United States*: "National Historic landmarks…illuminate our rich and complex national story that spans more than 10,000 years, from the arrival of the ancient hunters who crossed into Alaska from Asia to the exploration of outer space. The story is there to be told in Presidential homes, on stretches of arctic tundra, in our rich seafaring and maritime heritage, on battlefields, at pueblo ruins and earthen mounds, in the nation's industrial facilities, in historic towns and communities, and in our masterpieces of architecture and engineering."

LANL is an active and vibrant scientific and industrial complex. It is important to do the necessary infrastructure upgrades to stay at the cutting edge of science and to best conduct LANL mandated mission in the service of the country. However, it is also necessary to retain and protect those storied reminders of history that best serve to ground present and future generations in how things were and how they came to be. This preservation and interpretation are important for the people who work at LANL, for those who live in the surrounding communities including Pueblo neighbors, and for the Nation as a whole.

Few stories are more compelling than those of the use of the Pajarito Plateau by Ancestral Pueblo populations during the 13th through the 17th centuries and the 20th century use of the Plateau by the Manhattan Project. While parts of these stories are captured at nearby Bandelier National Monument, Trinity Site NHL, and at the Los Alamos Scientific Laboratory NHL within the present town site of Los Alamos, key elements are situated at LANL itself.

Two potential NHL Districts at LANL and their likely contributing elements (Figure 15.1) are outlined below. In Section 16, we address the need for a Los Alamos Archaeology National Register District, separate from but complementary to the two potential landmark districts.

"Project Y" of the Manhattan Project lasted only four years, 1942 through 1946, but it represents one of the defining moments of recent world history. "Project Y" had as its main goal the immediate development and possible deployment of the world's first atomic weapon. Because of such urgency, the construction of "Project Y" facilities at Los Alamos was driven by simple expediency, and little did anyone dream at its inception that this project would eventually result in the creation and perpetuation of a state-of-the-art national security laboratory.

A number of factors have served to greatly reduce the number of Manhattan Project buildings still extant as of October 2004. These include (1) the expedient initial construction of the original buildings and structures; (2) post-Manhattan Project infrastructure development particularly during the late 1950s and early 1960s, and again beginning in the late 1990s through the first

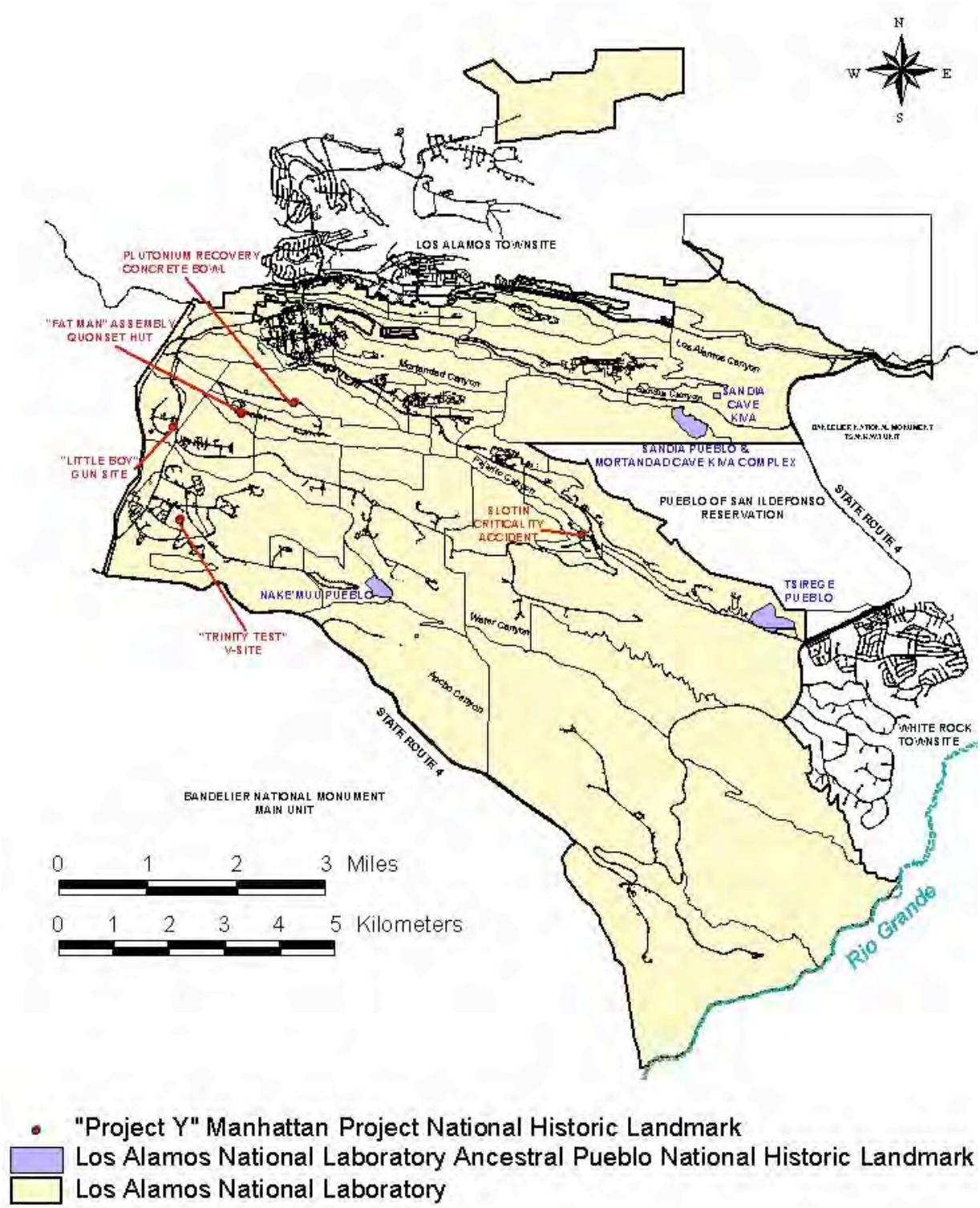


Figure 15.1. Potential "Project Y" Manhattan Project National Historic Landmark and LANL Ancestral Pueblo National Historic Landmark.

decade of the 21st century; (3) the development of the Los Alamos town site during the 1950s and 1960s; (4) the May 2000 Cerro Grande fire; and (5) contamination of some buildings by asbestos and radioactive isotopes. As of 2003, only 44 of these retained sufficient historical and physical integrity for listing on the Register, and only a handful are deemed suitable for long-term preservation and interpretation. Fortunately, of this handful, five separate properties together provide compelling insight into the most significant aspects of "Project Y." Each of these is a small discrete area, representing from between approximately 1 to 3 acres of land.

"Trinity Test" V-Site [TA-16]: The V-site contained an assembly bay, laboratory buildings, an equipment building, and a warehouse used for experimental work with special assemblies. In 1945, Laboratory personnel conducted a trial assembly of the Trinity device. This location was chosen in 1999 for restoration and interpretation by the Federal "Save America's Treasures" program, but suffered substantive damage from the May 2000 Cerro Grande fire (Figures 15.2 and 15.3). Only the assembly building (16-516) and the equipment building (16-517) survived the fire (Figure 15.4).

"Little Boy" Gun Site [TA-8]: The Gun Site contains three buildings (8-1, -2, and -3) and associated external landscape features that are associated with development and testing in support of the "Little Boy" bomb. "Little Boy" was an uranium gun device that involves shooting one subcritical mass of uranium-235 into another at sufficient speed to avoid predetonation, but which together yields a supercritical mass. The three buildings were constructed in a small ravine as part of the Anchor Ranch Proving Ground (Figure 15.5) designed to test aspects of the gun device and to document the tests through high-speed photography. In March 1944, special test guns from the Naval Gun Factory were set up in gun emplacements above the roof level of the control building. This unique design lessened the hazards associated with using high-alloy tubes and with firing the tubes in free recoil. The Gun Site was included in 2002 for restoration and interpretation by the Federal "Save America's Treasures" program, after the May 2000 Cerro Grande Fire damaged the V-Site (Figure 15.6).

Figure 15.2. Part of the "Trinity Test" V-site before the Cerro Grande fire.

Figure 15.3. The same buildings as in Figure 15.2 after the Cerro Grande fire.

Figure 15.4. V-site Buildings 16-516 and -517, which survived the Cerro Grande fire.

Figure 15.5. Anchor Ranch Proving Ground.

Figure 15.6. The Gun Site, chosen in 2002 for restoration and interpretation.

"Fat Man" Quonset Hut [TA-22]: Building 22-1 is a true Quonset hut, often referred to as a Pacific-style hutment facility (Figure 15.7). TA-22 was primarily used for detonator research and development. Explosive components associated with the "Fat Man" plutonium implosion bomb were assembled in the Quonset hut.

"Plutonium Recovery" Concrete Bowl [TA-6]: Because plutonium was scarce and had only been produced in extremely small amounts by late 1944, experimental systems for the potential recovery of plutonium from failed criticality tests were devised. The bowl (Building 6-37) consists of a sloping, ground level concrete pad with a drain in the center of the structure (Figure 15.8). The concrete bowl is 200 feet in diameter and consists of 16 pie-shaped wedges. The center of the bowl has a raised dome with a metal cover on top. Near the north side of the bowl is

Figure 15.7. The Quonset hut, Building 22-1, where 'Fat Man' explosive components were assembled.

Figure 15.8. "Plutonium recovery" Concrete Bowl.

a wood-framed and gravel-filled ramp. Water recovery tests using depleted uranium were conducted at the Concrete Bowl beginning in 1944. The tests involved a shot containing depleted uranium (used as a stand-in for plutonium) in a redwood water container on a tower approximately 50 feet high. The shots contained up to 10 pounds of explosives and up to 500 gallons of water. After an explosion, workers would wash the bowl depression and filter the water to recover the metal shot fragments. The Laboratory ultimately decided against using the water recovery method for the Trinity Test because it was not feasible to scale the project up to the size required for the test of an actual atomic bomb. The water recovery tests at the Concrete Bowl were suspended after the spring of 1945.

"Criticality Accident" Slotin Building [TA-18]: In August 1945, because of a fatal criticality accident suffered by Harry Daghlian at the Omega Site in TA-2, critical assembly work was transferred to the Pajarito Site [TA-18]. In May 1946, a similar fatal accident occurred in Building 18-1 (Figure 15.9), leading to the death of Louis Slotin. His death prompted the discontinuance of hand assembly for criticality experiments and the use of remote assembly techniques, as well as accentuating the role that health physics eventually came to play in weapons research.

Figure 15.9. Building 18-1, site of a fatal criticality accident.

Potential Los Alamos National Laboratory Ancestral Pueblo National Historic Landmark

There are more than 1600 known Ancestral Pueblo archaeological sites at LANL, among the highest densities of such sites in the American Southwest. While all are considered important by the modern Pueblo descendants of the people who made these sites, there is a small percentage of sites that, due to integrity of location and the nature of the resource, best serve to tell the story of the Ancestral Pueblo use of the Pajarito Plateau during the period of around AD 1250 to 1700.

These Ancestral Pueblo resources can be grouped into two general levels of significance: NHL potential status and National Register Historic District potential status. A general description of these resources is provided below, followed by a specific listing of sites recommended for the landmark.

Late Coalition Period and Classic Period Complex Plaza Pueblos: During the period of around AD 1150 to 1250, large numbers of small single-story roomblock pueblos, each averaging around two to three habitation rooms and four to five storerooms, were constructed on the Pajarito Plateau. This represented the first time in the archaeological record that large numbers of people were living part or all of the year on the Plateau. Subsequently, during the period of AD 1250 to 1300, population began amalgamating into larger-sized pueblos. These pueblos appear to run from about 40 to more than 200 rooms and are characterized by two or more roomblocks being linked together around one or more partially or completely enclosed plazas. Most of these complex plaza pueblos contain one or more sections of roomblocks that were originally two

stories in height, with the largest pueblos exhibiting evidence of three-story construction. Kiva ceremonial chambers, extensive midden areas, and cemeteries are also present. Preliminary data suggest that these complex plaza pueblos can be divided into at least three size categories based on a calculation of the aggregate square footage of roomblocks and attached plazas. The majority (20 examples) average in size between approximately 800 to 1200 square meters, with a few being as low as 450 square meters and as high as 1400 square meters; five range in size between 1900 to 2500 square meters; while two are each approximately 4200 square meters. During the Classic period, after about AD 1325, the numerous complex plaza pueblos were consolidated into five immense pueblos, one of which is present at LANL (Tsirege).

Cavate Complexes: Associated primarily with late Coalition period and Classic period complex plaza pueblos are a number of rooms excavated by hand into the welded tuff cliff faces. These range from small isolated habitation rooms and storage rooms to clusters of habitation rooms and associated storage rooms to clusters containing large squarish rooms that appear to have been used as kivas. The larger clusters almost invariably have one or more masonry rooms ("talus rooms") constructed immediately in front of the cavate rooms. Most cavate complexes also contain exterior rock art panels. The majority of cavate habitation rooms and cavate kivas appear to have been prepared by first smoking the room to produce a layer of black soot and then the lower third to half being covered with a smooth layer of light brown plaster. This produces a seemingly purposeful effect possibly representative of the earth (brown) and sky (black). In the kivas and larger habitation rooms, petroglyphs are commonly scratched through the black soot, revealing the natural white tuff underneath, and somewhat less frequently through the brown plaster. Particularly in the kiva-like rooms, these petroglyphs are complex with many human and animal figures in scenes possibly representing myths or other narrative stories. Three of the four examples of cavate complexes recommended for special status included particularly rich examples of petroglyph narrative art and well-preserved room features. The fourth example is not a complex, but instead represents a cavate with a uniquely preserved talus room, possibly reconstructed or refurbished in the 19th or early 20th centuries.

Rock Art Panels: In many locations, the Pajarito Plateau canyon cliff faces exhibit petroglyphs that have been pecked into the welded tuff and basalt, most typically along southern and eastern exposures. There is a tendency for rock art panels to cluster near cavate complexes in the vicinity of complex plaza pueblos. The petroglyphs cover a wide range of styles and motifs, including human figures (such as masked and shield warriors), animals, plants, and geometric designs.

Masonry Circles with Upright Stones: Along the eastern tips of several mesa tops on the Pajarito Plateau, including at LANL, are isolated circles of shaped stone, including a number of elongated upright stones. The location of these features and informal discussion with individuals from the Pueblos of San Ildefonso and Santa Clara suggest these may have served as trail shrines.

Potential Los Alamos National Laboratory Ancestral Pueblo National Historic Landmark

The four discrete units identified for inclusion in the potential LANL Ancestral Pueblo National Historic Landmark combine for a total of 132 acres (see Figure 15.1).

Nake'muu Pueblo Unit (30 acres): Nake'muu is a late Coalition Period complex plaza pueblo and associated structures and trails situated on a narrow ridge between Water Canyon and Cañada del Buey. It is notable for both its standing wall architecture, the only open pueblo ruin at LANL with such walls, and the fact that it served as a refuge for people from the Pueblo of San Ildefonso during the late 17th century Pueblo Revolt. Photographs taken of the site in 1915 (Figure 15.10) reveal that there has been little change to the site during the past eight decades (Figure 15.11)

Figure 15.10. Nake'muu in 1915.

Figure 15.11. Nake'muu in 1999.

Tsirege Pueblo Unit (57 acres): Tsirege is the only Classic period complex plaza pueblo at LANL and an ancestral village in the traditions of the Pueblo of San Ildefonso. Tsirege and Tsankawi were the last to be occupied on the Pajarito Plateau. It is one of the largest pueblo ruins on the Plateau, and contains several hundred ground floor rooms and evidence of three-story architecture (Figure 15.12). A long defensive wall, approximately 10 kivas, a reservoir, and many significant rock art panels are also present. A major complex of associated cavate structures and talus rooms was constructed along the cliff face above the bottom of Pajarito Canyon. Tree-ring dates indicate use at least during the period of AD 1422 to 1580, with the later date coinciding with the final abandonment of the Pajarito Plateau by permanent Ancestral Pueblo populations due to prolonged drought. A Tsirege rock art petroglyph (Figure 15.13) of an *Awanyu*, a horned water serpent deity, was copied by a famous Pueblo of San Ildefonso potterer, in the earlier 20th century. This image was part of the 20th century revival of Tewa pottery making and now commonly appears on contemporary Pueblo pottery. It also has become a commercial icon for northern New Mexico.

Sandia Pueblo and Mortandad Cave Kiva Unit (43 acres): This consists of a complex pueblo associated with a series of rock art panels and spectacular cavates including several with petroglyph complexes likely depicting mythological scenes (Figure 15.14). These remains are included in the traditions of the Pueblo of San Ildefonso and may represent a place of special cultural and traditional value. Because of the large numbers of visitors to the site and due to concern over potential vandalism, the National Park Service assisted LANL in putting a protective steel grate around the entrance to the cavate (Figure 15.15), which remains locked except for periodic monitoring or official visits. The LANL cultural resources program maintains custody of the key.

Sandia Canyon Cave Kiva Unit (2 acres): This consists of at least two spectacular cavates with petroglyph complexes likely depicting mythological scenes. They rival Mortandad Cave Kiva in terms of complexity and artistry of images.

