DOE/EA-1376

Environmental Assessment for the Proposed Construction and Operation of a New Interagency Emergency Operations Center at Los Alamos National Laboratory, Los Alamos, New Mexico

July 26, 2001

Department of Energy
National Nuclear Security Administration
Los Alamos Area Office

Contents

Acronyms and Terms v

Executive Summary vii

1.0 Purpose and Need 1
1.1 Introduction 1
1.2 Background 3
1.3 Statement of Purpose and Need for Agency Action 6
1.4 Scope of This EA 7
1.5 Public Involvement 7

2.0 Description of the Proposed Action and Alternatives 9
2.1 Proposed Action—Construct and Operate an Emergency Operations Center at TA-69, LANL 9
2.1.1 Proposed Location of the New Center 11
2.1.2 Site Preparation and Construction 11
2.1.3 Center Description and Operations 18
2.1.4 Disposition of the Existing EOC (TA-59, Building 1) 21
2.2 No-Action Alternative 21
2.3 Alternatives Considered but Dismissed 22
2.3.1 Upgrading Existing EOC 22
2.3.2 Use of Other Space at Alternate Locations at LANL or within Los Alamos County 22
2.3.3 Construct a New Center at Alternate Locations at LANL or within Los Alamos County 23
2.3.4 Enhanced Use of the Alternate EOC at TA-49 24
2.4 Relationship to Other DOE NEPA Documents or Analysis 24
2.4.1 Final SWEIS for the Continued Operation of the Los Alamos National Laboratory (DOE/EA-0238) 24

3.0 Affected Environment and Environmental Consequences 25
3.1 Regional Setting 25
3.2 Potential Environmental Issues 26
3.2.1 Land Use 26
3.2.1.1 Affected Environment 26
3.2.1.2 Proposed Action 26
3.2.1.3 No-Action Alternative 27
3.2.2 Traffic and Infrastructure 27
3.2.2.1 Affected Environment 27
3.2.2.2 Proposed Action 27
3.2.2.3 No-Action Alternative 28
3.2.3 Visual Resources 28
3.2.3.1 Affected Environment 28
3.2.3.2 Proposed Action 29
3.2.3.3 No-Action Alternative 29
3.2.4 Geological Setting 29
3.2.4.1 Affect Environment 29
3.2.4.2 Proposed Action 29
3.2.4.3 No-Action Alternative 30
3.2.5 Air Quality 30
3.2.5.1 Affected Environment 30
3.2.5.2 Proposed Action 30
3.2.5.3 No-Action Alternative 31
3.2.6 Waste Management 31
3.2.6.1 Affect Environment 31
3.2.6.2 Proposed Action 32
3.2.6.3 No-Action Alternative 32

3.2.7 Human Health 32
3.2.7.1 Affected Environment 32
3.2.7.2 Proposed Action 33
3.2.7.3 No-Action Alternative 34
3.2.8 Socioeconomics 35
3.2.8.1 Affect Environment 35
3.2.8.2 Proposed Action 35
3.2.8.3 No-Action Alternative 35
3.2.9 Noise 35
3.2.9.1 Affected Environment 35
3.2.9.2 Proposed Action 36
3.2.9.3 No-Action Alternative 37

4.0 Accident Analysis 39

5.0 Cumulative Effects 41

6.0 Agencies Consulted 45

7.0 References 45

Figures

Figure 1. Location of Los Alamos National Laboratory 2
Figure 2. Burn severity categories of the Cerro Grande Fire 4
Figure 3. Technical areas at LANL with TA-69 highlighted 10
Figure 4. Center road access map 12
Figure 5. Conceptual draft site plan 13
Figure 6. Conceptual draft - First floor plan 15
Figure 7. Conceptual draft - Second floor plan 16