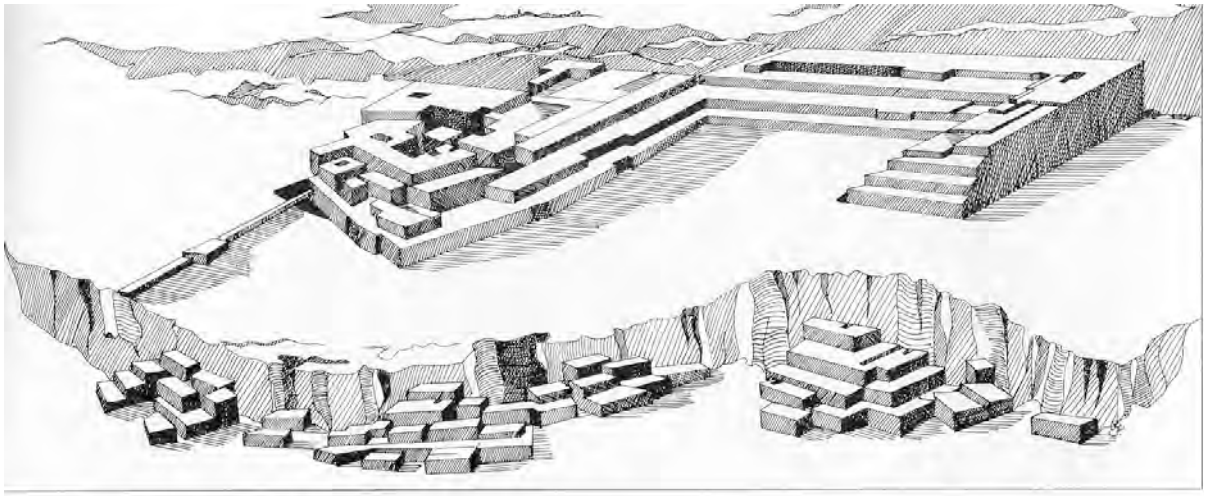


Figure 15.12. Artist rendering of Tsirege Pueblo (K.M. Chapman).

Figure 15.13. Rock art petrophyph at Tsirege depicting the horned water serpent diety, *Awanyu*.

Figure 15.14. Mortandad Cave Kiva.

Figure 15.15. Steel grate in front of Mortandad Cave Kiva.

Preservation Standards for National Historic Landmarks

Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs. The law requires that agencies, "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmarks." In those cases when an agency's undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction or carried out by a state or local government pursuant to a Federal delegation or approval so affect an NHL, the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL.

Where such alternatives appear to require undue cost or to compromise the undertaking's goals and objectives, the agency must balance those goals and objectives with the intent of the NHPA. In doing so, the agency should consider

1. the magnitude of the undertaking's harm to the historical, archaeological, and cultural qualities of the NHL;
2. the public interest in the NHL and in the undertaking as proposed; and
3. the effect a mitigation action would have on meeting the goals and objectives of the undertaking.

The ACHP's regulations implementing Section 106 include specific provisions that also implement Section 110(f). These regulations require that the Council must be included in any consultation following a determination by the Federal agency that a Federal or Federally assisted undertaking will have an adverse effect on an NHL. The Council must notify the Secretary and may request the Secretary to provide a report to the Council detailing the significance of the affected NHL under Section 213 of the NHPA and recommending measures to avoid, minimize

or mitigate adverse effects. The Council shall report the outcome of the Section 106 process to the Secretary and the head of the agency responsible for the undertaking.

Even if the above named properties are not eventually nominated for placement into NHL Districts, they will be considered as having special significance requiring heightened long-term monitoring and protection as described below in Section 17.

Section 16. Potential Los Alamos Archaeology National Register Historic District

In addition to the two potential NHL Districts at LANL noted in Section 15, there are a number of archaeological sites and clusters of sites that, while not deemed of sufficient significance to be considered for inclusion in the two potential NHL Districts, nevertheless are important to the State of New Mexico and to the Nation. They are appropriate for inclusion in a Los Alamos Archaeology National Register Historic District, separate from but complementary to the potential landmarks. This proposed Los Alamos Archaeology National Register Historic District would contain a total of 10 discrete components with a combined size of approximately 1496 acres (Figure 16.1). Included within these 10 components are six site complexes rich in resources dating from the Archaic period through the Ancestral Pueblo Classic period and four components relating to the Homestead period of 1890 through 1943. These 10 components are detailed below.

Potential Los Alamos Archaeology National Historic Register District

Mesita del Potrillo Complex (727 acres): This is a large complex of approximately 134 archaeological sites between Pajarito Canyon and Potrillo Canyon, immediately west of White Rock and south of TA-54. These sites include four complex plaza pueblos, 31 pueblo roomblocks, 26 cavates and sets of cavates, 19 rock art panels, six sets of stairs and trails, 21 fieldhouses, four lithic scatters, three rock shelters, one rock ring, 11 rock features, four artifact scatters, three garden plots, and one miscellaneous site. This is one of the most dense and well-preserved groups of Ancestral Pueblo archaeological sites at LANL. In addition, there are several parallel sets of wagon ruts on top of Mesita del Potrillo that may have been part of the transportation corridor servicing the timber cutting activities of Henry Buckman, perhaps linking to the Buckman sawmill itself at what was later to become the “S-Site” (sawmill site) at LANL.

Los Alamos and Sandia Canyons Complex (277 acres): This is a complex of approximately 34 sites on either side of Los Alamos Canyon and north of Sandia Canyon, immediately west and north of State Route 4. These include a large Coalition period complex plaza pueblo consisting of a series of four interconnected two-story pueblo roomblocks surrounded by single-story rooms, four pueblo roomblocks including a rare small Classic period pueblo, 15 individual cavates or cavate complexes, three lithic scatters, three lithic and ceramic scatters, five one- to three-room structures, two rock art sites, and numerous segments of trails and associated steps. The trail system likely serviced the occupants of nearby Tsankawi Pueblo in terms of travel from the Pueblo to the Jemez Mountains and the Valles Caldera to the west.

Puye Mesa Complex (108 acres): This is a complex of approximately 30 archaeological sites situated on the mesa top immediately south of Mortandad Canyon and immediately north of San Ildefonso Reservation. An isolated cavate along the northern slopes of Puye Mesa and an associated set of stairs are also included with this complex. The mesa top contains a dense cluster of sites including two complex plaza pueblos, 14 pueblo roomblocks (Figure 16.2), six fieldhouses, four Archaic period lithic scatters, one lithic and ceramic scatter, and a probable

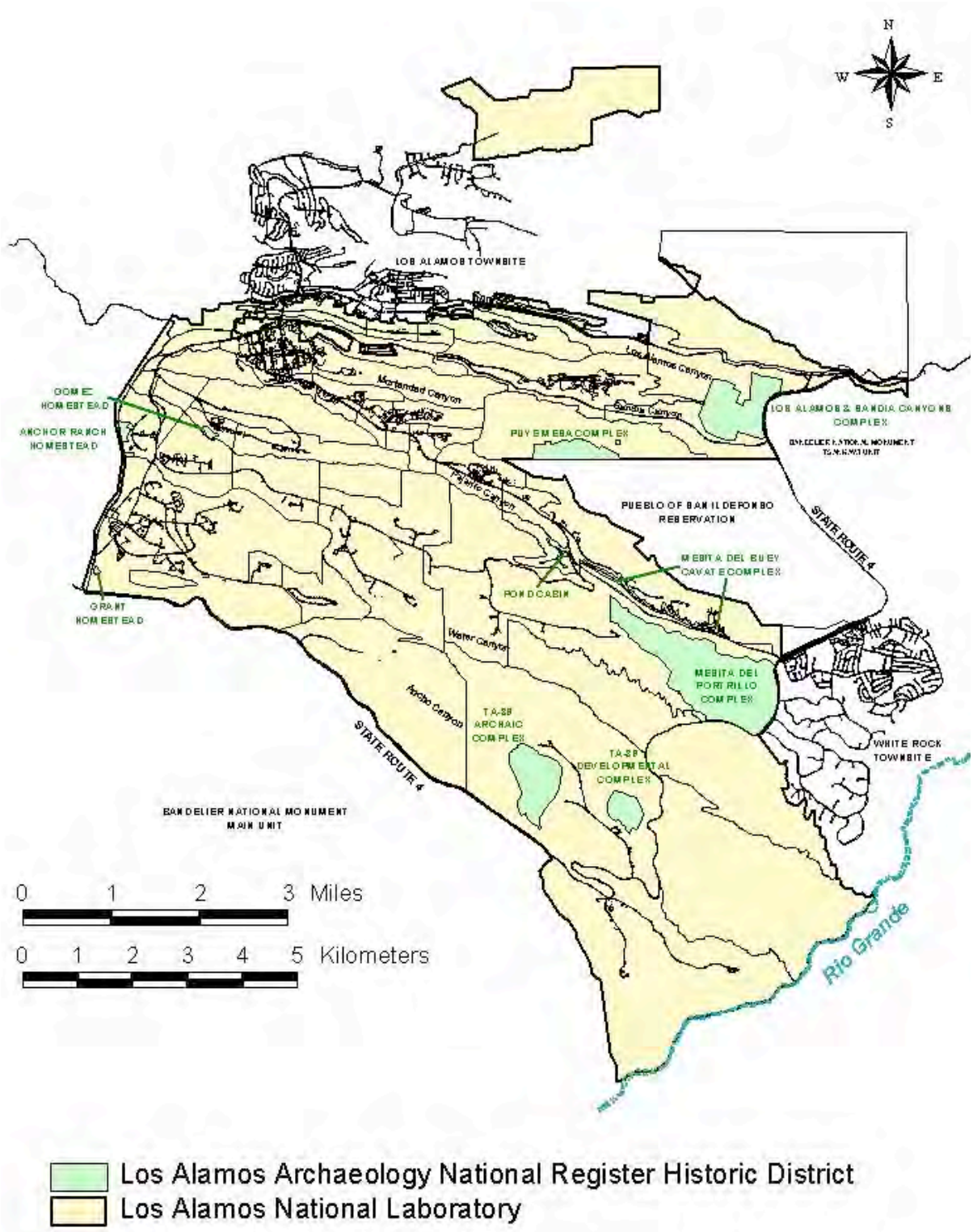


Figure 16.1. Potential Los Alamos Archaeology National Register Historic District.

Figure 16.2. Scattered shaped tuff blocks from an Ancestral Pueblo roomblock on Puye Mesa.

reservoir and associated agricultural terraces. A historic wagon road also transects the area. Survey has not yet been conducted along a portion of the south side of the mesa immediately adjacent to the boundary with the Pueblo of San Ildefonso, and it is anticipated that this area will contain cavates, trails, stairs, rock art, and other resources deserving of inclusion in the register district.

Mesita del Buey Cavate Complex (60 acres): This complex contains 21 sites, including outstanding examples of cavates and associated rock art situated along the southern cliff face of Mesita del Buey immediately north of the bottom of Pajarito Canyon (Figure 16.3). The area includes 13 cavate complexes, five rock art panels (Figure 16.4), and single examples each of a roomblock, rockshelter, and a lithic scatter.

TA-39 Archaic Complex (216 acres): This consists of approximately 19 archaeological sites situated on a mesa top between Water and Ancho Canyons in TA-39. The complex is distinguished by the presence of three large Archaic period lithic scatters, one lithic and ceramic scatter with a predominance of Archaic period materials, and three lithic scatters of undetermined affiliation, potentially including Archaic period materials. In addition, there are several Ancestral

TA-39 Developmental Complex (80 acres): This small complex contains a total of six archaeological sites. Based on ceramic analysis, two Ancestral Pueblo roomblocks and one lithic and ceramic scatter likely date to the Developmental period and thus constitute the earliest known Ancestral Pueblo archaeological sites on the Pajarito Plateau. The other three sites, likely dating to the Coalition period, include a one- to three-room structure, a lithic and ceramic scatter, and a rock feature.

Figure 16.3. General view of cavates along the southern slope cliff faces of Mesita del Buey.

Figure 16.4. Petroglyphs on the southern slope of Mesita del Buey.

Pueblo sites including eight roomblocks, two one- to three-room structures, and two lithic and ceramic scatters.

Grant Homestead (4 acres). The Grant Homestead is situated on a bench in Water Canyon immediately east of State Route 501. The homestead was established in the 1920s by an Anglo cowboy, Ted Mather, and his Hispanic wife, Rosa Grant, and was used up until the time of the Manhattan Project. Mather served as a wrangler with the Los Alamos Ranch School. The homestead was partially damaged by the Cerro Grande fire and subsequent rehabilitation measures. However, a number of features are still present including the house and privy foundations, trash scatters, and other definable activity areas.

Anchor Ranch (14 acres). Anchor Ranch was established as a homestead in 1901 by James Loomis, an employee with the lumberman Henry Buckman. The Ross family of New York State purchased the homestead in 1924 and turned it into a small commercial cattle ranch. Francis Smithwick was hired to manage the ranch and to care for their handicapped son, Alex. While none of the original ranch buildings are still standing (flooding after the May 2000 Cerro Grande fire destroyed an ice house), there are a large number of visible features extant including two ponds, irrigation ditches, pumping apparatus, building and structure foundations, and trash deposits. One of the log guesthouses, since demolished, was used for making the first industrial-type radiograph during the Manhattan Project. The Anchor Ranch name was used for Manhattan Project operations at TA-8 (Anchor Ranch West) and TA-9 (Anchor Ranch East).

Gomez Homestead (9 acres). The Gomez homestead is in TA-22 on the mesa edge immediately north of Pajarito Canyon near its junction with Starmers Gulch. It was established by Donaciano Gomez in 1899. The homestead was occupied by members of the Gomez family up until the Manhattan Project. Wooden structural elements of several features of the homestead were damaged or destroyed by the Cerro Grande fire. The homestead is largely unique in that a number of structures including a corral, a possible guest house, lambing pens, a horno (Figure 16.5), and other features (Figure 16.6) were constructed of stone masonry. The nearby Sanchez y Montoya homestead integrity was largely destroyed by the fire, but relatively little damage was sustained at the Gomez homestead because of the prevalence of the stone masonry.

Figure 16.5. Gomez homestead horno.

Figure 16.6. Other features at the Gomez homestead.

Pond Cabin (1 acre). The Pond Cabin is the one surviving standing log structure at LANL dating to the Homestead period (Figure 16.7) and is listed on the New Mexico state list Register. It was built in 1914 by Ashley Pond to serve as the office for the Pajarito Ranch, a commercial ranch similar in nature to Anchor Ranch. After the Pajarito Ranch was taken over by the Manhattan Project, the Pond Cabin was used as a sleeping quarter for various employees working at TA-18. Due to the increased potential for flooding in Pajarito Canyon immediately after the May 2000 Cerro Grande fire, a series of cement road barriers and sandbags was placed around the structure to protect it in the event of flooding (see Section 20). No floods reached the Pond Cabin, and the barriers have since been removed.

Figure 16.7. The Pond Cabin at TA-18.

Sensitive Archaeological Sites not included in the Landmark and National Register District Boundaries

There are a sizable number of sensitive archaeological resources not included in the potential NHL and National Register Historic District boundaries due to issues of integrity or other considerations. These include large complex plaza pueblos, TCPs, and other sensitive locations. They will be afforded the maximum protections available to such sites, and, where feasible, will be highlighted for avoidance by future LANL planning activities. A list of these sensitive sites by site number and TA is provided below.

TA-3:
University House Site

TA-15:
LA 4665
LA 4682
LA 14869

TA-33
LA 86584

TA-36:
LA 12620-C
LA 12625C

TA-39:
LA 21343
LA 21389
LA 136538

TA-49:
LA 3841
LA 4693
LA 4708
LA 12657-E

TA-53:
LA 4721

TA-54:
LA 4616
LA 4619
TA-60:
LA 136909

TA-68:
LA 12718-B

TA-71:
LA 12696
LA 139572
SWEIS II-15

PART IV. Native American Consultation and Outreach

Section 17. Native American Consultation and Outreach

During the more than 60 years that LANL has been in existence, it has attempted to maintain an amicable and respectful relationship with its Native American neighbors at the Pueblos of Cochiti, Jemez, San Ildefonso, and Santa Clara and with other tribes throughout northern and central New Mexico. However, this relationship at times has been strained due to the understandable concern by the tribes over issues of contamination, and secrecy, and particularly the resentment engendered by the fact that LANL occupies lands ancestral to the Pueblos.

Laboratory mission activities undeniably damaged and destroyed a number of Ancestral Pueblo archeological sites and traditional use areas, especially during the early decades of the existence of LANL. Ongoing and planned future changes in the DOE mission and associated infrastructure upgrades will continue to have the potential to impact Ancestral Pueblo resources. Beginning in 1992, LASO and LANL made a concerted outreach effort on behalf of the Accord Pueblos. This effort resulted in a set of agreement documents with each pueblo that spelled out a series of issues and initiatives aimed at enhancing communication, supporting environmental monitoring, and providing for educational and employment opportunities.

In keeping with the spirit of these agreements and recognition of the dialog engendered during the past several years of cultural resources management at LANL, it is a goal of this CRMP to consider the concerns and wishes of the Pueblos and other tribes while implementing the national security mission at LANL.

Cultural Affiliation

Several historic preservation laws, Eros, and DOE policy require consultation with Native American tribes that are culturally affiliated with LANL. The tribes most directly involved in this consultation include the Pueblos of San Ildefonso, Cochiti, Santa Clara, and Jemez. The Jicarilla Apache are likely culturally affiliated with two tepee rock ring sites in Rendija Canyon that were excavated in 2003 and which are part of the lands designated to be transferred to Los Alamos County by 2007. To a lesser degree, the Pueblo of Acoma and the Mescalero Apache have expressed an interest in land-use issues at LANL. Based on oral traditions, Pawnee and Kiowa groups may have also made occasional forays into this general area, but would not be considered as having been culturally affiliated to LANL.

“Cultural affiliation” as defined and intended under the canon of historic preservation law, particularly the NHPA and NAGPRA, differs from that upheld through the Federal courts in relation to the Indian Lands Commission Act of 1946. For example, although the Pueblo of San Ildefonso claims aboriginal rights to all of the lands presently occupied by LANL (with the exception of the Fenton Hill parcel), it may be possible for other tribes to satisfactorily demonstrate the presence of TCPs or to demonstrate cultural affiliation to sets of human remains found in various locations at LANL. This highlights the fact that the regulatory standard for establishing cultural affiliation is a lower standard than that used to establish ancestral land claims. In June 2005, the Pueblo of San Ildefonso settled their claim under the Indian Lands Commission Act, the last remaining tribe to reach settlement. However, this fact has not detracted from the clear understanding by DOE that most, if not all of LANL (excluding Fenton Hill), is situated within the aboriginal boundary of the Pueblo of San Ildefonso.

The general tenets of Native American cultural affiliation are discussed in a draft assessment prepared in 2002 for LASO prior to the start of the ongoing Land Conveyance and Transfer Project. This document is entitled "An Evaluation and Recommendations for the Determination of Ownership and Cultural Affiliation for Human Remains and Associated and Unassociated Objects Pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA) at Los Alamos National Laboratory, New Mexico." It is characterized as a draft in that it reflects historical, ethnographic, and archaeological considerations, but does not reflect recent oral tradition as demonstrated through direct consultation and dialog with all of the tribes. Such consultation, being pursued on a government-to-government relationship by LASO, is ongoing with the Pueblos of San Ildefonso and Santa Clara.

The Pueblo of San Ildefonso is the only tribe to be a direct neighbor to LANL, with several kilometers of shared boundary (see Figure 1-1). San Ildefonso views virtually all of the Laboratory, with the exception of the Fenton Hill parcel, as belonging within their ancestral boundaries and thus their aboriginal land. DOE agrees with this assessment and therefore considers the Pueblo of San Ildefonso to be culturally affiliated under NAGPRA with Ancestral Pueblo remains throughout all of LANL (Figure 17.1), with the exception of Fenton Hill.

The Pueblo of Cochiti views the southern edge of LANL—including Ancho Canyon and the mesa top to the south—as being part of their ancestral boundaries; they thus appear to share Ancestral

Figure 17.1. San Ildefonso tribal members visit an Ancestral Pueblo site at LANL.

Pueblo cultural affiliation under NAGPRA for this part of the Laboratory with the Pueblo of San Ildefonso, a position evident in the review of historical documents and ethnographies.

The Pueblo of Santa Clara (Figure 17.2) has stated a claim for cultural affiliation to Rendija Canyon, and possibly to other portions of the Laboratory, although the latter has not yet been formally presented to LASO as an actual claim. DOE has accepted the Rendija Canyon claim by

the Pueblo of Santa Clara; therefore both Santa Clara and San Ildefonso are viewed as sharing cultural affiliation under NAGPRA to Ancestral Pueblo remains and objects in this particular location. DOE has not yet seen the evidence to support the notion that the Pueblo of Santa Clara is culturally affiliated to Ancestral Pueblo human remains elsewhere at LANL.

In addition to these three pueblos, it has been determined by DOE that Jemez Pueblo has sole claim to cultural affiliation under NAGPRA for Ancestral Pueblo remains and objects at the Fenton Hill parcel. Even more circumscribed is the relationship of the Jicarilla Apache Nation to two historic tepee-ring sites excavated in 2003 in Rendija Canyon as part of the Land Conveyance and Transfer Project (Figure 17.3). The excavation evidence supports a connection with the Jicarilla Apache, but no human remains or NAGPRA-related items were recovered.

Other tribes who have shown an interest in LANL lands have included the Pueblo of Acoma, the Hopi Indian Tribe, and the Mescalero Apache Tribe. While the Pueblo of Acoma and the Mescalero Apache Tribe have expressed a desire to be kept informed of cultural resources actions at LANL, neither they nor the Hopi Tribe desire to be active participants in cultural resources consultations at LANL.

Archaeological sites at LANL dating to the Archaic period (before AD 600) are considered too early for any one Pueblo to have the knowledge to claim a direct lineal relationship with any human remains or potential NAGPRA-related objects. For this reason, in the unlikely event that

Figure 17.2. Santa Clara tribal members visit an Ancestral Pueblo site at LANL.

Figure 17.3. Tribal consultation with the Jicarilla Apache.

any such remains or objects are found at LANL, cultural affiliation is assumed by DOE to be shared between all New Mexico pueblos and the Hopi Tribe of Arizona. Therefore, initial consultation would be performed with all of these tribes. However, the consultation process may determine that some or most of these tribes would be willing to formally defer consultation to the Accord Pueblos.

Native American Sovereignty and Government-to-Government Consultation

EO 13175, along with virtually all historic preservation guidance and DOE policy, explicitly recognize the sovereign status of Federally recognized Native American tribes, and therefore acknowledges that formal historic preservation consultation should be carried out on a government-to-government basis. This relationship is clearly spelled out in the October 2000 publication *U.S. Department of Energy American Indian and Alaska Native Tribal Government Policy*. Formal consultation regarding NAGPRA, NHPA, and other laws and EOs as may be appropriate, are conducted directly between the Manager or Cultural Resources Manager of LASO and the respective governors or presidents of pueblos and tribes. However, informal day-to-day conduct of cultural resources activities may also be carried out by appropriate staff, such as the LASO Cultural Resources Program Manager, the LANL cultural resources staff, and various cultural resources and environmental program managers at the pueblos and tribes.

National Historic Preservation Act Section 106 Consultation

Consultation regarding Section 106 of the NHPA is carried out on a government-to-government basis between culturally affiliated tribes and DOE for all appropriate LANL undertakings. Typically, this will be in the form of a letter report sent to the SHPO by LASO, with copies to the tribes. The SHPO serves as a facilitator for Federal consultation with the tribes and usually will not complete the SHPO review until receiving proof or at least notice of consultation between the agency and the appropriate tribes. Other related types of actions, such as reviews of data recovery

plans/research designs and reviews of changes in Register eligibility or site boundaries, are similarly sent to the SHPO with copies to the tribes.

One caveat in Section 106 consultation is the fact that a complete TCP assessment has not yet been performed with the Pueblos of San Ildefonso, Cochiti, and Santa Clara. Thus it is possible (although not likely) that an action deemed as "no property, no effect" in Section 9 and thus excluded from immediate review by the SHPO, could impact a TCP landscape that has not been previously recognized as an archaeological site. In part for this reason, the TCP dialog with these three pueblos needs to be finalized as soon as possible within the next two or three years.

Traditional Cultural Properties

As noted in Section 2, a TCP, as established by the NHPA is defined as place of special heritage value to contemporary communities (often, but not necessarily, Native American groups) because of their association with the cultural practices or beliefs that are rooted in the histories of those communities and are important in maintaining the cultural identity of the communities.

TCPs were first considered at LANL in the specific context of the 1993 then proposed Bason Land Exchange in Rendija Canyon. Consultations by project staff with the Pueblo of San Ildefonso resulted in the identification and concurrence by the SHPO of seven TCPs associated with an ancient pilgrimage trail extending from the Rio Grande to a prominent peak in the Jemez Mountains.

The next set of TCP consultations occurred during the period of 1996 and 1997 during the preparation of an "Ethnographic Study" in conjunction with the 1999 SWEIS for LANL (see Section 16). This ambitious undertaking resulted in contact with 16 tribes and members of nearby Hispanic communities. The results of the study were reported in the SWEIS (SWEIS Appendix E), unfortunately the detailed documentation necessary for DOE to make informed decisions was not available for review.

The Ethnographic Study divided its classification of TCPs into five basic categories: Ceremonial sites, natural features, ethnobotanical gathering sites, artisan material gathering sites, and traditional subsistence features. Tribes indicating the usage of one or more of these categories on LANL land and/or cultural affiliation to LANL land include the Pueblos of Acoma, Cochiti, Laguna, Picuris, Pojoaque, Sandia, San Ildefonso, Santa Clara, Zia, and Zuni, along with the contacted Hispanic communities (who identified a pilgrimage route to Jemez Springs).

In 2000, LASO contacted a total of 24 tribes to identify whether they had potential or known TCPs on LANL land. Along with the four Accord Pueblos, the Pueblo of Acoma and the Hopi Tribe expressed interest, as did the Mescalero Apache Tribe. Several tribes expressing cultural affiliation during the Ethnographic Study, those of the Pueblos of Laguna, Picuris, Pojoaque, Sandia, Zia, and Zuni, failed to respond despite several attempts to interest them.

Of all of the pueblos, only San Ildefonso has recently provided specific information that can be adequately evaluated within the context of the law. An attempt at dialog with the Pueblos of Santa Clara and Cochiti will continue to be made. However, discussion of TCPs involves a considerable amount of information that is considered sacred knowledge and accordingly is not willingly shared with people outside of the clan that controls the information.

Executive Order 13007, Sacred Sites

This EO concerns Indian Sacred Sites. In order to protect and preserve Indian religious practices, Federal land managers must accommodate access to and ceremonial use of Indian Sacred Sites by Indian religious practitioners and avoid adversely affecting the physical integrity of Sacred Sites. A definition for sacred sites is provided in Section 2. As might be anticipated, tribes view sacred sites in much the same manner as that of TCPs, with such information typically being closely guarded.

Native American Graves Protection and Repatriation Act

There are four sets of issues relating to compliance with the NAGPRA at LANL.

The first issue, that of Native American tribes establishing potential cultural affiliation to LANL lands, was discussed at length above.

The second issue involves the creation and use of NAGPRA intentional excavation comprehensive agreements for planned excavation at LANL. Such an agreement was produced in cooperation with the Pueblo of San Ildefonso and successfully used during the first two field seasons (FY 2002 and FY 2003) of the Land Conveyance and Transfer Project. As a result of the agreement LANL was able to employ the services of two monitors from the Pueblo of San Ildefonso for the duration of the two field seasons. These monitors not only conducted their duties as NAGPRA monitors, but participated as appropriate in aspects of excavation fieldwork, data analysis, and report production.

The monitoring situation is expanding in FY 2004 and FY 2005 to include a monitor from the Pueblo of Santa Clara for excavation work being conducted in Rendija Canyon. Overall the comprehensive agreement and the use of monitors has been a tremendous success. The practice will be continued in future excavations at LANL.

The third issue is the necessity of revising and completing a set of comprehensive agreements dealing with the issue of the inadvertent discovery of human remains or NAGPRA-related objects at LANL. Inadvertently discovered sets of human remains found in 1998 and in 2003 have provided a number of lessons learned, although the old draft NAGPRA inadvertent discovery plan did provide at least minimally satisfactory guidance in dealing with the remains discovered in 2003. The revised inadvertent discovery comprehensive agreement is targeted for use by the end of FY 2005.

The remaining NAGPRA issue is that of the request by the Pueblo of San Ildefonso to rebury the human remains and identified NAGPRA-related objects at LANL. LASO and LANL are fully aware that NAGPRA does not address reburial once the remains and objects have been repatriated to the culturally affiliated tribes. However, both LASO and LANL upper management have expressed their willingness to identify such a reburial site at LANL. This issue must be fully resolved prior to the March 30, 2006, deadline for repatriation of the Land Conveyance and Transfer Project human remains NAGPRA-related objects.

Native American Outreach

The Accord/Cooperative Agreements between LASO/LANL and the Accord Pueblos initiated a period of dialog and support between and among these six entities. During the past five years the LANL cultural resources program has been committed to continuing this spirit of cooperation.

In addition to basic field visits at LANL to view archaeological sites and proposed sites for mission-related development, a number of cooperative endeavors have been undertaken. The most notable ones are listed here.

1. Nake'muu Monitoring Program (1997 to present). Systematic study of effects of Laboratory operations and ambient environmental conditions on a unique (at LANL) 14th century standing wall Ancestral Pueblo village. Conducted with the Pueblos of San Ildefonso and Santa Clara.
2. DOE LANL Traditional Cultural Property Study (2000 to present). Working with the Pueblos of San Ildefonso, Santa Clara, and Cochiti to identify, protect, and manage TCPs at LANL.
3. Cerro Grande Rehabilitation Project (2002 to 2003). Contracted Pueblos of Cochiti, Jemez, San Ildefonso, and Santa Clara to conduct tree thinning, snag removal, and erosion control on DOE LANL land in aftermath of the May 2000 Cerro Grande fire.
4. Cerro Grande Fire Cultural Site Rehabilitation Project (2002 to 2003). Contracted Pueblos of San Ildefonso and Santa Clara to conduct assessments and rehabilitation activities at 118 Native American cultural sites on DOE LANL land damaged by the Cerro Grande fire.
5. Land Conveyance and Transfer Project NAGPRA Tribal Monitors (2002 to present). Contracted use of monitors from the Pueblos of San Ildefonso and Santa Clara to assist LANL archaeologists in excavation of archaeological sites on land being transferred by DOE to Los Alamos County.
6. DOE LANL Trails Study (2003 to present). Working with the Pueblos of San Ildefonso and Santa Clara along with other agencies, organizations, and individuals to identify public trail usage in and around LANL to address cultural, environmental, safety, security, and social impacts.
7. Joint Tsirege Tour for LANL 60th Anniversary Celebrations (May 17, 2003). Tour of Ancestral Tewa Indian Pueblo of Tsirege and poster presentation jointly produced by Pueblo of San Ildefonso and the LANL Cultural Resources Team.
8. Joint Presentation at National Congress of American Indians (November 18, 2003). Joint presentation by Pueblo of San Ildefonso and the LANL Cultural Resources Team discussing ongoing cooperative programs and Federal agency avenues for economic development.

The Cerro Grande Fire Cultural Site Rehabilitation Project was particularly fruitful and beneficial for Ancestral Pueblo archaeological resources at the Laboratory (Figures 17.4 and 17.5), although all of these projects and activities have been important for outreach and collaboration. It is expected that a similar level of shared outreach will be conducted in future years.

Figure 17.4. Pueblo of San Ildefonso members fence off an archaeological site along a fire road.

Figure 17.5. Spreading native seed after the Cerro Grande fire.

PART V. Strategic Planning and Long-Term Management Issues and Goals

Section 18. Cultural Resources Management and LANL Strategic Planning

Cultural resources management at LANL is part of a larger set of planning activities that all have as their common goal the effective and prudent use of the LANL built environment and landscape in support of the DOE mission. With this in mind, it is imperative that this CRMP and its

associated 10-Year CRMP Road Map be closely integrated with all other planning initiatives and activities at LANL. And while the present LANL electronic Project Review system is satisfactory for cultural resources evaluation of funded projects actively in design and construction phase, it does not satisfactorily take into account other long-range planning initiatives at LANL.

Three such sets of long-range planning initiatives are considered here. These are the TYCSP, the SWEIS, and individual facility strategic plans some of which presumably are in support of the TYCSP.

Ten-Year Comprehensive Site Plan

The TYCSP is a major DOE planning process conducted at LANL by the PM Division that resulted from the February 2001 "Report to Congress from the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile" (The Foster Panel Report). The Foster Panel Report indicated that "parts of the weapons complex infrastructure are defective; the production capabilities that remain are fragile." As noted in the FY 2003 TYCSP, the TYCSP planning process "provides crucial input to meeting the NNSA [National Nuclear Security Administration] strategy to provide state-of-the-art facility and infrastructure supported by advanced scientific and technical tools to meet operations and mission requirements. These long-range facility and construction needs of Los Alamos, as linked to projects and realistic budgets and projects, are addressed in this TYCSP. Although not every project requested can be funded, a risk-based, cost-benefit approach is used to plan and prioritize facility and construction needs for the Laboratory."

The following general problem areas are addressed in the FY 2003 TYCSP. As is readily apparent from this list of problem areas and the suggested project solutions in the TYCSP, each has the potential to affect cultural resources and to be affected by cultural resources.

- Consolidate facility operations into fewer/smaller facilities to provide for more efficient facility operations in support of missions.
- Through Integrated Nuclear Planning, consolidate nuclear materials facilities within a single security fence. A series of projects would replace over-50-year-old nuclear facilities over approximately 8 to 10 years.
- Replace vulnerable "temporary" structures to provide long-term office and light laboratory space and to make land available for more appropriate use in meeting mission requirements.
- Upgrade or replace infrastructure (electricity, water, waste water, natural gas, roads, and protection and communications systems) to ensure sufficient capacity and capability to support ongoing and new missions.
- Construct or modify existing facilities to meet specific program/campaign needs, including expanded workforce.

Three related sets of actions need to be pursued by LANL cultural resources staff in support of this planning process. First, cultural resources managers need to provide timely input with respect to locations being proposed for TYCSP projects in part to avoid or reduce impacts to key cultural resources, and in part to provide the necessary cultural resources information to TYCSP project planners to factor into their proposed designs. Second, cultural resources managers need to prioritize their efforts at evaluating and reevaluating cultural resources for eligibility in the Register (see Section 15) so as to reflect the priorities of the TYCSP and to maximize the potential for land-use flexibility in support of the TYCSP. Third, cultural resources managers need to continue to work closely with the staff of the FIRP. Such close coordination is necessary to ensure that decontamination and decommissioning efforts not only meet the TYCSP planning

vision but also reflects the realities of cultural resources documentation schedules and is consonant with this CRMP.

Site-Wide Environmental Impact Statement

In 1999, DOE released the SWEIS. This document recognized and stated that DOE proposed to continue and expand operations at LANL in support of its national missions. The purpose of the SWEIS was to evaluate the potential environmental impacts of continuing to operate LANL and to receive and address comments from the public based on a draft of the document.

To a certain extent this is a parallel planning process to that outlined in the TYCSP, however, while the emphasis of the TYCSP is on infrastructure changes and enhancements of the DOE mission at LANL, the SWEIS focuses on the potential that these changes and enhancements may have on the physical environment, including cultural resources. In fact, a finding of the SWEIS was that LANL did not yet have a CRMP in place. The present CRMP resulted in part from requirements spelled out in the subsequent Mitigation Action Plan for the Record of Decision issued in 1999.

In accordance with 10 CFR 1021.330(d) of the DOE NEPA Implementing Procedures, DOE shall evaluate site-wide NEPA documents prepared under 1021.330(c) at least every five years to determine if existing and projected LANL operations are still within the scope of operations and impacts identified in the 1999 SWEIS and associated Record of Decision. As with the TYCSP, LANL cultural resources staff work closely with the individuals evaluating the operating parameters of the SWEIS to ensure cultural resources are fully evaluated as part of the overall LANL environmental policy compliance.