Tables

Table 1: Environmental Issues Considered 25

ACRONYMS AND TERMS

ac	acres
BAER	Burned Area Emergency Rehabilitation
BMPs	best management practices
Center	New Emergency Operations Center
CFR	Code of Federal Regulations
cm	centimeters
CMR	Chemistry and Metallurgy Research (Building)
CMU	concrete masonry unit
County	Incorporated County of Los Alamos
CSP	Comprehensive Site Plan (2000)
dB	decibels
dBA	A-weighted frequency scale
DOE	(U.S.) Department of Energy
EA	environmental assessment
EOC	Existing Emergency Operations Center
EPA	Environmental Protection Agency
EPZs	emergency planning zones
ft	feet
ft^2	square feet
FY	fiscal year
gal.	gallons
ha	hectares
HFLC	high-frequency, low-consequence
HEPA	high-efficiency particulate air
HVAC	heating, ventilating, and air conditioning (systems)
in.	inches
km	kilometers
L	liters
LAAO	Los Alamos Area Office
LANL	Los Alamos National Laboratory
LFHC	low-frequency, high-consequence
m	meters
m^2	square meters
mi	miles
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NMED	New Mexico Environment Department
OEL	occupational exposure limit
Plan	Construction Safety and Health Plan
Plateau	Pajarito Plateau
PRS	potential release site
RCRA	Resource Conservation and Recovery Act
rem	roentgen equivalent man (dose equivalent or unit for measuring radiological effects on the human body)
ROD	Record of Decision
SR	State Road
SWEIS	Site-Wide Environmental Impact Statement
SWPPP	Storm Water Pollution Prevention Plan
TA	technical area (at LANL)
TEL	threshold for early lethality
TRU	transuranic
UBC	Uniform Building Code
UC	University of California
UPS	uninterrupted power supply
U.S.	United States

EXPONENTIAL NOTATION: Many values in the text and tables of this document are expressed in exponential notation. An exponent is the power to which the expression, or number, is raised. This form of notation is used to conserve space and to focus attention on comparisons of the order of magnitude of the numbers (see examples):

1×10^{4}	=	10,000
1×10^{2}	=	100
1×10^{0}	=	1
1×10^{-2}	=	0.01
1×10^{-4}	=	0.0001

Metric Conversions Used in this Document

Multiply	By	To Obtain
Length		
inch (in.)	2.50	centimeters (cm)
feet (ft)	0.30	meters (m)
yards (yd)	0.91	meters (m)
miles (mi)	1.61	kilometers (km)
Area		
acres (ac)	0.40	hectares (ha)
square feet (ft^2)	0.09	square meters (m^2)
square yards (yd^2)	0.84	square meters (m^2)
square miles (mi^2)	2.59	square kilometers (km^2)
Volume		
gallons (gal.)	3.79	liters (L)
cubic feet (ft^3)	0.03	cubic meters (m^3)
cubic yards (yd^3)	0.76	cubic meters (m^3)
Weight		
ounces (oz)	29.60	milliliters (ml)
pounds (lb)	0.45	kilograms (kg)
short ton (ton)	0.91	metric ton (t)

Executive Summary

The Department of Energy, National Nuclear Security Administration[1] (NNSA) is charged with maintaining the capability and capacity required to support its national security mission assignments at Los Alamos National Laboratory (LANL). These assignments include the arrangements necessary for emergency preparedness activities and emergency event(s) response in the case of human-caused and induced accidents and natural disasters. NNSA has identified insufficiencies and inadequacies of the existing Emergency Operations Center (EOC) at LANL that need to be remedied. The EOC is also vulnerable to large-scale disasters. At the same time, LANL's EOC is critical to integrating and coordinating emergency preparedness and emergency response actions with other neighboring government entities and neighboring communities on the Pajarito Plateau by providing them with the use of the EOC.

The Proposed Action is the construction and operation of a new Interagency Emergency Operations Center (Center) at Technical Area 69. The new Center would include a 30,000-square-foot (2,700-square-meter) facility, a garage, a 130-car parking lot, and a 150-foot (45-meter) tall fire suppression water storage tank with antenna attachments on about a 5-acre (2-hectare) site. The new Center would be designed as a state-of-the-art multi-use facility housing about 30 fulltime University of California and Los Alamos County (or their contractor) staff. Under normal operating conditions, the facility would serve as the County fire, police, and 911-dispatch center and the administrative offices for the LANL Emergency Management and Response staff. Up to about 120 federal, state, local, and tribal representatives may also be accommodated at the Center in the event of an emergency on the general scale of the May 2000 Cerro Grande Fire. The new Center would be designed to meet and withstand, to the extent practical, any anticipated emergency such that emergency response actions would likely not be compromised by the emergency itself.

The No-Action Alternative was also considered. Under this alternative the existing EOC would continue to be used as it is currently configured. This is not an alternative that meets NNSA's purpose and need for action.

The new Center and associated structures are anticipated to have minimal traffic, visual, and environmental effects. The site is currently vacant but disturbed because of prior tree-thinning operations in this area and fire access roads. The small number of involved employees and the access point that would be built for this Proposed Action would cause very little change in the overall traffic circulation in this area. The fire suppression water storage tank would be visible from the townsite and other high points in the area, though it would be designed and painted to visually blend in with the background. The proposed Center itself however, would be relatively low, would be landscaped with native vegetation, and would not contrast with skylines or other natural scenic features. Built against the lower slopes of the Jemez Mountains, the proposed storage tank would not be visible from higher areas of the nearby Bandelier National Monument and Dome Wilderness areas.

[1] The NNSA is a separately organized agency within the DOE established by the 1999 National Nuclear Security Administration Act [Title 32, of the Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65)].

Cumulative effects of the Proposed Action along with past, present, and reasonably foreseeable actions on LANL and surrounding lands are anticipated to be negligible. No increase in LANL operations are anticipated as a result of this action.

1.0 Purpose and Need

1.1 Introduction

The *National Environmental Policy Act of 1969* (NEPA) requires federal agency officials to consider the environmental consequences of their proposed actions before decisions are made. In complying with NEPA, the United States (U.S.) Department of Energy (DOE), National Nuclear Security Administration (NNSA)[2] follows the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1500-1508) and DOE's NEPA implementing procedures (10 CFR 1021). The purpose of an Environmental Assessment (EA) is to provide federal decision makers with sufficient evidence and analysis to determine whether to prepare an Environmental Impact Statement or issue a Finding of No Significant Impact.

The NNSA must make a decision whether to construct and operate a new Interagency Emergency Operations Center (Center) at Los Alamos National Laboratory (LANL) and this EA has been prepared to assess the potential environmental consequences of a new Center. LANL is a National Security Laboratory owned by the Federal government comprising 43 square miles (111 square kilometers) of buildings, structures, and forested land located at Los Alamos, New Mexico (Figure 1). The University of California (UC) is currently under contract to DOE for the day-to-day management and operations of LANL. The NNSA provides oversight of LANL for the Federal government. The new Center would accommodate employees of both the Incorporated County of Los Alamos (County) and UC, or their contractor or subcontractor staff, on a daily basis; it would also provide dedicated space for NNSA and other federal, state and local government agencies, pueblos, and other entities, as needed, primarily for emergency response actions. This proposed Center would be located near the townsite of Los Alamos within LANL boundaries.

The objectives of this EA are to (1) describe the underlying purpose and need for NNSA's action; (2) describe the Proposed Action and identify and describe any reasonable alternatives that satisfy the purpose and need for Agency Action; (3) describe baseline environmental conditions at LANL; (4) analyze the potential direct, indirect, and cumulative effects to the existing environment from implementation of the Proposed Action, and (5) compare the effects of the Proposed Action with the No-Action Alternative and other reasonable alternatives. For the purposes of compliance with NEPA, reasonable alternatives are identified as being those that meet NNSA's purpose and need for action by virtue of timeliness, appropriate technology, and applicability to LANL.

Several federal, state, local, and tribal organizations were invited to participate along with NNSA in the preparation of this EA. The following agencies agreed to participate: the U.S. Forest Service, Santa Fe National Forest; the National Park Service, Bandelier National Monument; and Los Alamos County.

In addition, the EA process provides NNSA with environmental information that can be used in developing mitigative actions, if necessary, to minimize or avoid adverse effects to the quality of

[2] See footnote 1, page viii.