Facility Strategic Plans

In addition to the recently mandated TYCSP described above, individual divisions and segments of divisions periodically produce strategic plans to help guide their organizations into the future. While much of this planning is now likely to be captured within the TYCSP, there will be a continuing need for such internal planning as organizations reflect on and contend with future directions.

LANL cultural resources staff work with facility managers to identify the early stages of such strategic planning and ensure that those involved in strategic planning are aware of potential cultural heritage issues, such as might be involved in the renovation or demolition of a historic building, or in the expansion of a facility into presently undeveloped areas. In turn, the cultural resources managers shall be prepared to weigh risks and address alternatives in the attempt to balance mission needs with cultural resources concerns. The goal of this dialog is to identify potential resources issues early enough in the planning process so that maximum flexibility can be achieved to the extent feasible—including, if warranted, use of the prioritization strategy outlined in Section 16.

Section 19. Prioritization Strategy for Register Eligibility Determinations for Potentially Eligible Archaeological Sites and the Reevaluation of Selected Sites Previously Determined Eligible

The majority of known archaeological sites at LANL have never been formally evaluated with the SHPO for their eligibility for listing in the Register. As of October 2004, a total of 1438 out of the known 1933 archaeological sites at LANL (74.3%) fall into this category. In addition, a small but substantive number of the 414 archaeological sites previously determined eligible for listing in the Register have either lost their integrity since their initial discovery and evaluation or were inadequately evaluated through lack of detailed study and testing. However, all of these sites are considered eligible under the NHPA until definitive determination can be made.

The end result is that strategic planners at LANL are unduly circumscribed in their ability to place new facilities and infrastructure upgrades. A related problem is that funded projects are sometimes delayed while historic preservation consultations are being conducted with the SHPO and with Native American tribes. A recent example of these issues occurred in Mortandad Canyon. A time-sensitive series of proposed characterization wells, borings, and other studies in support of the New Mexico Environment Department compliance order at LANL had to be postponed or redesigned due to the presence of a large (35-acre) Archaic period lithic scatter in the central portion of Mortandad Canyon. It is the opinion of LANL archaeologists that the testing of this site, in consultation with the SHPO and affiliated Native American tribes, would reveal that the site is much smaller than originally defined, or perhaps even lacks the necessary integrity for continued listing in the Register.

It is therefore in the best interest of the DOE mission at LANL to deal proactively with these two related cultural resources management issues. A three-step approach is recommended.

1. LANL cultural resources staff will work with LANL strategic planners and with the TYCSP to identify those portions of LANL likely to be subject to land-use modifications or to projects such as the compliance order noted above. These will then be prioritized by the anticipated date for project activities and by the size and location of project areas with respect to known archaeological sites. A similar effort will focus on the locations of historic buildings. All remaining portions of LANL not being actively considered for projects within the TYCSP or other strategic planning needs would be placed into a “low priority” status.

2. LANL cultural resources staff will identify all archaeological sites and historic buildings and structures within these high-priority land-use modification locations and proposed project areas that have not yet been evaluated for listing in the Register. Field checks would be necessary for some of these sites.

3. LANL cultural resources staff will identify all archaeological sites within these general locations and proposed project areas that previously have been formally determined eligible for listing on the Register that have the potential for modification or reclassification—including delisting and removal from Register eligibility. If and where appropriate, a similar effort will focus on historic buildings and structures. Archaeological sites most likely falling into this category would include artifact scatters from all time periods. This includes Archaic period lithic scatters as noted for Mortandad Canyon that are located in geomorphic contexts suggesting secondary deposition, as well as fieldhouses or agricultural features that are situated on bedrock with no expectation for

subsurface archaeological deposits and features. Field checks would be necessary for all of these sites, with the field checks potentially including subsurface testing.

To make this approach as effective as possible it would be necessary to perform the evaluations and consultations before the completion of project designs.

Section 20. Site Monitoring and Protection

Section 110 of the NHPA states that each Federal agency shall establish a preservation program for the identification, evaluation, and nomination to the Register and protection of historic properties. It further states that such program shall ensure

- that historic properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the Register;
- that such properties under the jurisdiction or control of the agency as are listed in or may be eligible for the Register are managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values in compliance with Section 106 of this Act—that is determining the effect of the agency's undertakings on cultural resources—and gives special consideration to the preservation of such values in the case of properties designated as having National significance; that the preservation of properties not under the jurisdiction or control of the agency, but subject to be potentially affected by agency actions are given full consideration in planning; and
- that the agency's preservation-related activities are carried out in consultation with other Federal, state, and local agencies, Indian tribes, and with the private sector; and that the agency's procedures for compliance with Section 106 of this Act provide a process for the identification and evaluation of historic properties for listing in the Register and the development and implementation of agreements, in consultation with SHPOs, local governments, Indian tribes, and the interested public, as appropriate, regarding the means by which adverse effects on such properties will be considered; and provide for the disposition of Native American cultural items from Federal or tribal land in a manner consistent with the NAGPRA.

DOE Policy 141.1 further states that "DOE will uphold historic preservation laws by preserving, protecting, and perpetuating cultural resources for future generations in a spirit of stewardship to the extent feasible given the agency's mission and mandates. To do this, DOE will implement management accountability for compliance with Federal statutes, EOs, DOE orders, and implementation guidance. The Department also ensures that DOE contractors are obligated to implement DOE program and projects in a manner that is consistent with this Policy and that reflects this commitment in site management contracts."

A number of projects over the years have been specifically implemented to help protect heritage resources at LANL, particularly in response to the Cerro Grande fire. For example, the previously highlighted fencing of archaeological sites along fire roads (see Figure 17.4) and the spreading of native seed on eroded archaeological sites (see Figure 17.5) illustrate positive efforts to rehabilitate and protect resources. Also of great benefit has been the cutting and removal of snags (standing dead trees due to fire and drought) around sensitive archaeological sites as that of Nake'muu (Figures 20.1 and 20.2), and tree thinning in and around archaeological sites throughout much of the Laboratory.

Figure 20.1. Snag removal at Nake'muu to decrease risk of possible damage to standing walls.

Figure 20.2. Overhanging branches are removed from a snag at Nake'muu to minimize chance of damage to standing walls.

An important aspect of the CRMP is the field monitoring of those significant cultural resources most vulnerable to impacts by vandalism, natural erosion or decay, or mission activities. Typically, most cultural resources eligible for listing in the Register should be periodically monitored, but monitoring can vary in duration depending on the fragility and sensitivity of the resource. Some resources require monitoring on a yearly or even more frequent basis, while other resources can be adequately monitored every few years.

The best example of detailed yearly monitoring is that which has been done since 1999 for the Ancestral Pueblo site of Nake'muu. The construction and use of the Dual-Axis Radiographic Hydrodynamic Test Facility a few hundred meters to the northeast, raised concerns that sound vibrations from the testing might have an effect on the standing walls at Nake'muu. Studies have included use of motion and vibration sensors, stress gauges, and similar equipment during practice shots (Figures 20.3 and 20.4), as well as comparison with historic photographs and actual quantitative counts of the loss of chinking stones each year (Figures 20.5 and 20.6). Studies are still ongoing, but preliminary results suggest that the amount of snowfall in a given year may be the single biggest contributor to the loss of chinking stones and impacts on the overall integrity of standing walls.

The LANL site monitoring program will concentrate its efforts on three general categories of site. The first consists of a yearly monitoring effort devoted to an examination of a percentage of those archaeological sites and historic buildings and structures contained in the proposed landmarks and national register districts described in Sections 15 and 16. Those "sensitive" sites outside of the national register historic district boundaries noted in Section 16 will also be included in this first category. The monitoring of sites in this category should be conducted in such a way that the most critical and sensitive are visited on an annual or biannual basis, with the remainder of the sites visited on the average of at least once every five years.

A second category of sites for monitoring consists of those important resources known to be moderately or severely impacted and compromised by ongoing erosion, recreational trail use, infrastructure activities, or other actively damaging situation. There are currently 21 of these "at risk" sites at LANL. These include LA 170, LA 350, LA 352, LA 4718, LA 4719, LA 82602, LA 12597, LA 12743, LA 20969, LA 21972, LA 65909, LA 70023, LA 115372, LA 126548, LA 130569, LA 139513, LA 139514, LA 139573, LA 139576, LA 143903, and temporary site no. SWEIS II-8. These likely require yearly monitoring until such time as conditions may improve, including through rehabilitation activities.

The third category of sites for monitoring consists of those sites potentially threatened by infrastructure activities at LANL, but have not yet been obviously impacted. Table 3 provides a list of approximately 400 archaeological sites in this category. The monitoring of 400 sites in this category should be done by the yearly sampling of a modest percentage (10% to 20%).

It is anticipated that the actual field monitoring would be conducted by two individuals during a portion of the spring, summer, and fall months. Monitoring should take approximately one hour on the average, for example, for sites such as pueblo roomblocks, with cavate complexes requiring considerably more time and fieldhouses requiring considerably less time. Site monitoring would include visual inspection to detect any vandalism that may have occurred recently or since the last inspections. Photography, including repeat photography of selected locations experiencing ongoing erosion, the filling out of a field monitoring form, and GPS recording of specific locations experiencing or subject to problems will constitute the primary tools of the site-monitoring program.

Figure 20.3. LANL employees and San Ildefonso monitors stand behind electronic equipment used to measure vibrations during a test shot.

Figure 20.4. This vibration sensor sits on the top of a standing wall at Nake'muu.

Figure 20.5. Comparison to historic photographs helps illustrate the rate of the loss of parts of the standing wall.

Figure 20.6. Periodic quantitative counts of chinking stones helps with the temporal assessment.

Table 3. Numbers of Archaeological Sites by Technical Area Potentially Subject to LANL Infrastructure Impacts

TA	Electric	Gas	Water	Dirt Roads	Fire Roads	Paved Roads	Trails	Structures	Firing Points	Cumulative Sum	Actual Sum
2	0	0	1	0	0	0	1	0	0	2	2
3	2	2	1	1	0	2	3	2	0	13	4
5	1	0	1	18	12	0	8	2	0	42	17
6	3	0	0	4	0	0	0	2	0	9	6
8	2	1	4	1	0	1	2	1	0	12	4
9	1	0	0	1	0	0	0	0	0	2	1
11	1	0	0	0	0	0	0	0	0	1	1
14	1	1	1	2	2	1	0	0	0	8	2
15	4	3	5	7	8	2	1	6	1	37	21
16	8	5	5	10	0	1	0	1	0	30	16
18	2	1	1	2	0	0	0	2	0	8	2
21	0	1	2	1	0	1	1	1	0	7	3
22	0	0	0	1	0	0	0	0	0	1	1
33	6	1	2	9	1	2	0	2	0	23	15
36	26	0	1	58	34	7	0	4	1	131	75
37	0	0	0	3	0	1	0	1	0	5	4
39	9	6	6	30	27	4	5	2	0	89	36
40	1	1	0	1	0	0	0	0	0	3	1
41	0	0	0	0	0	0	0	1	0	1	1
43	2	2	0	0	0	2	1	0	0	7	2
46	2	1	4	3	3	4	0	3	0	20	8
48	0	0	1	0	0	0	0	0	0	1	1
49	9	5	5	13	4	3	0	2	0	41	18
50	1	0	1	0	0	0	0	0	0	2	1
51	7	3	7	12	0	0	0	4	0	33	18
52	1	0	1	0	0	0	0	3	0	5	3
53	6	7	8	7	0	3	1	15	0	47	18
54	9	3	14	17	2	7	0	11	0	63	29
55	1	0	1	0	1	1	0	1	0	5	1
59	0	0	1	0	0	0	0	0	0	1	1
60	2	0	0	2	1	0	0	0	0	5	3
61	0	1	1	0	2	1	1	1	0	7	2
62	3	0	1	1	0	1	0	0	0	6	3
64	1	1	1	1	0	0	0	1	0	5	1
66	0	0	0	1	0	0	0	0	0	1	1
67	0	0	0	2	3	0	0	0	0	5	4
68	0	0	0	4	4	1	0	0	0	9	5
69	2	0	1	0	1	2	1	0	0	7	3
70	4	0	0	22	0	0	21	0	0	47	26
71	5	0	0	18	1	1	10	0	0	35	20
72	8	5	3	7	5	4	4	0	0	36	22
73	2	0	0	1	1	0	1	1	0	6	3
74	1	0	0	6	4	0	3	0	0	14	9
SUM	**133**	**50**	**80**	**266**	**116**	**52**	**64**	**69**	**2**	**832**	**414***

*this total includes 14 duplicate numbers that span two or more TAs; the actual total number of sites is 400

A brief yearly report will be produced after the end of each FY. This brief report will document the sites that were monitored during the course of the previous year and discuss those issues and problems discovered and documented during the monitoring process. This report will help to serve as a guide for programming preservation actions and needs in subsequent years.

TA-70 and TA-71 present a special case for archaeological site monitoring and protection. These TAs are situated immediately adjacent to the community of White Rock. For the past 45 years these areas have been utilized for recreational hiking and horseback riding by residents of White Rock, in particular, but also by residents of the Los Alamos town site. There are a number of archaeological sites, including Archaic period lithic scatters and Ancestral Pueblo roomblocks, that are situated under and along some of the trails. The LANL Trails Management Working Group, set up by LANL and LASO in response to an Environmental Assessment (2003) of trails use at LANL, has reached an initial conclusion that for a number of reasons it would not be in the best interest of LANL to completely close these trails, although it may be possible to reroute some of the trails around or away from archaeological sites.

In addition to the possibility of rerouting trails, this area represents an ideal situation for the use of volunteer archaeological site stewards to take on the responsibility of periodic monitoring of these specific resources. The New Mexico Historic Preservation Division has recently established a program called New Mexico SiteWatch. The program consists of volunteers who become trained to monitor valuable resources on public (Federal, state, or local) lands near their homes. The New Mexico SiteWatch program lists the following in their Statement of Purpose:

- Prevention of cultural resource destruction due to acts of nature, theft, or vandalism
- Utilization of the knowledge, skills, and abilities of New Mexico's citizens
- Raising public awareness of the value of historic preservation through education and outreach
- Promoting cooperation between communities, agencies, and individuals throughout the state
- Organizing citizens into a group that makes a measurable difference in their own quality of life
- Stewardship of an irreplaceable resource in perpetuity
- Enhancing knowledge of New Mexico's unique history

These goals are compatible with LANL's site protection program. It is appropriate and worthwhile for the LANL cultural resources program to work with the LASO, LANL Security forces, SHPO, and the community of White Rock to establish such a site steward program for TA-70 and TA-71. Depending on the success of the program, it could be expanded to encompass other appropriate portions of LANL, such as TA-72 near its junction with State Route 4.

Section 21. Educational Outreach and Interpretation

Educational outreach and the dissemination of cultural resources management information are important aspects of LANL's historic preservation program. The public is the ultimate beneficiary of NHPA documentation conducted by LANL. Outreach and interpretation options include public tours and lectures, museum exhibits, written publications (summary history pamphlets and general audience reports), video productions, and history and cultural resources management web pages with links to online reports. The site steward program noted in Section 20, would also serve the purposes of educational outreach, as noted in the Statement of Purpose for the New Mexico SiteWatch program.

An important aspect of the outreach program would be to work closely with neighboring Federal and municipal agencies toward common goals. For example, Los Alamos County has a trails

initiative (Los Alamos County Open Space Program Trail Network Plan) that should be considered for integration with the LANL treatment of historic trails and Homestead period roads. In a similar vein, participation in the cultural resources subcommittee of the East Jemez Resource Council has benefited the LANL cultural resources program. Other examples have included the removal of the Homestead era Romero Cabin from TA-55 in the mid-1980s, and its repair and refurbishment for exhibit near Fuller Lodge in downtown Los Alamos (Figures 21.1 and 21.2). Yet another example was the salvaging of two historic candy kettles that were impacted by the Cerro Grande fire (Figure 21.3). These kettles were originally used during the Manhattan Project to mix high explosives, and one of them has been exhibited and interpreted at public venues, such as the exhibit of Manhattan Project paintings, photos, and artifacts from December 21, 2001, through January 18, 2002, at the Governor's Gallery at the State Capital Building, Santa Fe (Figure 21.4).

To facilitate an outreach program that effectively deals with the cultural heritage at LANL, in September 2005, the Laboratory created a Cultural Resource Council that meets on a quarterly or biannual basis. Members of this organization include representatives from the LANL Ecology Group Cultural Resources Team, the Environmental Stewardship Division at LANL, the LANL Tribal Relations Team, the LANL Historian/Archivist, the Bradbury Museum, the Los Alamos Historical Society, Los Alamos County, Bandelier National Monument, the Pueblos of San Ildefonso and Santa Clara, the Homestead Association, and the New Mexico Citizens Advisory Board. Other members may be added at a later date.

Inreach activities that support LANL employees are also important—they provide employees with a connection to the roots of this organization and help them place themselves within the institutional history. Examples of inreach activities include conducting employee tours and preparing brief facility histories for use during site-specific new-hire orientations. At LANL, many exceptionally significant buildings and structures are located in areas normally closed to the general public. Kiosks or interpretative monuments placed at these locations would certainly play an important inreach function.

Figure 21.1. The Romero Cabin at its original location.

Figure 21.2. The same cabin rehabilitated and relocated next to Fuller Lodge.

Figure 21.3. Candy kettles used to mix high explosives are seen here after the Cerro Grande fire.

Figure 21.4. Manhattan Project candy kettle (see Figure 21.3, right side) and paintings on display at the Governor's Gallery at the State Capital Building.