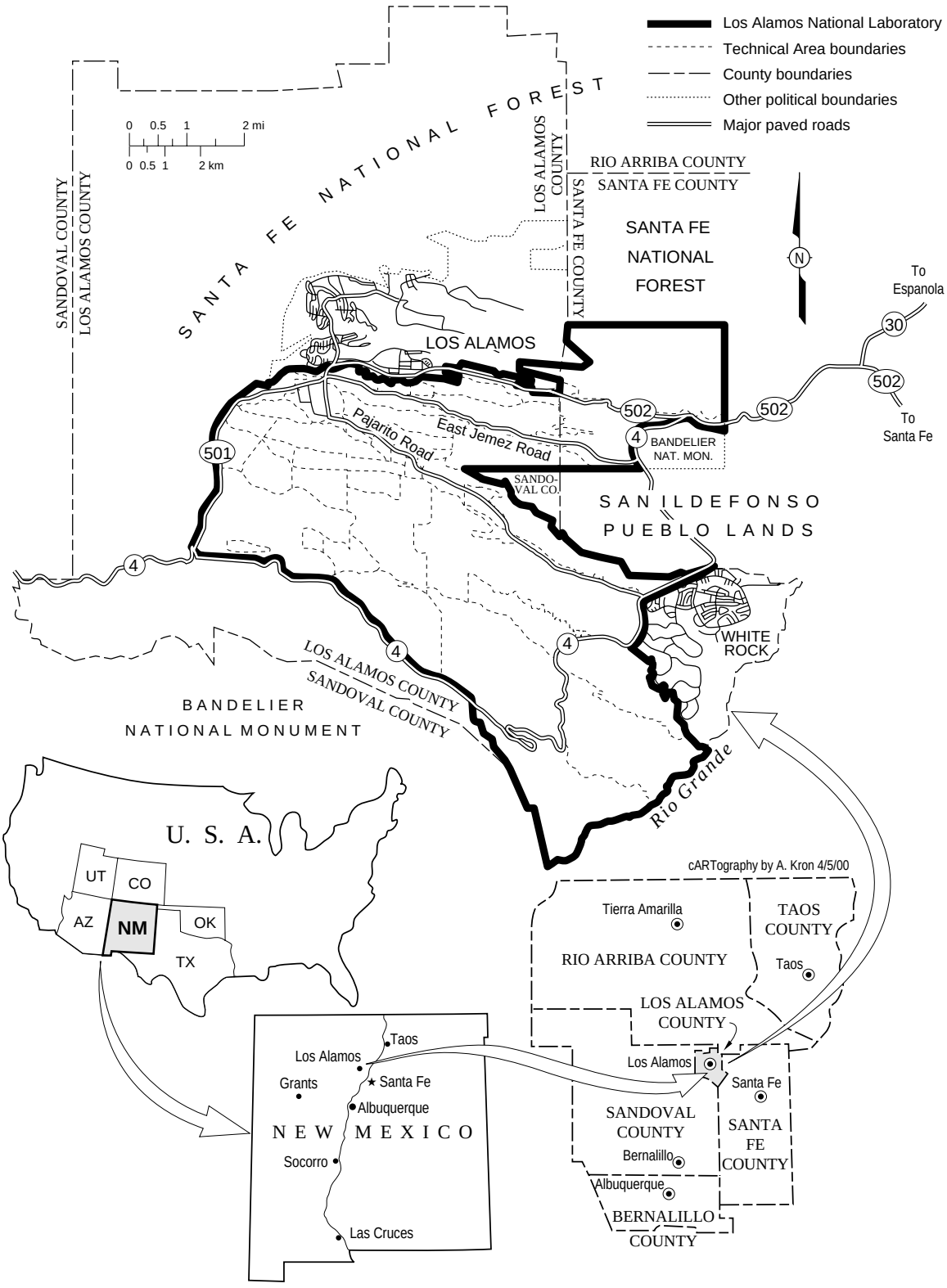

Figure 1. Location of Los Alamos National Laboratory

the human environment and natural ecosystems should NNSA decide to proceed with implementing the construction and operation of a new Center at LANL. Ultimately, the goal of NEPA and this EA is to aid NNSA officials in making decisions based upon an understanding of environmental consequences and taking actions that protect, restore, and enhance the environment.

1.2 Background

The limited capabilities and vulnerabilities of LANL's existing Emergency Operations Center (EOC) during a large-scale emergency were demonstrated during last year's Cerro Grande Fire. In May 2000, a prescribed burn[3] started on land to the southwest of LANL by the Department of the Interior, National Park Service, Bandelier National Monument, blew out of control and was designated as a wildfire. This wildfire, which became known as the Cerro Grande Fire, burned over 43,000 acres (ac) (17,200 hectares [ha])[4] of forest along the eastern flank of the Pajarito Plateau (Plateau) within the upper and mid elevation zones of several watersheds before it was extinguished. Approximately 7,650 ac (3,061 ha) within the boundaries of LANL were burned; nearly 10 percent of the Los Alamos townsite nearby was also burned (Figure 2). A total of 40 LANL structures (including trailers, transportables, storage units, and unoccupied buildings) were destroyed outright. Millions of dollars in damages to other buildings, structures, equipment, and infrastructure that support the NNSA missions at LANL occurred as well. Over 200 residential structures occupied by over 400 families were destroyed in the Los Alamos townsite and several hundred more suffered lesser damages. No lives were lost during this fire, which resulted in more property loss than any other wildfire in New Mexico's recorded history.

At the beginning stages of the Cerro Grande Fire on May 5, 2000, the current LANL EOC was activated. This EOC, located in the basement of Building 1 of Technical Area (TA) 59, is equipped to provide occupancy for a staff of 16 persons in the event of an emergency situation occurring at LANL. A single shower and two unisex bathrooms are located therein, which are connected to the LANL sanitary waste disposal system. There are no accommodations for people to rest or sleep. The total square footage of the EOC is about 4,000 square feet (ft^2) (372 square meters [m^2]), including all of the bathrooms, offices, equipment areas, security vault, etc. Communications equipment consists of a building-wide telephone system with a single real-time video communications system located in the security vault, which is about 240 ft^2 (22 m^2) in area. Ventilation in the EOC is provided by a high-efficiency particulate air-filter system, which is not a balanced system (a negative pressure situation can occur in the EOC that then draws air from the exterior of the building into the EOC). There are two roadways that provide access to the EOC from Los Alamos townsite: Diamond Drive to the north and Pajarito Road to the east through the community of White Rock. Potable water supply is furnished as part of the LANL distribution system to the building, and the EOC has a diesel-fueled generator to provide a

[3] Prescribed burns include all fires ignited by management actions to meet specific objectives. Prescribed fire is a well accepted and established practice utilized by federal, tribal, state, and private land management agencies.

[4] The number of acres is an estimate based on data derived from the Burned Area Emergency Rehabilitation (BAER) Team Report (BAER 2000). Any differences in acres affected among the BAER Report, other published sources, and this document are the result of data entry variations or rounding differences and are not intended to indicate significant differences.