Section 22. Procedures for Emergency Situations

The NHPA states that normal Section 106 review can be suspended during emergency or repair work to minimize hazards to human health or to the environment, or declared disasters, emergencies, or national security threats. Such emergency actions will be immediately reported to the SHPO as conditions permit, and will be evaluated and reported to the SHPO in a timely basis—normally within one month after the termination of the emergency—for impacts to historic properties.

The LANL Emergency Operations Center (EOC) has been established to deal with a variety of emergency situations that may arise at LANL and in the immediate area surrounding LANL. For example, the EOC was the center of operations for dealing with the May 2000 Cerro Grande fire (Figure 22.1). Cultural resources personnel are part of the overall LANL presence at the EOC so as to ensure that environmental issues, including cultural heritage, are taken into account to the extent practicable during all emergency management activities. Members of the Cultural Resources Team have been trained to work at the EOC and to coordinate their efforts with the staff of the EOC.

As demonstrated by the May 2000 Cerro Grande fire, emergency situations and their responses can have a detrimental impact on cultural resources. Of approximately 500 archeological sites evaluated for fire damage during the two years following the fire, more than 150 evidenced at least some fire effects or suppression damage (Figures 22.2 and 22.3). The fire also created special long-term problems, such as an enhanced potential for flooding due to the extreme burning of the upper watersheds of several canyons that flow onto Laboratory property. This led to some innovative protection measures for canyon-bottom resources such as the Pond Cabin in Pajarito Canyon (Figure 22.4).

Figure 22.1. Cerro Grande fire moving onto LANL land.

Figure 22.2. Archaeological site damaged by the Cerro Grande fire.

Figure 22.3. Archaeological site after the Cerro Grande fire.

Figure 22.4. The Pond Cabin was enclosed to protect it from possible flash flooding after the Cerro Grande fire.

An important outcome of the fire assessment was the implementation of a series of rehabilitation measures at 107 damaged or imperiled archaeological sites to help reduce the long-term effects of the fire and to reduce the likelihood that future fire suppression efforts would additionally damage the sites.

The creation of an emergency disaster plan, treating key sites and portions of districts, will be part of management preservation plans for the two potential NHL Districts and for the potential National Register Historic District.

PART VI. Safety, Security, and Quality Assurance

Section 23. Archaeological and Historic Preservation Field and Laboratory Safety and Security

All archaeological and historic preservation fieldwork performed at LANL is conducted in a safe and secure manner fully consonant with DOE, LASO, and LANL policy and standards.

In terms of safety, this includes reading and understanding institutional safety philosophy and job specific hazards analysis and safety plans. The key is an integrated safety management approach in which every employee has the right and duty to perform work safely and to immediately question and report unsafe or potentially unsafe conditions. All cultural resources workers, particularly supervisory personnel, should be aware of and practice the five-step ISM Process in which (1) the work to be done is clearly defined; (2) the hazards are thoroughly evaluated; (3) necessary controls to minimize or eliminate hazards are put into place; (4) the work is performed in a safe manner; and (5) the work performance is properly evaluated and safety improvements are put in place, if necessary, for future work.

Currently, field safety measures include daily tailgate safety briefings (Figure 23.1). It also entails a series of integrated work documents (IWD) prepared by project managers and specialists that define as pertinent and practicable all hazards associated with the specific job being done and provides procedures to minimize the hazards. All workers must sign these documents and the field supervisor must take responsibility for ensuring that the IWD is satisfactorily implemented.

In addition to the IWDs, there are a number of formal procedures that have been designed to ensure that all work conducted by the cultural resources program at LANL is conducted in a safe and efficient manner. These are discussed in Section 25.

Each Laboratory employee shares a responsibility to protect classified and unclassified controlled information. Archaeological and historic preservation fieldwork often entails working in classified areas requiring escorts for uncleared personnel or working with archival documents that may contain classified or unclassified controlled information. A common example of the latter is the fact that all maps depicting archaeological site location information are considered “Official Use Only” and are not to be shared with the general public. All cultural resources staff must be properly trained in safeguards and security, including computer security, to the degree or level required by their position and by the job that they perform.

Figure 23.1. A tailgate safety briefing takes place before fieldwork begins.

Section 24. Cultural Resources Management Administrative Record

A cultural resources management administrative record is kept on file at LANL. The administrative record currently contains documentation of all formal and some informal Native American consultation. It also contains documentation of all correspondence with regulators, including the New Mexico SHPO and the ACHP. Select formal correspondence between LANL and LASO is also maintained in the administrative record. LANL maintains records of public outreach activities performed by cultural resources staff members in support of cultural resources management at LANL.

LASO is encouraged to conduct audits of these records on at least a yearly basis. The first such audit is suggested to take place during the 4th quarter of FY 2005. Subsequent audits will be at the discretion of LASO.

Section 25. Cultural Resources Management Quality Assurance Program

As a required aspect of LANL environmental programs, the cultural resources program operates under the Ecology Group Quality Management Plan and a Cultural Resources Management Quality Assurance Program Plan. These plans are designed to ensure that programs and associated projects are carried out efficiently and responsibly, with clear guidance as to how quality control is maintained throughout their performance.

In addition to these general quality assurance documents, the cultural resources program operates under the guidance of currently 18 sets of detailed procedures through which normal daily activities are conducted. These 18 procedures encompass a wide range of activities including project review, archaeological survey, excavation, laboratory work, GPS and GIS data management, historic buildings/structures fieldwork and documentary research, and the application of NHPA integrity and significance standards. A complete list of procedures is provided in Appendix B.

Appendix A. 10-Year Road Map for the CRMP

This 10-Year Road Map (Road Map) for the Los Alamos National Laboratory (LANL) Cultural Resources Management Plan (CRMP) represents a prioritization of the effort necessary to achieve the goals of the CRMP. These goals include not only the cost-effective and efficient long-term management and protection of significant heritage resources at LANL, but also an aggressive approach to enhancing land-use flexibility. The Road Map will be reviewed on a yearly basis. It is emphasized, however, the implementation of the road map is contingent on available funding.

The Road Map has identified a total of 25 tasks to be variously carried out during fiscal year (FY) 2005 through FY 2014 (Table A-1). These tasks are divided into two groups. The first 18 tasks (1–18) represent short-term, typically between one- to three-year projects, intended to address specific resource issues. The second group includes seven tasks (A–G). These represent a set of programmatic activities intended to take place throughout the life of the CRMP and its subsequent iterations, and which provide the minimum effort required to successfully implement the Road Map. An example of programmatic activities would be the yearly monitoring of potential National Historic Landmark and National Register District properties.

Table A-1 represents the estimated schedule for implementing the Road Map. The 25 tasks themselves are briefly summarized below.

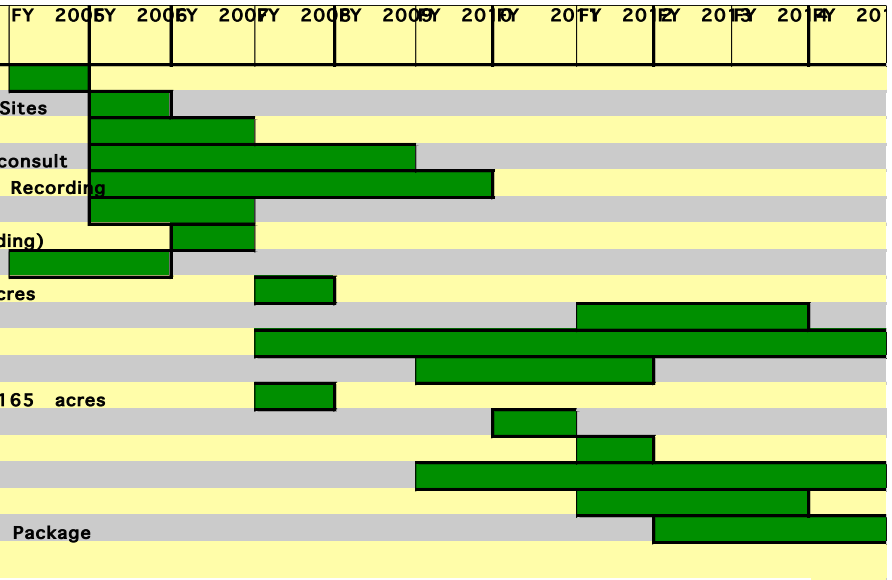
Task 1 --- CRMP Meetings/Reviews/Finalizing. This task represents the effort necessary to finalize the language and content of the CRMP through meetings with various stakeholders, including regulators, tribes, and the general public.

Task 2 --- Significance Evaluation Criteria for Historic Buildings and Archaeological Sites. This task includes the development of a set of significance criteria that will help standardize the process for evaluating the historic significance of archaeological sites throughout LANL in terms of their eligibility for listing in the Register. As part of this effort, historic context studies will also be prepared for the topics of the Cold War (1946–1989), Homesteads (1890–1943), and for Homestead and Manhattan Project roads and trails (1890–1946). The intent of this task is to streamline part of the effort necessary to process the current backlog of 1356 archaeological sites that have not yet been evaluated for the Register. The National Historic Preservation Act Section 106 compliance review process currently is bogged down by the need to consider individual buildings and structures, trails and roads, or small groups of such features on a case-by-case, project-by-project basis. The development of the historic contexts may lead to the preservation and protection of a few buildings and structures, and roads and trails, and the determination that all other such sites are not eligible for listing in the Register. Although the May 2000 Cerro Grande fire considerably damaged many of the homesteads at LANL, there are a number of homestead features, such a fencelines and trash deposits, which have only minor information value. The development of the Homestead historic context may lead to the preservation and protection of a few homestead features and the determination that all other such features are not eligible for listing in the Register.

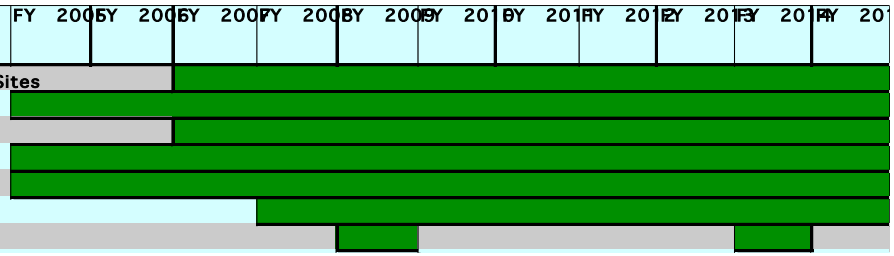
Task 3 --- Global Positioning System [GPS] Site Updates/Database Management. A total of 386 of the known previously recorded archaeological sites at LANL have not yet been subjected to the spatial coordinate precision achieved by the use of GPS technology. Accurate site boundaries and site locations are important elements in land-use flexibility and in making effective evaluations in the LANL new project review process. This task permits the timely updating of site

Table A-1. Tasks Included in the 10-Year Road Map.

NO.	SHORT TERM PROJECT TASK LIST
1	Meetings/Review/Finalizing
2	Significance Evaluation Criteria: Historic Buildings and Archaeological Sites
3	Global Positioning System (GPS) Site Updates/Database Management
4	Ernvironmental Restoration (ER) Project Report Completion & SHPO consult
5	Completion of Cerro Grande Rehabilitation Project (CGRP) Arch. Site Recording
6	Historic Buildings Register Evaluation
7	Archaeological Survey: Tsirege ---52 acres (plus detailed cavate recording)
8	Manhattan Project National Historic Landmark Package
9	Archaeological Survey: Sandia/Mortandad Cave Kiva Complex --- 318 acres
10	Pajarito Plateau Ancestral Pueblo National Historic Landmark Package
11	Archaeological Survey of TA-70/71/72 --- 1352 acres
12	Archaeological Survey: LANSCE --- 411 acres
13	Archaeological Survey: Pajarito&Two Mile Canyons/Mesita del Buey --- 165 acres
14	Archaeological Survey: TA-58/62 --- 176 acres
15	Archaeological Survey: TA-68 --- 291 acres
16	Archaeological Survey: TA-33 --- 953 acres
17	Modeling and Testing Artifact Scatters for Subsurface Integrity
18	Pajarito Plateau Archaeological Park National Register Historic District Package



NO.	LONG TERM PROGRAM FUNCTION TASK LIST
A	Historic Properties Site Monitoring --- Landmark & Register District Sites
B	Historic Properties Site Monitoring --- At Risk Sites + LANL Sample
C	LANL Strategic Planning Coordination
D	Native American TCP/NAGPRA Consultation and Outreach
E	Heritage Resources Public Education Outreach and LANL Inreach
F	White Rock TA-70/71 Site Steward Program
G	Cultural Heritage Resources Management Plan Update



location information for these 386 sites. In addition to adding these precise boundaries to the Geographic Information System (GIS) database, the associated tabular information for all site database tables will be corrected to reflect changes in status and other physical attributes that have resulted from field checks, formal consultations with the New Mexico State Historic Preservation Officer (SHPO), and cultural resources program survey and excavation projects.

Task 4 --- Environmental Restoration (ER) Project Report Completion and SHPO Consultation. This is a provisional task to be included in the CRMP Road Map if outside funding cannot be obtained for its support. The task includes completion of 14 archaeological survey reports and subsequent consultation with the SHPO for LANL environmental compliance projects dating between 1991 through 1995. Thirteen projects were part of the LANL ER Project study of canyon bottoms throughout LANL, while the other was in support of a Resource Conservation and Recovery Act project. Funding was not available to complete the recording of archaeological sites and the submittal of the finalized report to the SHPO and the New Mexico Archaeological Records Management Section (ARMS). Completion of these reports is not only a critical compliance issue but also will help facilitate and streamline the new project review process for new construction and other infrastructure projects at LANL.

Task 5 --- Cerro Grande Rehabilitation Project (CGRP) Archaeological Site Recording. This is a provisional task to be included in the CRMP Road Map if outside funding cannot be obtained for its support. This task includes the completion of the recording of approximately 460 archaeological sites discovered on previously unsurveyed lands at LANL during the course of tree-thinning operations between FY 2001 and FY 2004 as part of the CGRP. In order to permit the timely completion of CGRP tree-thinning activities, LANL was under formal agreement with the SHPO that these sites could be marked for avoidance but would not be recorded until the conclusion of CGRP activities. The CGRP provided funds for the recording of only 60 of these sites. Completion of these records and submittal to SHPO and ARMS is not only a critical compliance issue but also will help to facilitate and streamline the new project review process for new construction and other infrastructure projects at LANL.

Task 6 --- Historic Buildings Register Evaluation. An architectural review has not yet been performed for approximately 100 early Cold War (1946–1963) buildings and structures, along with a few potentially exceptionally significant more recent buildings and structures, that have been identified as potentially eligible for the Register. This task provides the effort needed by a historical architect to conduct such a review.

Task 7 --- Archaeological Survey of Tsirege. A systematic archaeological inventory survey has never been conducted of the Tsirege Pueblo complex, proposed as part of the LANL Ancestral Pueblo National Historic Landmark. A survey needs to be conducted of this important area to provide baseline information for long-term management and protection of the resources. It is anticipated that the survey would include a team of three archaeologists.

Task 8 --- Manhattan Project National Historic Landmark Package. This task consists of the effort necessary to put together the required package for nominating the five identified components of the potential Manhattan Project National Historic Landmark. The package would include specific historical contexts, component descriptions, and boundary definitions.

Task 9 --- Archaeological Survey of Sandia Cave Kiva, Sandia Pueblo, and Mortandad Cave Kiva Complex. A systematic archaeological inventory survey has never been conducted of the Sandia Cave Kiva, Sandia Pueblo, and Mortandad Cave Kiva complex, proposed as part of the LANL Ancestral Pueblo National Historic Landmark. A survey needs to be conducted of these

important areas to provide baseline information for long-term management and protection of the resources. Approximately 318 acres will need to be surveyed. It is anticipated that the survey would include a team of three archaeologists.

Task 10 --- LANL Ancestral Pueblo National Historic Landmark Package. This task consists of the effort necessary to put together the required information package for nominating the four identified spatially separated components of the potential LANL Ancestral Pueblo National Historic Landmark. The package would include a specific historical context, component descriptions, and boundary definitions for each of these components.

Task 11 --- Archaeological Survey of Technical Areas (TAs) 70, 71, 72. A systematic archaeological inventory survey has never been conducted of much of TA-71 immediately next to White Rock or of TA-70 adjacent to TA-71. Residents of White Rock have long utilized the trails transiting the area for various recreational purposes including hiking and horseback riding. A survey needs to be conducted of this important area to provide baseline information for long-term management and protection of the resources. There are approximately 245 acres in TA-71 and 1150 acres in TA-70 that remain to be surveyed. It is anticipated that a team of three archaeologists would perform the survey.

Task 12 --- Archaeological Survey of Los Alamos Neutron Science Center (LANSCE). A systematic archaeological inventory survey has not been previously conducted for approximately 411 acres in the vicinity of the LANSCE facility. It is anticipated that a team of three archaeologists would perform the survey.

Task 13 --- Archaeological Survey of Pajarito & Two Mile Canyons and Mesita del Buey. A systematic archaeological inventory survey has not been previously conducted for approximately 165 acres in Pajarito and Two Mile Canyons and on portions of Mesita del Buey in TA-54. It is anticipated that a team of three archaeologists would perform the survey.

Task 14 --- Archaeological Survey of TAs 58 and 62. A systematic archaeological inventory survey has not been previously conducted for portions of TA-58 and TA-62. The unsurveyed area contains approximately 176 acres immediately west and south of TA-3. It is anticipated that a team of three archaeologists would perform the survey.

Task 15 --- Archaeological Survey of TA-68. A systematic archaeological inventory survey has not been previously conducted for approximately 291 acres in TA-68. It is anticipated that a team of three archaeologists would perform the survey.

Task 16 --- Archaeological Survey of TA-33. A systematic archaeological inventory survey has not been previously conducted for approximately 953 acres in TA-33. It is anticipated that a team of three archaeologists would perform the survey.