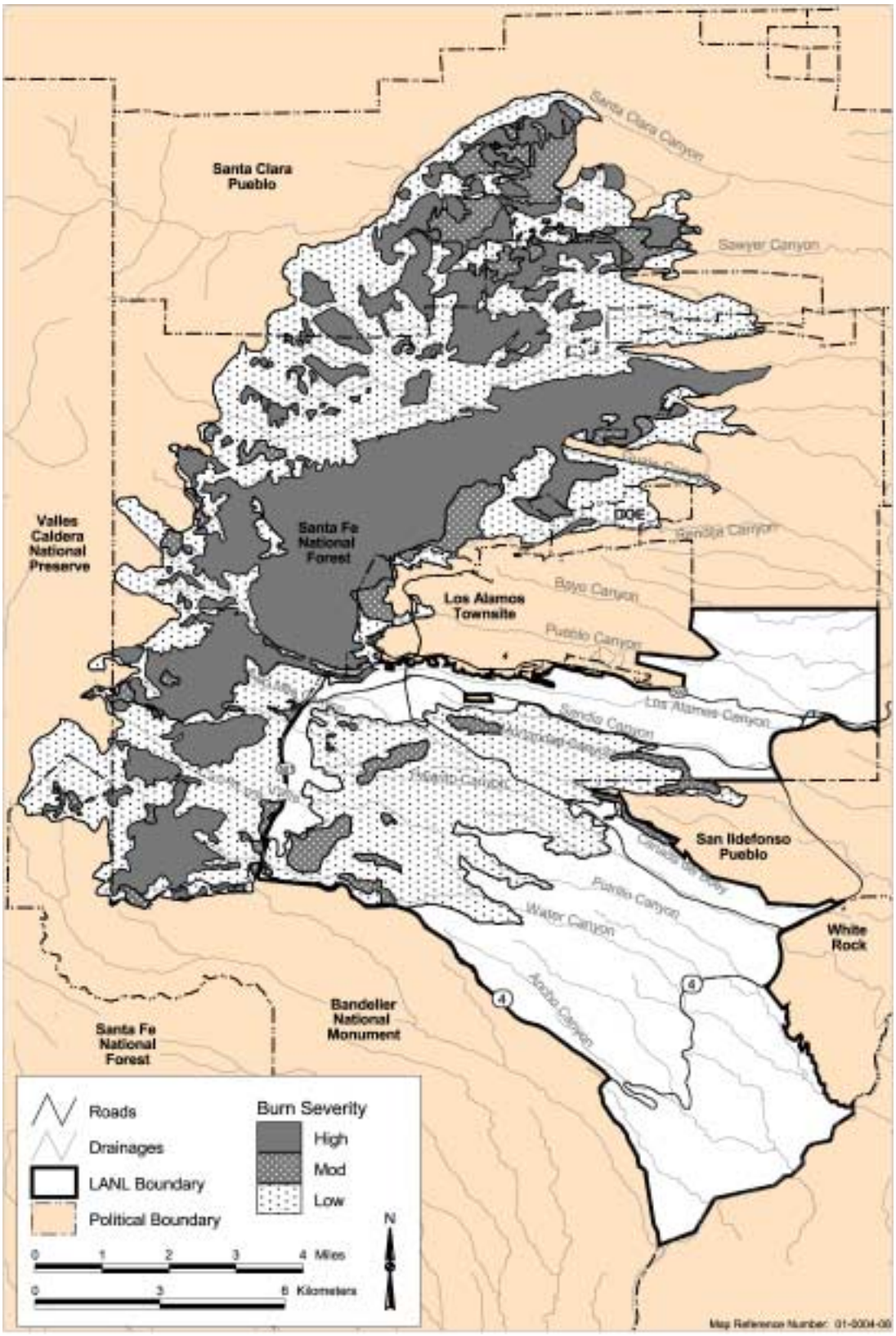

Figure 2. Burn severity categories of the Cerro Grande Fire

backup electrical supply in the event of electric power failure, together with a fuel storage tank capable of holding up to a four-day diesel-fuel supply. Food for EOC workers is provided from local restaurants and stores in either White Rock or Los Alamos townsite, as there is no provision for keeping food on hand or for cooking it at the EOC.

During the Cerro Grande Fire, the EOC was occupied periodically by up to about 75 staff members of the DOE, UC, County, and Department of Agriculture (Forest Service), as well as various Congressional members, other individuals, and organizational representatives. Fire twice burned through the canyon area immediately adjacent to the EOC forcing the partial evacuation of the EOC because of excessive smoke inhalation potential and possible destruction of the building housing the EOC itself. Most people within the EOC at the time of the partial evacuations were moved to an ad hoc facility in White Rock and to LANL's TA-49, Building 49-113, which is designated as the Alternate EOC. As soon as it was deemed safe, the people previously staffing the LANL EOC moved back to that facility in the basement of Building 59-01. The EOC was occupied on a 24-hour-a-day basis for a total of 16 days during the Cerro Grande Fire event and later during the emergency recovery period over the summer and into early fall 2000.

The use of the EOC for emergency response to the Cerro Grande Fire was found to be substandard and inadequate to meet the demands placed upon it during that extensive major disaster event. While the size of the facility and equipment provided, as well as the construction standards in use at the time it was established, may have been adequate to facilitate the scale of emergencies at LANL in the past, it was not able to appropriately facilitate the scale of emergency response predicated by the Cerro Grande Fire.

After the Cerro Grande Fire was under control, a comprehensive examination of the EOC was undertaken to identify the inadequacies of the facility, as well as the building structure itself. NNSA has considered the need to accommodate agency, interagency, and other personnel based on the potential for future emergency events. The events considered range from the high-frequency, low-consequence (HFLC) minor emergencies up to and beyond events similar in magnitude to the Cerro Grande Fire based on likely credible accident events identified for LANL. It was found that the building that currently houses the EOC is located within one radiological threshold for early lethality (TEL)[5] hazard circle and three chlorine TEL hazard circles, as well as numerous emergency planning zones (EPZs)[6]. There are only two routes of site access, which may render it inaccessible to key individuals during specific emergency situations. The EOC fails to provide the minimum capability or capacity requirements expected at LANL for many other reasons including (1) the EOC does not meet present day seismic construction standards for housing emergency operations centers; (2) its operation is totally

[5] For the purposes of determining EPZ, TEL applies to the general population and is intended to approximate the level of dose or exposure at which the sensitive groups within any large population would begin to show an increase in mortality. (Ref: DOE Guide 151.1-1, Volume II Hazards Surveys and Hazards Assessments.) This information is published annually by the Security and Safeguards Division in the Los Alamos Hazard Assessment Document to develop EPZs for Laboratory facilities.

[6] An EPZ is defined as a geographic area surrounding a specific DOE facility (LANL) for which special planning and preparedness efforts are carried out to ensure that prompt and effective protective actions can be taken to reduce or minimize the impact to Laboratory personnel, public health and safety, and the environment in the event of an operational emergency. Radiological and nonradiological releases are included in the determination of EPZs.

dependent on outside sources of food, water, sanitation needs, and diesel fuel (for periods of operation greater than four days in duration); (3) it does not have the required escape routes for EOC occupants as there is only one exterior building egress; (4) it does not meet Americans with Disabilities Act standards; (5) its ventilation system draws air from outside the building through HEPA filters subject to breaching and clogging, which can operate with a negative air pressure; (6) due to its location below ground level it could become filled with heavier-than-air gasses; (7) it is too small to accommodate more than 16 people comfortably in the performance of their duties during an emergency situation; (8) it has no dedicated provisions for 24-hour occupation by people staffing the EOC; (9) the communications system is limited and inadequate; (10) its physical space is not organized and physically arranged to facilitate multi-agency use; and (11) it is located within a flammable structure.

Los Alamos County has identified major inadequacies in the physical accommodations for emergency response personnel at County facilities. Additionally, a review of neighboring federal agencies on the Plateau revealed that their agency facilities in the LANL area were limited or they had no presence in the area immediately within their administratively-controlled boundaries.

Landowners and stewards of the Plateau, including Los Alamos County residents, remain very vulnerable to the occurrence of additional wildfires, flooding, mudflows, and avalanche, as well as to other potential natural disasters, such as earthquakes and wind storms. Efforts to reduce natural disaster vulnerabilities, including wildfire hazards, are being addressed as part of the recovery efforts from the Cerro Grande Fire. However, reductions of this nature will take a long time to achieve. The reductions in natural disaster vulnerabilities will not eliminate all natural disaster hazards, nor will it affect the ever increasing possibility for human-affected or human-induced emergency situations to arise. Thus, landowners and stewards of the Plateau have a continuing need for the capability to coordinate emergency response operations at LANL and integrating LANL's emergency preparedness activities and emergency response operations with those of surrounding communities on the Plateau and with other federal, state, and local agencies in emergency situations, including natural disasters such as the Cerro Grande Fire.

1.3 Statement of Purpose and Need for Agency Action

NNSA is charged with maintaining the capability and capacity required to support its national security mission assignments at LANL, including the arrangements necessary for emergency preparedness activities and emergency event(s) response in the case of human-caused or induced accidents and natural disasters. NNSA has identified insufficiencies and inadequacies of the existing EOC at LANL that need to be remedied. The existing EOC is vulnerable to large-scale disasters such as the Cerro Grande Fire or to potential natural disasters such as earthquakes. At the same time, and as was demonstrated during the Cerro Grande Fire emergency response operations, LANL's EOC is critical to integrating and coordinating emergency preparedness and emergency response actions with other neighboring government entities and neighboring communities on the Plateau by providing them with use of the EOC.

1.4 Scope of This EA

A sliding-scale approach (DOE 1993) is the basis for the analysis of potential environmental and socioeconomic effects in this EA. That is, certain aspects of the Proposed Action have a greater potential for creating environmental effects than others; therefore, they are discussed in greater detail in this EA than those aspects of the action that have little potential for effect. For example, implementation of the Proposed Action would affect visual resources in the LANL area. This EA, therefore, presents in-depth descriptive information on these resources to the fullest extent necessary for effects analysis. On the other hand, implementation of the Proposed Action would cause only a minor effect on socioeconomics at LANL. Thus, a minimal description of socioeconomic effects is presented.