Task 17 --- Modeling and Testing Artifact Scatters for Subsurface Integrity. This task consists of the development of a set of geomorphic criteria to categorize the likely integrity of archaeological sites and thus their suitability for listing in the Register. Sites located on geomorphically unstable surfaces like alluvial fans or floodplains are probably the result of erosion and are not in their original primary context. The intent of this task like that of Task 2 is to streamline part of the effort necessary to process the current backlog of 1305 archaeological sites that have not yet been evaluated for the Register. However, this task also will look at a number of artifact scatters previously deemed eligible for the Register but which likely now lack sufficient integrity to still qualify for listing. This task will utilize aspects of the cultural resources program GIS to look at

the spatial relationship between archaeological sites and certain geomorphic landforms as an aide to the assessment of site integrity. This task also involves the systematic archaeological subsurface testing of artifact scatters to determine their integrity and to also determine the boundaries of those sites deemed eligible for listing in the Register. The modeling performed in Task 3 will assist in the identification of those sites requiring subsurface testing.

Task 18 --- Pajarito Plateau Archaeological Park National Register Historic District Package. This task consists of the effort necessary to put together the required information package for nominating the 10 spatially separate components and the more than 200 individual archaeological sites of the potential LANL Ancestral Pueblo National Register Historic District. The package would include a specific historical context, component descriptions, and boundary definitions.

Task A --- Historic Properties Site Monitoring --- Landmark and Register District Sites. The potential National Historic Landmarks and National Register Districts components are of such importance and significance to require periodic monitoring. Some sites and components will require yearly monitoring due to their fragile or sensitive nature, while others can be monitored once every two or three years. This task is designed to facilitate monitoring of these resources using standardized procedures and techniques. It is anticipated that the monitoring effort would entail a team of two cultural resources program staff members.

Task B --- Historic Properties Site Monitoring --- At Risk Sites & LANL Sample. More than 20 significant archaeological sites are known to be at risk due to erosion and known or potential vandalism. These need to be closely monitored on a yearly basis until such time as conditions may improve. In addition, more than 400 significant archaeological sites are in locations of potential risk due to LANL mission-related activities. These would include sites transected by utility corridors (electric, gas, water, sewer), transportation corridors (paved roads, dirt roads, fire roads, trails), and sites situated within 100 feet of buildings and firing structures. A sample of such sites needs to be monitored on a yearly basis. This task is designed to facilitate monitoring of these resources using standardized procedures and techniques. It is anticipated that the monitoring effort would entail a team of two cultural resources program staff members.

Task C --- LANL Strategic Planning Coordination. Because LANL's national mission is periodically enhanced or modified, and because of the continually aging infrastructure at LANL, strategic planning is an important aspect of normal operations at LANL. There is a continuing need for cultural resources program staff to actively work with planners at all levels of planning at LANL to ensure that heritage resources are appropriately taken into account.

Task D --- Native American Traditional Cultural Property/Native American Graves Protection and Repatriation Act Consultation and Outreach. Native American consultation and outreach will always be a continuous process given the fact that LANL has more than 1000 archaeological sites of Ancestral Pueblo origin. These include ancestral villages, traditional cultural properties, more than 200 archaeological sites recognized as being of such significance to recommend for National Historic Landmark and National Register District status. In addition, erosion and other ground-disturbing mechanisms will continue to periodically inadvertently expose Native American burials and burial associations.

Task E --- Cultural Heritage Public Education [brochure/signs]. This task is schedule to coincide with the schedules for the proposed landmark and register district but does not strictly depend on the formal establishment of either of these. The task is meant to cover both outreach and inreach aspects of public education. Two possible activities would be the development of interpretive

brochures and signs, but there are other possibilities as well, including public lectures and other similar activities.

Task F --- White Rock TA-70 and TA-71 Site Steward Program. Technical Areas 70 and 71 present a special cultural resources management issue given the fact that residents of White Rock have long utilized the trails transiting the area for various recreational purposes including hiking and horseback riding. It has been determined through a series of meetings held by the LANL Trails Management Working Group that the complete closure of these trails is not a desirable or even viable option. Therefore the most appropriate manner in which to deal with the heritage resources in these areas is to proactively set up a local volunteer Site Steward or Site Watch program in cooperation with the SHPO and managed by the LANL cultural resources program. Once the program is established it could be yearly maintained at a very modest level of effort.

Task G --- CRMP Update. In accordance with standard practice for Federal agencies with cultural resources management plans, there is a review and update of such plans every five years. This task provides the time necessary to (1) carefully evaluate the successes and the issues that have come about from the implementation of the first five years of the CRMP, (2) make any necessary changes to the text and body of the plan, and (3) design a new Road Map.

Appendix B. Annotated List of Documents on File in Support of the CRMP

The documents, materials, and collections listed in this Appendix are those providing background, guidance, and quality control for the performance of the Los Alamos National Laboratory (LANL) cultural resources program, and for the implementation of this LANL Cultural Resources Management Plan (CRMP). These documents, materials, and collections are currently maintained by the LANL cultural resources program in Technical Area 21, Building 210, unless otherwise specified.

The appendix is divided into the following general topical divisions:

1. Pertinent Historic Preservation and Related Federal Laws, Regulations, Executive Memoranda and Orders, Regulations, Guidance, and Policies
2. Cultural Resources Program Documents, References, and Materials Relating to Project Review and Shared Between the Archaeology and Historic Buildings and Structures Projects
3. Cultural Resources Program Documents, References, and Materials for Fieldwork Associated with Historic Buildings and Structures
4. Cultural Resources Program Documents, References, and Materials for Archaeology Fieldwork and Laboratory Processing
5. Cultural Resources Program Quality Control Documents
6. Cultural Resources Program Safety Documents
7. Cultural Resources Program Administrative Record
8. Links to Pertinent Cultural Resources Web Sites
9. Cultural Resources Program Reports

It is noted that some documents containing archaeological site locations and other sensitive information are protected by law. An example is that of archaeological survey reports that contain specific information on archaeological site locations. Such documents typically are assigned a Los Alamos Controlled Publication number (LA-CP). They are treated as “Official Use Only” and cannot be released to the public.

1. Pertinent Historic Preservation and Related Federal Laws, Executive Memoranda and Orders, Regulations, Guidance, and Policies

Federal Laws

- Antiquities Act of 1906
- Historic Sites Act of 1935
- National Historic Preservation Act of 1966
- National Environmental Policy Act of 1969
- American Indian Religious Freedom Act of 1978
- Archaeological Resources Protection Act of 1979
- Native American Graves Protection and Repatriation Act of 1990

Executive Memoranda and Orders

- Executive Memorandum, September 23 2004 --- Government-to-government relations with Tribes
- Executive Order 13007, May 24, 1996 --- Sacred Sites
- Executive Order 13175, November 6 & 9, 2000 --- Consultation and Coordination with Tribal governments

- Executive Order 13287, March 3, 2003 --- Preserve America

Regulations

- 36 CFR 60: National Register of Historic Places
- 36 CFR 63: Determination of Eligibility for Inclusion in the National Register of Historic Places
- 36 CFR 65: National Historic Landmarks Program
- 36 CFR 67: The Secretary of the Interior's Standards for Rehabilitation
- 36 CFR 68: The Secretary of the Interior's Standards for the Treatment of Historic Properties
- 36 CFR 78: Waiver of Federal Responsibilities under Section 110 of the National Historic Preservation Act
- 36 CFR 79: Curation of Federally Owned and Administered Archaeological Collections
- 36 CFR 800: Protection of Historic Properties
- 43 CFR 7: Protection of Archaeological Resources
- 43 CFR 10: Native American Graves Protection and Repatriation Act Regulations

Guidance

- DOE G 450.1-3, September 22, 2004 Environmental Guidelines for Development of Cultural Resource Management Plans—Update
- 43 FR 44716 The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation

DOE and LANL Policies

- DOE Order 1230.2, 1992, revised 2000: American Indian Tribal Government Policy
- LANL Pueblo Accords, 1994
- LASO Management Procedure No. 0.5.09, 2005: Cultural Resources Management Program
- DOE Policy 141.1, May 2, 2001: Department of Energy Management of Cultural Resources

2. Cultural Resources Program Documents, References, and Materials Relating to Project Review and Shared Between the Archaeology and Historic Buildings and Structure Projects

There are a number of documents and archival materials that are kept and maintained by the cultural resources program as reference materials in support of the development of historic contexts relating to historic buildings and structures, and also for project review for both archaeological fieldwork and for survey associated with historic buildings and structures. These are as follows:

- LANL Structure Location Map Books ["Green/Gray Books"]: 1950, 1955, 1961, 1966, current map book.
- Historic and Contemporary Sets of Aerial Photographs, on file at the Los Alamos Historical Society, LANL groups ENV-ECR, ENV-ECO, and IM-9: 1946 and 1947 Sandia Flyover; LANL aerials in 1950, 1955, 1991.
- RFI work plan series for various ER operable units. Environmental Restoration Program, Los Alamos National Laboratory, Los Alamos, New Mexico.

3. Cultural Resources Program Documents, References, and Materials for Fieldwork Associated with Historic Buildings and Structures

There are a number of documents and archival materials that are kept and maintained by the cultural resources program as reference materials in support of the development of historic contexts relating to historic buildings and structures, and for survey associated with historic buildings and structures. These are as follows:

Historic Buildings and Structures Field Guidance and Support Documents

- Archaeological Field Survey Manual
- U.S. Department of Interior, National Park Service. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*. By Weeks, Kay D. and Anne E. Grimmer (1995).
- A Report to the U.S. House of Representatives, Committee on Interior and Insular Afairs, Subcommittee on National Parks and Public Lands, and the Committee, on Science, Space, and Technology**.** *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities.* Advisory Council on Historic Preservation (1991).
- Photographic Specifications. Historic American Buildings Survey, Historic American Engineering Record. National Park Service (1989 & subsequent revisions).
- HABS/HAER Standards. Historic American Buildings Survey, Historic American Engineering Record. National Park Service.

Historic Buildings and Structures Field Forms

- Historic Building Survey Form

Historic Buildings and Structures Baseline References on File

Gosling, F. G.
2001 *The Manhattan Project: Making the Atomic Bomb*. U.S. Department of Energy, DOE/MA-0002.

Hawkins, D., E. C. Truslow, and R. C. Smith
1983 *Project Y: The Los Alamos Story*. The History of Modern Physics, 1800-1950 II. Tomash Publishers and the American Institute of Physics.

Hoddeson, L., P. W. Henriksen, R. A. Meade, and C. Westfall
1998 *Critical Assembly: A Technical History of Los Alamos during the Oppenheimer Years, 1943-1945*. Cambridge University Press, New York and Cambridge.

1993 *Los Alamos: Beginning of an Era, 1943-1945*. Reprinted by the Los Alamos Historical Society, Los Alamos, New Mexico.

1995 "Los Alamos National Laboratory: A Proud Past, An Exciting Future" (Special Issue), LALP-95-2-6&7. *Dateline*: Los Alamos.

2001 "The Laboratory in a Changing World: A Los Alamos Chronology;" LALP-01-65. The Nuclear Weapons Publication Team, Los Alamos National Laboratory, Los Alamos, New Mexico.

McGehee, E. D. and K. L. M. Garcia
1999 *Historical Building Assessment for the Department of Energy Conveyance and Transfer Project*. Historic Building Survey No. 178, LA-UR-00-1003. On file at the Ecology Group, Los Alamos National Laboratory.

McGehee, E. D., S. McCarthy, K. Towery, J. Ronquillo, K. L. M. Garcia, and J. Isaacson
2003 *Sentinels of the Atomic Dawn: A Multiple-Property Evaluation at the Remaining Manhattan Project Properties at Los Alamos (1942-1946).* Historic Building Survey Report No. 215. Los Alamos, New Mexico, 2003. Survey No. 858, LA-UR-03-0726. On File at the Ecology Group, Los Alamos National Laboratory, Los Alamos, New Mexico.

Rothman, H.
1992 *On Rims and Ridges, The Los Alamos Area Since 1880*. University of Nebraska Press, Lincoln, Nebraska.

Truslow, Edith C.
1991 *Manhattan District History: Nonscientific Aspects of Los Alamos Project Y, 1942 through 1946, (Based on an Unpublished 1946 Manuscript)*. Los Alamos, New Mexico: The Los Alamos Historical Society.

4. Cultural Resources Program Forms, Documents, References, and Materials for Archaeology Fieldwork

There are a number of documents and archival materials that are kept and maintained by the cultural resources program as reference materials in support of archaeological fieldwork. The specific archaeological procedures identified here are more detailed than in the formal cultural resources quality control procedures noted below in Section 5: These documents and archived materials are as follows:

Archaeological Field and Laboratory and Laboratory Guidance and Support Documents

- Archaeological Field Survey Manual
- Archaeological Excavation—Field Procedures Manual
- Archaeology Laboratory Procedures
- Ceramic Workshop Notes
- Field Access Procedures
- Field Manual, version 4.6
- Flotation Procedures
- Pollen Wash Methods
- Recording Cavates
- Report Style Guide

Archaeological Field and Laboratory Forms

- Area Definition Form
- Area Log
- Artifact Collection Form
- Auger Form

- Burial Form
- Cultural Resources Field Journal (Daily Field Journal)
- Feature Form
- Feature Log
- Field Specimen Catalog
- Flotation Log Form
- Government Vehicle Log
- GPS Form
- Grid Level Excavation Form
- Historic Artifact Field Survey Recording Form
- Human Remains Tracking
- Instrument Mapping Form
- Isolated Occurrence Recording Form
- NAGPRA Artifacts Tracking
- Native American Consultation Record Form
- New Site Short Recording Form
- NMCRIS Registration Form
- NMCRIS Site Form
- Personal Vehicle Log
- Room Summary Form
- Sample Log
- Site Assessment Check Sheet
- Stratigraphy Log
- Stratigraphy Unit Summary Form

LANL Archaeological Baseline Studies

A series of baseline studies have been prepared, or are in the process of being prepared, that serve to support the ongoing Land Conveyance and Transfer Project excavations, but which will also aid in the formulation of the general and all future specific archaeological research designs and other aspects of the future conduct of archaeology and historic preservation program at LANL. In each case the baseline study has been prepared by a recognized expert in the pertinent field.

These baseline studies currently include but will not necessarily be restricted to the following titles and authors:

- Anderson, R. Scott (Northern Arizona University), *Jemez Mountains Paleoecology Studies.*
- Blinman, Eric, and Jeffrey Royce Cox (Archaeomagnetic Dating Laboratory, Museum of New Mexico), *A Context for the Interpretation of Archaeomagnetic Dating Results from the Pajarito Plateau*
- Broxton, David E., Fraser Goff, and Kenneth Wohletz (Earth and Environmental Sciences, LANL), *The Geology of Los Alamos National Laboratory as a Back Drop for Archeological Studies on the Pajarito Plateau*
- Castro-Reono, Sergio F., and Elizabeth Miksa. *Petrographic Analyses of Sherd Samples for LANL with Geologic and Source-Specific Reference Materials*
- Foxx, Teralene S. (retired from LANL Ecology Group), *Ecosystems of the Pajarito Plateau and East Jemez Mountains: Linking Land and People*
- Shackley, M. Steven (Phoebe Hearst Museum of Anthropology, University of California at Berkeley), *Archaeological Obsidian and Secondary Depositional Effects in the Jemez Mountains and the Sierra de Los Valles, Northern New Mexico*

- Smith, Susan J. (Laboratory of Paleoecology, Northern Arizona University), *Modern Pollen Analog Study, Los Alamos National Laboratory*
- Stevenson, Christopher M. (Diffusion Laboratory, Petersburg VA), *Obsidian Hydration by Infrared Spectroscopy*
- Towner, Ronald H. (Manzanares Research, Tucson AZ), *The Current Status of Archaeological Dendrochronology and Dendroclimatology of the Pajarito Plateau, NM*

Because these baseline studies have considerable application to Pueblo neighbors and to land-holding agencies outside of LANL itself, they will be placed together into a separate volume as part of the DOE Land Conveyance and Transfer Project excavation series.

Archaeological Teaching Collections

- Ceramics from Pajarito Plateau identified by Rory Gauthier (Bandelier National Monument) for use as a comparative and teaching collection by the cultural resources program staff.
- Obsidian and other chipped stone collected from source area in and around the Pajarito Plateau for use as a comparative and teaching collection by the cultural resources program staff.

5. Cultural Resources Program Quality Control Documents

Cultural Resources Quality Assurance Program Plan (QAPP)

- LANL-ENV-ECO-QAPP-004 R0 Cultural Resources Program QAPP

Cultural Resources Quality Control Procedures

These are grouped into two categories, depending on whether they are viewed as essential (E) for the day-to-day operation of the cultural resources program, or are primarily important for quality control (Q) for the data and products resulting from the work of the Cultural Resources Program. Also listed is the assigned ENV-ECO number for finalized and authorized procedures, and the status of procedures that have not yet been finalized and authorized.

- ECO-401 Archaeological Survey and Site Recording (E)
- ECO-402 Field Visitor Tours (E)
- ECO-404 Construction Project Monitoring (E)
- ECO-405 Archaeological Excavation and Laboratory Protocols (E)
- ECO-406 Surveying Historic Buildings (E)
- ECO-407 Field Checks (E)
- ECO-409 Use of Nikon DTM-521 Digital Transit (Q)
- ECO-408 GPR Data Management (Q)
- Draft GPS and GIS Data Management (Q)
- Draft Project Review (Q)
- Draft Report Style Guide (Q)
- Draft Artifact Curation (Q)
- Draft Buildings/Structures Document Research (Q)
- Partial Draft Native American Consultation (Q)
- Partial Draft Database Management (Q)
- Partial Draft NHPA Integrity & Significance Standards (Q)
- Future Electronic Image Management (Q)
- Future Administrative Record (Q)

- Future ARPA/NHPA Monitoring & Site Protection (Q)

6. Cultural Resources Program Safety Documents

Integrated Work Documents

- IWD-ECO-ASFC-ESA Archaeological survey and field checks-ESA
- IWD-ECO-ASFC-DX Archaeological survey and field checks-DX
- IWD-ECO-ASFC-MFU8 Archaeological survey and field checks-FMU-8
- IWD-ECO-HBSSD-FMU1 Historic buildings/structures surveys and documentation FMU-1
- IWD-ECO-HBSSD-FMU2 Historic buildings/structures surveys and documentation FMU-2
- IWD-ECO-HBSSD-FMU3 Historic buildings/structures surveys and documentation FMU-3
- IWD-ECO-HBSSD-FMU6 Historic buildings/structures surveys and documentation FMU-6
- IWD-ECO-HBSSD-FMU7 Historic buildings/structures surveys and documentation FMU-7
- IWD-ECO-HBSSD-FMU8 Historic buildings/structures surveys and documentation FMU-8
- IWD-ECO- - C&T Excavate prehistoric and historic sites on land transfer sub-parcels as part of the Land Conveyance and Transfer Project

Hazard Control Plans

- LANL-RRES-ECO-EP-OP-002 R2 Archaeological Site Excavation
- LANL-RRES-ECO-HR/EP-HCP/OP-003 R0 Historic Buildings Surveys and Documentation

7. Cultural Resources Program Administrative Record

The cultural resources program maintains (1) a set of administrative files relating to National Historic Preservation Act Section 106 consultation with the New Mexico State Historic Preservation Officer and the Advisory Council on Historic Preservation; and (2) a set of administrative files relating to consultation with Native American Tribes under the Native American Graves Protection and Repatriation Act (NAGPRA) and other laws as appropriate.

8. Links to Pertinent Cultural Resource Management Web Sites

As in any program that is driven by federal legislation, federal and state regulations, guidance, and policy, federal cultural resources management is an actively growing and changing field. There are a number of Web Sites that provide useful background information and that also capture the changing face of cultural resources across the United States. Some of the particularly pertinent Web Sites are provided below.

Advisory Council on Historic Preservation Home Page:
http://www.achp.gov/search.html

CRM Cultural Resource Management Magazine, US National Park Service
http://www.cr.nps.gov/crm/

Common Ground Magazine: National Park Service Archaeology and Ethnology Program:
http://www.cr.nps.gov/aad/cg/

DOE Cultural Resources:
http://www.eh.doe.gov/oepa/cultural

LANL ENV-ECO Ecology Group Home Page:
http://ecologygroup.lanl.gov/

New Mexico Historic Preservation Division:
http://www.nmhistoricpreservation.org/

Society for American Archaeology Home Page:
http://www.saa.org/

9. Cultural Resources Program Reports

The following table lists all reports produced by the cultural resources program since 1986. As noted in the table, some of the reports have yet to finalized, for example several reports relating to surveys performed in the mid-1990s on behalf of the LANL Environmental Restoration (ER) Program.

The table provides:

- Cultural resources program report number
- A notation if the report was a letter report
- LANL document control number (UR=unrestricted; CP=controlled)
- Report author(s) last name
- Whether or not the report received formal SHPO concurrence (if appropriate)
- The date of the formal SHPO concurrence

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
1		LA-CP-95-313	Meteorological Tower, Frijoles Mesa	Larson	Y	08-Apr-87
2		LA-CP-95-314	A Cultural Resource Survey for Three Seismograph Station Locations on Santa Fe National Forest	Larson	Y	22-Aug-86
3		LA-CP-95-315	Milagro Productions Movie Location, Los Alamos Canyon	Larson	Y	08-Apr-87
4		LA-CP-95-316	Central Guard Facility Parking Lot Extension, TA 59 East	Larson	Y	08-Apr-87
5		LA-CP-95-317	Visiting/Consulting Scientists' Trailers, TA 33	Larson	Y	18-Apr-87
6		LA-CP-95-318	Mountain Bell Communications Underground Cable, South Mesa Line	Larson	Y	08-Apr-87
7		LA-CP-95-319	Temporary Inflatable Trailer for CLS-3 at TA 46	Larson	Y	08-Apr-87
8		LA-CP-95-320	J-8 Transportables, TA 16	Larson	Y	08-Apr-87
9		LA-CP-95-321	PCB Storage Facility, Septic Tank/Drain Field, TA-54, Area "L"	Larson	Y	27-Feb-87
10		LA-CP-95-322	Theoretical and Computation Modular office Building	Larson	Y	29-Apr-87
11		LA-CP-95-323	Fill Dirt Area, Fenton Hill Fill Site, TA-57	Larson	Y	20-May-87
12		LA-CP-95-324	Live Firing Range Extension, Sandia Canyon	Larson	Y	07-Dec-87
13		LA-CP-95-325	Cabra/Rendija Canyon Seismic Trench	Larson,	Y	25-Jun-87
14		LA-CP-95-326	Canada Del Buey Sanitary Landfill	McGehee and Larson	Y	09-Sep-87
15		LA-CP-95-327	MPF-35 Relocation TA-53	Larson	Y	04-Sep-87
16		LA-CP-95-328	LANL Tailings Pile, Lake Fork Mesa, Forest Service Road 1676	Larson		
17		LA-CP-95-329	N-12 Trailer Park, at TA-52	Larson	Y	24-May-88
18		LA-CP-95-330	Solid Waste Fired Boiler Facility, TA-16	Larson	Y	29-Jun-88
19		LA-CP-95-331	White Rock "Y" Water Main Relocation	Larson	Y	31-Aug-88
20		LA-CP-95-332	Club 1663 Fitness Trail	McGehee and Larson	Y	03-Nov-88
21		LA-CP-95-333	Transmissometer Shelter	McGehee	Y	08-Dec-88
22		LA-CP-95-334	Pajarito Mountain Antenna Site - LANL	McGehee	Y	19-Jan-89
23		LA-CP-95-335	Dual-Axis Radiographic Hydrotest Facility (DARHT)	Larson	Y	21-Feb-89
24		LA-CP-95-336	Materials Science Laboratory	Larson and McGehee	Y	21-Feb-98
25		LA-CP-95-337	Pulsed Power Assembly Building	Larson and McGehee	Y	21-Feb-89
26		LA-CP-95-338	Sandia Canyon Landfill	McGehee and Larson		
27		LA-CP-95-339	Utilities Restoration, LANL/DOE Gas Line Replacement Phase A - Cuba Section	Powers	Y	28-Aug-89
28		LA-CP-95-340	Utilities Restoration, LANL/DOE Gas Line Replacement Additive Alternate No. 1 - Kutz By-Pass	Powers and Larson	N/A	N/A
29		LA-CP-95-341	Sanitary Wastewater Consolidated System - Plant	McGehee and Larson	Y	09-Nov-89
30		LA-CP-95-342	Power Line Extension in Sandia Canyon, Santa Fe County, New Mexico	Powers		
31		LA-CP-95-343	Utilities Restoration, Phase I: Otowi Water Wells # 1 and # 4	Larson and McGehee	Y	01-Nov-89
32		LA-CP-95-344	Advanced Analytical Chemistry Facility	McGehee		
33		LA-CP-95-345	Pajarito Mountain Antenna Power line Reroute	Powers	Y	07-Dec-89
34		LA-CP-95-346	Temporary EEO Trailer and Transportables	Powers		
35		LA-CP-95-347	Los Alamos Canyon Electric Pole Replacement	McGehee	Y	29-Jan-90
36		LA-CP-95-348	Q-Site Fire Road	Powers and Larson	Y	29-Jan-90
37		LA-CP-95-349	Airport Fire Station - Site 2	Powers	Y	20-Feb-90
38		LA-CP-95-350	Communications Duct TA-46 to TA-54	Powers	Y	07-Mar-90
39		LA-CP-95-351	Utilities Restoration, LANL/DOE Gas Pipeline Replacement Phases B, C, and D - Nageezi to Counselor Section	Powers		
40		LA-CP-95-352	Live Firing Range Telephone System Upgrade	McGehee	Y	12-Jun-90

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
41		LA-CP-95-353	White Rock Visitor Information Center	McGehee		
42		LA-CP-95-354	Los Alamos Integrated Communications Systems; Phase I, S-Site Duct Bank	McGehee	Y	06-Apr-92
43		LA-CP-95-355	Technical Support Facility, TA-46	McGehee	Y	09-May-91
44		LA-CP-95-356	Area G, TA-54, New Pits	Larson	Y	09-Jul-91
45		LA-CP-95-357	Sanitary Wastewater Systems Consolidation - Pipelines; North Interceptor	McGehee, Larson, and Powers	Y	20-Nov-91
46		LA-CP-95-358	Seismic Hazards - Guaje Pines Area, Los Alamos County	McGehee and Manz	Y	18-Sep-91
47		LA-CP-95-359	Seismic Hazards Investigation - S-Site, Rendija Canyon, Guaje Canyon and Chupaderos Canyon	McGehee and Manz	Y	29-Oct-91
48		LA-CP-95-360	New Facilities at Technical Areas (TAs) 52, 63, and 66	Larson and McGehee	Y	12-Feb-92
49		LA-CP-95-361	Los Alamos Integrated Communications Systems; Phase II, Technical Areas 35, 46, 50, 52, and 66	Larson and McGehee	Y	06-Apr-92
50		LA-CP-95-362	Environmental Restoration Program, Operable Unit (OU) 1106	McGehee, Manz, Parish, Hannaford, and Schillaci	Y	06-Apr-92
51		LA-CP-95-363	Environmental Restoration Program, Operable Unit (OU) 1078	McGehee, Binzen, Hannaford, and Manz	Y	06-Apr-92
52		LA-CP-95-364	Utility Restoration Phase II; Los Alamos Canyon Water Well and Lines	McGehee and Schillaci	Y	08-Apr-92
53		LA-CP-95-365	Low Level Waste Drum Staging Facility (Lab Job No. 12061) and WETF Shipping and Receiving Addition (Lab Job No. 12012)	Manz, McGehee, and Wallace	Y	01-Oct-92
54		LA-CP-95-366	Jemez Tomography Experiment	Hoagland	Y	21-Oct-92
55		LA-CP-95-367	Environmental Restoration Program, Operable Unit (OU) 1071	McGehee, Hoagland, Manz, Larson, Binzen, and Hannaford	Y	10-May-93
56		LA-CP-95-368	Environmental Restoration Program, Operable Unit (OU) 1079	Hoagland, Manz, and McGehee	Y	03-Sep-93
57		LA-CP-95-369	Environmental Restoration Program, Operable Unit (OU) 1122	McGehee, Binzen, Manz, Hannaford, Hoagland, and Stolpe		
58		LA-CP-95-370	Jemez Teleseimic Project	Hoagland	Y	30-Sep-93
60		LA-CP-95-371	Infrastructure Support Facilities (ISF) Gasline - Los Alamos Townsite	Manz, Hoagland, McGehee, and Larson	Y	27-Sep-93
61		LA-CP-95-372	Department of Energy ISF Gasline Replacement, Phases A and B, Bloomfield to Kimbeto Wash, San Juan County, New Mexico	Hoagland, Larson, Schillaci, and Albertson	N/A	N/A
62			Environmental Restoration Program Operable Unit (OU) 1157	McGehee and Manz		
63			Environmental Restoration Program Operable Unit (OU) 1082	Binzen		
64			Environmental Restoration Program Operable Unit (OU) 1111	McGehee and Manz		
66		LA-CP-95-373	Los Alamos County Landfill Expansion	Lakatos	Y	01-Feb-95
67		LA-CP-95-374	115 KV Norton Transmission Line Structure Replacement on Department of Energy Land	Manz	Y	08-Jun-95
68		LA-CP-95-375	Cabra Canyon - Supplemental Report for Environmental Restoration Program Operable Unit (OU) 1071	Manz and McGehee	N/A	N/A
69			Environmental Restoration Program Operable Unit (OU) 1085	Hoagland		
70		LA-CP-95-376	Infrastructure Support Facilities (ISF) Gasline - Los Alamos Townsite; Additional Survey	McGehee, Manz, Schillaci, and Irving	Y	20-Jul-94
71		LA-CP-95-377	Guaje Booster S 2 & 3: Operation and Maintenance	Wallace and McGehee	Y	28-Oct-92

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
72		LA-CP-95-378	Environmental Restoration Program, Operable Units (OUs) 1129 and 1147	Manz, Hannaford, McGehee, and Binzen	Y	02-Feb-95
73		LA-CP-95-379	Transuranic (TRU) Waste Facilities	Larson	Y	05-Dec-86
74		LA-CP-96-078	Technical Area 21, Buildings 3 & 4: Decontamination and Decommission Historic Building Survey Report	McGehee		
75		LA-CP-95-380	United States Geological Survey (USGS) Gauging Stations: TA-54, Area G	Manz	Y	17-Oct-94
77		LA-CP-95-381	Deep Groundwater Monitoring Well at TA-54	Larson	Y	01-Feb-95
78		LA-CP-95-382	Upgrading of Existing Dirt Access Road and Surface Blading of Drill Pads	Manz	Y	01-Feb-95
79		LA-CP-95-383	Widen Intersection: TA-51 Pajarito Road	Manz	Y	01-Feb-95
80		LA-CP-95-384	Environmental Restoration Program, Operable Unit (OU) 1136	Eilert	Y	07-Jul-95
81		LA-CP-95-385	Environmental Restoration Program, Operable Unit (OU) 1154	Eilert	N/A	N/A
82		LA-CP-95-386	High Explosives Wastewater Treatment Facility (HEWTF)	Lakatos	Y	01-Feb-95
83		LA-CP-95-387	Environmental Restoration Program, Operable Unit (OU) 1140	Manz, Hannaford, and McGehee	Y	01-Feb-95
84		LA-UR-95-617	Decontamination and Decommissioning of 28 "S Site" Properties: Technical Area 16	McGehee	Y	24-Mar-95
85		LA-CP-95-388	115 KV Norton Transmission Line Structure Replacement on Forest Service Land	Manz	Y	25-May-95
86		LA-CP-95-389	115 KV Norton Transmission Line Structure Replacement on Bureau of Land Management Land: FY 96 Structures	Manz	Y	04-Jun-95
88		LA-CP-97-66	115 KV Norton Transmission Line Structure Replacement on Bureau of Land Management Land: Fiscal Years 97 & 98 Structures	Manz	Y	04-Jun-97
89		LA-CP-95-390	Environmental Restoration Program, Operable Unit (OU) 1114	Schillaci and Parish	Y	21-Jul-95
90		LA-CP-95-391	Collaborative Geophysical Investigation, BLM Land	Schillaci	N/A	N/A
91		LA-CP-95-392	Collaborative Geophysical Investigation, USDA Forest Service Land	Schillaci	N/A	N/A
92		LA-CP-95-393	Collaborative Geophysical Investigation, Private Land	Schillaci	Y	06-Jul-95
93		LA-CP-95-394	Environmental Restoration Program, Operable Unit (OU) 1093	Manz and Schillaci	Y	07-Jul-95
			East Gate Guard Tower (TA-73-15)	McGehee	Y	10-Jul-95
94		LA-CP-95-395	DARHT II: Preliminary Report of Expanded Area and Alternatives	Larson		
95		LA-CP-95-396	Otowi #1 Storage Tank	Manz	Y	06-Jul-95
96		LA-CP-95-397	Cultural Resource Mitigation Plan for Laboratory of Anthropology (LA) Site 70029, Los Alamos County, New Mexico	Powers and Larson	Y	
97		LA-CP-95-398	Cultural Resource Data Recovery Plan for Laboratory of Anthropology (LA) 4618, Mesita Del Buey, Los Alamos National Laboratory	Larson	Y	
98		LA-CP-95-399	Cultural Resource Data Recovery Plan for Seven Coalition Period Pueblos on Mesita Del Buey: Laboratory of Anthropology (LA) 4620, 4621, 4622, 4623, 4624, 4625, & 4626, Los Alamos National Laboratory, New Mexico	Larson	Y	09-Jul-91
99		LA-CP-95-400	Cultural Resource Data Recovery Plan for the Vigil Y Montoya Homestead, Laboratory of Anthropology (LA) 70028, Los Alamos National Laboratory, New Mexico	McGehee and Larson	Y	27-Sep-93
100		LA-UR-95-1334	Proposed Effects and Treatment of Effects for Decontamination and Decommissioning of 28 "S Site" Properties: Technical Area 16	McGehee	Y	30-May-95

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
101		LA-CP-95-401	Environmental Restoration Program Operable Unit (OU) 1098	Binzen and Eilert	Y	07-Jul-95
102	L		Parking Lot Expansion, TA-48	Manz	Y	06-Jul-95
103		LA-CP-95-402	Installation of Two Trailers: Technical Area 15	Manz	Y	06-Jul-95
104	L		Storage Yard and Temporary Parking Lot, TA-63	Manz	Y	06-Jul-95
105	L		Construct Addition (TA-48-1)	Hoagland		
106		LA-CP-95-403	Building TA-64-39, Parking Lot Extension	Hoagland	Y	06-Jul-95
107			ER TA-15 OU 1086	Hoagland		
108			ER TA-36 OU 1130	Larson		
109			ER TA-49 OU 1144	Larson and Lakatos		
110		LA-CP-99-36	DARHT III: Expanded Area of Potential Effects	Vierra, Hoagland, Larson, and Manz	Y	20-May-99
111		LA-CP-95-404	Neutron Tube Target Loading Facility	Manz	Y	06-Jul-95
112	L		Double Wide Trailer, TA-48 (and Parking Lot)	Manz	Y	06-Jul-95
113		LA-CP-95-405	Seismic Hazards Investigation - 1995	Manz	Y	26-Jul-95
114		LA-CP-95-180	TA-16 Heating System Replacement	McGehee	Y	18-Aug-95
115		LA-CP-95-406	Contractor's Task Force Trailers, Technical Area 58	Manz	Y	15-May-96
116		LA-UR-95-3191	Infrastructure Support Facilities (ISF) Gasline - Los Alamos Townsite: The "Peggy Sue" Bridge	McGehee	Y	12-Dec-95
117	L		Land Application of Dried Sanitary Sewage Sludge at TA-61	Manz	Y	15-May-96
118		LA-CP-96-018	CMR Building Upgrades Cultural Resource Survey Report	Larson	Y	14-Feb-96
119			ER TA-39 OU 1132	Manz		
120		LA-CP-96-022	Radioactive Liquid Waste Treatment Facility (RLWTF) Cultural Resource Survey Report	Larson, Manz, and McGehee	Y	15-May-96
121		LA-CP-96-077	Facility and Utility Modifications for the Low Energy Demonstration Accelerator (LEDA)	Larson and Manz	Y	22-Jun-96
122		LA-CP-96-024	New Parking Lot, Trailers, and Transportable at Technical Area 16	McGehee and Manz	Y	15-May-96
123		LA-CP-96-025	High Energy Density Experiments Laboratory	McGehee and Manz	Y	15-May-96
124	L		Biophysics Laboratory Addition	Manz	Y	15-May-96
126		LA-CP-97-187	Hydrodynamic Testing Operations Center	Hoagland	Y	24-Feb-98
127		LA-CP-96-139	Firing Point Prescribed Burns	Hoagland	Y	18-Sep-96
128		LA-CP-96-117	TA-39 Hardening Upgrade	Manz	Y	18-Sep-96
129			Environmental Restoration Program, Operable Unit (OU) 1049, Pilot Study, Lower Los Alamos Canyon, Pueblo of San Ildefonso	Hoagland, Manz, and Larson		
130		LA-CP-96-222	Capability Maintenance and Improvements Project (CMIP)	Manz, Larson, and Hoagland		
131			Firing Site Impacts to Cultural Resources, Cultural Resource Assessment Report	Larson and Mcclure	N/A	Internal Laboratory document
132		LA-CP-96-231	Research Park	Larson, Hoagland, and Manz	Y	14-May-97
133		LA-CP-96-260	DP Road Land Transfer	Hoagland	Y	12-Dec-96
136		LA-CP-97-53	National Spallation Neutron Source Facility, Cultural Resource Assessment	Larson	N/A	N/A
137			Los Alamos Trail Network, Cultural Resource Assessment	Larson		
138		LA-CP-97-60	Environmental Restoration Program, Field Unit 4, Reach LA-3, Los Alamos Canyon, New Mexico	Hoagland, Manz, and Larson	Y	14-May-97
139		LA-CP-97-91	Seismic Hazards Investigations - 1997	Manz	Y	28-Aug-97
140		LA-CP-97-96	Environmental Restoration Program, Alluvial Observation Well LLAO-3, Los Alamos Canyon, New Mexico	Hoagland	Y	28-Aug-97
141		LA-CP-97-101	Monitoring Wells Fiscal Year 1997	Manz, Larson, and Hoagland	Y	28-Aug-97

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
142			Environmental Restoration Program, Field Unit 4, Reaches in Pueblo and Los Alamos Canyons, New Mexico	Hoagland and Albertson		
144		LA-CP-97-174	Engineering, Sciences, and Applications Division, Fire Brake and Fire Roads	Hoagland	Y	28-Oct-97
145		LA-CP-97-176	Heliport Pads, Access Road and Equipment Building	Manz	Y	28-Oct-97
146		LA-CP-97-247	West Jemez Road Tree Thinning	Manz	Y	24-Feb-98
147		LA-CP-97-235	Fire Protection Improvements: Los Alamos National Laboratory	Hoagland and Manz	Y	14-Jan-98
148		LA-CP-97-236	Fiber Optics Cable, TA-54 to TA-18	Manz, and Hoagland	Y	14-Jan-98
149		LA-CP-97-220	Sigma Mesa Chemical Storage Building	McGehee		
150		LA-CP-98-7	Weapons Neutron Research Detector Shed	Manz and Hoagland	Y	24-Feb-98
151	L		Upgrades TA-9, Building 42	McGehee	Y	26-May-98
152		LA-CP-98-21	TA-16 Pre-Manufactured Office Building	Manz and Hoagland	Y	24-Feb-98
153		LA-CP-98-22	Facilities Improvements Technical Support Building, TA-55	Manz and Hoagland	Y	24-Feb-98
154		LA-UR-98-2140	Strategic Computer Complex	Manz and McGehee	Y	01-Jul-98
155		LA-UR-98-2282	TA-61 Sheds	Manz	Y	21-Jul-98
156		LA-CP-98-147	WETF Modular Office Building	Manz and Hoagland	Y	21-Jul-98
157		LA-CP-98-173	Los Alamos County Lift Station Relocation	Manz	Y	31-Aug-98
158		LA-UR-98-4463	Decontamination and Decommissioning of Buildings 86 and 90 at Technical Area 33	Manz	Y	22-Feb-99
159		LA-CP-98-229	New Greenhouse: Technical Area 16	Manz	Y	18-Nov-98
160		LA-CP-98-295	TA-54 Wildfire Prevention Project	Vierra	Y	29-Jan-99
161		LA-CP-98-288	Radioactive Liquid Waste Treatment Facility	Garcia	Y	08-Dec-98
162		LA-UR-99-798	Decontamination and Decommissioning of Structure 49 and Buildings 57 and 88 at Technical Area 2	Garcia	Y	17-Mar-99
163		LA-CP-98-118	Nake'muu Village on the Edge: Description and Condition of a Prehistoric New Mexican Pueblo	Nordby, Mayberry, and Brisbin - NPS Mesa Verde	N/A	N/A
164		LA-CP-99-162	Electrical Power System Upgrades Project, Norton to the Western Technical Area 115kv Transmission Line	Hoagland, Vierra, Masse, Campbell, Madsen, and Oakley	Y	03-Nov-99
165	L		Stabilization of Inadvertent Discovery at TA-18	Isaacson	Y	N/A
166		LA-CP-99-108	Breakneck Trail, Santa Fe County, New Mexico	Knight	Y	08-Aug-99
167		LA-UR-99-1425	Decontamination and Decommissioning of Buildings TA-3-42, TA-8-27, TA-8-31, and TA-35-1	Garcia	Y	25-Jun-99
168	L		NIS Facility (Nonproliferation and International Security Center)	Garcia	Y	07-May-99
169	L		New 4" Gas Line from TA-9 to TA-15	Garcia	Y	01-Jun-99
170	L		New Emergency Response Consolidation Office Building and Parking Lot	Isaacson	Y	17-Sep-99
171		LA-UR-99-2393	Decontamination and Decommissioning of the Technical Area 33 Water Reservoir and Pump House	Garcia		
172	L		TA-8-21 Parking Lot Expansion	Isaacson	Y	17-Sep-99
173	L		FY 1999 Wildfire Prevention	Vierra	Y	11-Jun-99
174		LA-UR-99-4241	Decontamination and Decommissioning of Structure TA-3-156 and Building TA-3-163	Garcia and Mclain	Y	17-Sep-99
175	L		Parking Lot, TA-58, FM-81	Vierra	Y	03-Nov-99
176		LA-CP-00-179	Cultural Resources Survey and Assessment of the Conveyance and Land Transfer Tracts	Hoagland	Y	06-Oct-00
177		LA-UR-99-6912	Isotope Production Facility Addition: Building TA-53-3	Garcia and McGehee	Y	07-Dec-99

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
178		LA-UR-00-1003	Historical Building Assessment for the Department of Energy Conveyance and Transfer Project	McGehee and Garcia	Y	Never received notification back from SHPO.
179			Mortandad Canyon RCRF Facility Investigation Canyon Bottom Project, Los Alamos County, New Mexico	Knight, Hoagland, and Masse		
180			Diagnostic X	Masse	N/A	Internal Laboratory document
181		LA-CP-00-119	Seismic Hazards Investigation: Chupaderos Canyon, Los Alamos County	Vierra	Y	09-Feb-01
182		LA-CP-00-136	TA-15 Electrical Infrastructure Upgrade Project	Vierra	Y	13-Mar-01
183		LA-CP-00-143	County of Los Alamos Wildfire Mitigation Project	Hoagland	N/A	N/A
184		Neg. rpt to BLM	An Archaeological Survey of the Proposed LANL EES-4 Geo Engineering Group Microborehole Drilling Project	Hoagland	N/A	N/A
185		LA-CP-00-277	Emergency Flood-Control Actions on the Historic Anchor Ranch, LA 16808 Los Alamos National Laboratory, New Mexico	Masse	Y	06-Oct-00
186		LA-UR-00-3854	The Omega West Reactor and Water Boiler Building, TA-2-1; A Preliminary Report	McGehee and Garcia	Y	13-Oct-00
187		LA-CP-00-327	Mesita Del Buey Cavate Survey	Vierra, Nisengard, and Schmidt	N/A	N/A
188		LA-UR-03-7364	A Current Assessment of the Nake'muu Monitoring Program	Vierra	N/A	N/A
189		LA-UR-00-5888	Sherwood and Scyllac Buildings, TA-3-105 and TA-3-287; An Eligibility Assessment Report	McGehee and Garcia	Y	30-Jan-01
190		LA-UR-01-0694	Cultural Resource Reviews of Emergency Environmental Activities After the Cerro Grande Fire	Garcia	N/A	N/A
191		LA-UR-01-1805	"The Hollow" at TA-15; An Eligibility Assessment Report	McGehee and Garcia	Y	08-Jun-01
192		LA-UR-01-2303	Administration Building TA-3-43; An Eligibility Assessment Report	McGehee and Garcia	Y	08-Jun-01
193		LA-UR-01-3195	Decontamination and Decommissioning of Building TA-16-195	Mclain and Garcia	Y	31-Jul-01
194		LA-CP-01-382	Pajarito Gasline Project	Masse, McGehee, Harmon, Madsen, and Schmidt	Y	28-Nov-01
195		LA-UR-01-5308	Decontamination and Decommissioning of Buildings 1, 2, and 40 at Technical Area 33	Mclain, Garcia, and McGehee	Y	19-Nov-01
196		LA-UR-01-4833	TA-36-12 Addition	Mclain and Garcia	Y	18-Oct-01
197		LA-CP-01-385	TA 15 Electrical Infrastructure Upgrade Connection Project	Vierra and Schmidt	Y	20-Nov-01
198	L	LA-UR-01-5449	NHPA Compliance Review for the Potential Effects of Operations Under the National Pollution Discharge Elimination System Storm Water Multi-Sector General Permit for Industrial Activities at Los Alamos National Laboratory	Isaacson and Garcia	N/A	N/A
199	L	LA-UR-01-5587	TA-16-260 Half-Wall Removal, Bay 7	Garcia	Y	24-Oct-01
200		LA-UR-01-5721	Cultural Resources Status of the Proposed Advanced Hydrotest Facility Site Location in TAs 53, 72, 73, and 5 (LANSCE Site) at Los Alamos National Laboratory, Los Alamos, New Mexico	Noll, Jr. and Hoagland	N/A	Internal Laboratory document
201		LA-UR-02-1284	Department of Energy Land Conveyance Data Recovery Plan and Research Design for the Excavation of Archaeological Sites Located Within Selected Parcels to be Conveyed to the Incorporated County of Los Alamos, New Mexico	Vierra, Hoagland, and Isaacson	Y	05-May-02
202		LA-CP-02-109	Norton Line – Pueblo of San Ildefonso Land	Hoagland	Y	01-Apr-02

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
203		LA-UR-02-2079	TA-22 Connector Road Project: An Assessment of the Gomez Homestead, Los Alamos National Laboratory	Schmidt, Vierra, McGehee, and Garcia	Y	
204		LA-UR-02-2663	Decontamination and Decommissioning of TA-41	McGehee, Garcia, Ronquillo, and Towery	Y	22-May-02
205	L	LA-UR-02-2340	TA-16-193 Modifications	Garcia	Y	07-May-02
206		LA-CP-02-0378	Cultural Resource Protection and Site Inventory for the Wildfire Hazard Reduction Project: Results of the 2001 Field Season	Vierra	Y	03-Oct-02
207	L	LA-CP-02-315	Los Alamos Canyon Gas Mainline	Hoagland	Y	05-Aug-02
208		LA-UR-02-4348	Decontamination and Decommissioning of the Basket Washing Facility, Technical Area 16	McGehee, Garcia, Towery, and Ronquillo	Y	06-Aug-02
209	L	LA-UR-02-4690	Decontamination and Decommissioning of TA-16-206 and -208	Garcia	Y	14-Aug-02
210		LA-CP-02-0350	Los Alamos National Laboratory Cerro Grande Fire Cultural Site Assessment - (TAs 5, 49, 60, & Rendija Canyon)	Pueblo of San Ildefonso, Pueblo of Santa Clara Cultural Resources Assessment Team	Y	08-Aug-02
211		LA-UR-02-5713	Cerro Grande Fire Assessment Project: An Assessment of the Impact of the Cerro Grande Fire on Cultural Resources at Los Alamos National Laboratory, New Mexico	Nisengard, Harmon, Schmidt, Madsen, Masse, McGehee, and Garcia		19-Jun-03
212	L	LA-CP-02-0376	Norton Fence Line	Hoagland	Y	16-Sep-02
213		LA-CP-02-0469	Excavations at a Coalition Period Pueblo (LA 4624) on Mesita Del Buey, Los Alamos National Laboratory	Vierra, Nisengard, Harmon, Larson, Curewitz, Schmidt, McBride, Smith, and Binzen	Y	16-Dec-02
214		LA-UR-02-6841	ESA Division's 5-Year Plan: Consolidation and Revitalization at Technical Areas 3, 8, 11, and 16	McGehee, Mccarthy, Garcia, Towery, and Ronquillo	Y	22-Jun-03
215		LA-UR-03-0726	Sentinels of the Atomic Dawn: A Multiple Property Evaluation of the Remaining Manhattan Project Properties at Los Alamos (1942-1946)	McGehee, Mccarthy, Towery, Ronquillo, Garcia, and Isaacson	Y	05-Jun-03
216		LA-CP-03-0280	Canones Micro Drilling	Hoagland	Y	11-Jun-03
217		LA-CP-03-0455	Cultural Resource Protection and Site Inventory for the Wildfire Hazard Reduction Project: Results of the 2002 and 2003 Field Seasons	Vierra	N/A	N/A
218			Seismic Hazards Test Trench Survey	Masse		
219	L		TA-22 Connector Road Project: LA 21331 Site Assessment	Vierra	Y	06-Aug-03
220	L		Report to SHPO on "No Property, No Effect" Undertakings April 2000 through September 2002	Garcia	Y	25-Aug-03
221	L		Report to SHPO on "No Property, No Effect" Undertakings for FY 2003	Garcia	Y	04-Dec-03
222		LA-CP-03-0965	Removal of LA 89774 From Eligibility for Listing in the National Register of Historic Places	Masse and Garcia	Y	03-Feb-04
223	L		TA-16-410 Upgrades	Garcia	N/A	N/A
224	L	LA-UR-04-2497	TA-69-3 Decontamination and Decommissioning	McGehee and Garcia	Y	23-May-04
225		LA-UR-04-3752	Controlled Thermonuclear Research at Los Alamos: The History of the Sherwood and Scyllac Buildings (TA-3-105 and TA-3-287)	Ziegler, McGehee, Garcia, Towery, Ronquillo, and Isaacson		06-Jul-04
226		LA-CP-04-0536	Electrical Power System Upgrades Project, Norton to the Western Technical Area 115-KV Transmission Line, Segment 4	Hoagland, Kuru'es, and Copeland		

Cultural Resource Report No	Letter Report	LANL Document Control No	Title	Author	SHPO Concur	Date SHPO Return
227	L	LA-UR-04-4251	TA-36-22 Decontamination and Decommissioning	Garcia and McGehee	Y	30-Jul-04
228	L	LA-UR-04-4473	TA-16-260 Press Installation	Garcia	Y	30-Jul-04
229		LA-UR-04-5541	The Hollow and GMX Manor at TA-15 (R-Site): Historic Context and Property Documentation	McGehee and Garcia, Towery, Ronquillo, Loomis, Naranjo, and Isaacson		08-Sep-04
230		LA-UR-04-6061	Upgrades to TA-33-87, -88, and -89	Garcia and McGehee	Y	27-Sep-04
231		LA-UR-04-6492	Historical Context of W Site, Technical Area 41	McGehee, Garcia, Loomis, Ronquillo, Towery, and Isaacson	Y	19-Oct-04
232		LA-CP-04-0712	Cultural Resource Assessment and Monitoring for the Pajarito Road East Access Control Station Technical Area 36, Los Alamos National Laboratory Los Alamos County, New Mexico	Masse and Vierra	N/A	N/A
233		LA-CP-04-0766	Cultural Resource Site Recording for the Wildfire Hazard Reduction Project: Results of the 2004 Field Season	Harmon		
234		LA-UR-04-6681	Historical Context of the Omega Reactor Facility, Technical Area 2	Harvey, McGehee, Garcia, Ronquillo, Towery, Loomis, Naranjo, and Isaacson	Y	19-Oct-04
235		LA-UR-04-6856	Supplemental Historic Context of DP Site, Technical Area 21	McGehee, Garcia, Towery, and Ronquillo	Y	22-Nov-04
236		LA-UR-04-7130	Engineering the Bomb: Detonator and Plutonium Recovery Research At Two-Mile Mesa Site (TA-6)	McGehee, Loomis, Garcia, Towery, Ronquillo, Naranjo, Isaacson		
237	L	LA-UR-04-7567	Demolition of TA-3-70	Garcia	Y	16-Nov-04
238		LA-UR-04-7938	Historic Context of Hot Point Site, Technical Area 33	McGehee, Garcia, Towery, Ronquillo, Isaacson		

Los Alamos
NATIONAL LABORATORY

Los Alamos, New Mexico 87545