When details about a Proposed Action are incomplete, as a few are for the Proposed Action evaluated in this EA (for example, the exact height of the proposed structures), a bounding analysis is often used to assess potential effects. When this approach is used, reasonable maximum assumptions are made regarding potential emissions, effluents, waste streams, and project activities (see Sections 2.0 and 4.0 of the EA). Such an analysis usually provides an overestimation of potential effects. In addition, any proposed future action(s) that exceeds the assumptions (the bounds of this effects analysis) would not be allowed until an additional NEPA compliance review could be performed. A decision to proceed or not with the action(s) would then be made.

1.5 Public Involvement

NNSA provided written notification of this NEPA analysis to the State of New Mexico, the four Accord Pueblos (San Ildefonso, Santa Clara, Jemez, and Cochiti), the Mescalero Apache Tribe, and to more than 30 stakeholders in the area on February 12, 2001. Upon the release of this draft EA, NNSA will provide stakeholders with a 21-day review period, during which comments on the draft document will be accepted from the state, pueblos and tribes, and other LANL stakeholders. Where appropriate and to the extent practicable, concerns and comments will be considered in the final EA.

This Page Intentionally Left Blank

2.0 Description of the Proposed Action and Alternatives

This chapter describes the Proposed Action, the No-Action Alternative, and alternatives considered but eliminated from detailed consideration. Section 2.1 describes the Proposed Action, the construction and operation of a new Center that would allow NNSA to meet its purpose and need for agency action. The No-Action Alternative is presented in Section 2.2 as a baseline to compare with the consequences of implementing the Proposed Action. The No-Action Alternative would involve continued operations at the existing LANL EOC. Alternatives that were considered but not analyzed further in this EA are discussed in Section 2.3. These alternatives include (1) upgrading the existing EOC; (2) using other existing space at LANL and within Los Alamos County; (3) choosing alternate new Center locations at LANL and within Los Alamos County; and (4) enhancing the use of the Alternate EOC at TA-49. Related NEPA compliance analysis at LANL includes the *Final Site-Wide Environmental Impact Statement for the Continued Operation of the Los Alamos National Laboratory* (SWEIS), which is identified in Section 2.4.

2.1 Proposed Action—Construct and Operate an Emergency Operations Center at TA-69, LANL

The Proposed Action is the construction and operation of a new Center at TA-69 at LANL (Figure 3). The Center would include the main emergency operations building, a garage, parking lot, fire suppression water storage tank, antenna tower, and electric, data and communications, and gas line utility connections. The new Center would be designed as a state-of-the-art multi-use facility housing about 30 fulltime UC staff and Los Alamos County (or their contractors) staff. The new Center would house UC and County personnel (or their contractors or subcontractors) on a seven days per week, 24 hours per day basis. Under normal operating conditions, the facility would serve as the County fire, police, and 911-dispatch center and the administrative offices for the LANL Emergency Management and Response staff. Up to about 120 LANL, federal, state, local, and tribal representatives may be accommodated at the Center in the event of an emergency on the general scale of the Cerro Grande Fire. The new Center would be designed in accordance with DOE Order 420.1, *Facility Safety*, and its associated Guides and Standards to meet and withstand, to the extent practical, any anticipated emergency such that emergency response actions would likely not be compromised by the emergency itself. Such emergencies could include natural phenomena events in which occupants may be sustained for up to 14 days with filtered air and backup building services with restricted potable water use conditions.

The minimum NNSA emergency response functions at the new Center would be emergency management, facility operations, emergency assessment, taking protective actions, and joint dispatch operations. The Center would support response to both HFLC events and low-frequency, high-consequence (LFHC) events. HFLC events could include such events as the discovery of suspicious packages, minor fires, spills, injuries, and vehicle accidents. LFHC events could include earthquakes, floods, wildfires, major structural fires, and explosions. The proposed Center would also be used for coordinating LANL Security response to large-scale security incidents. The Center would be securable during certain types of emergencies, provide secure communications with outside and inside entities, and accommodate secure discussions on-

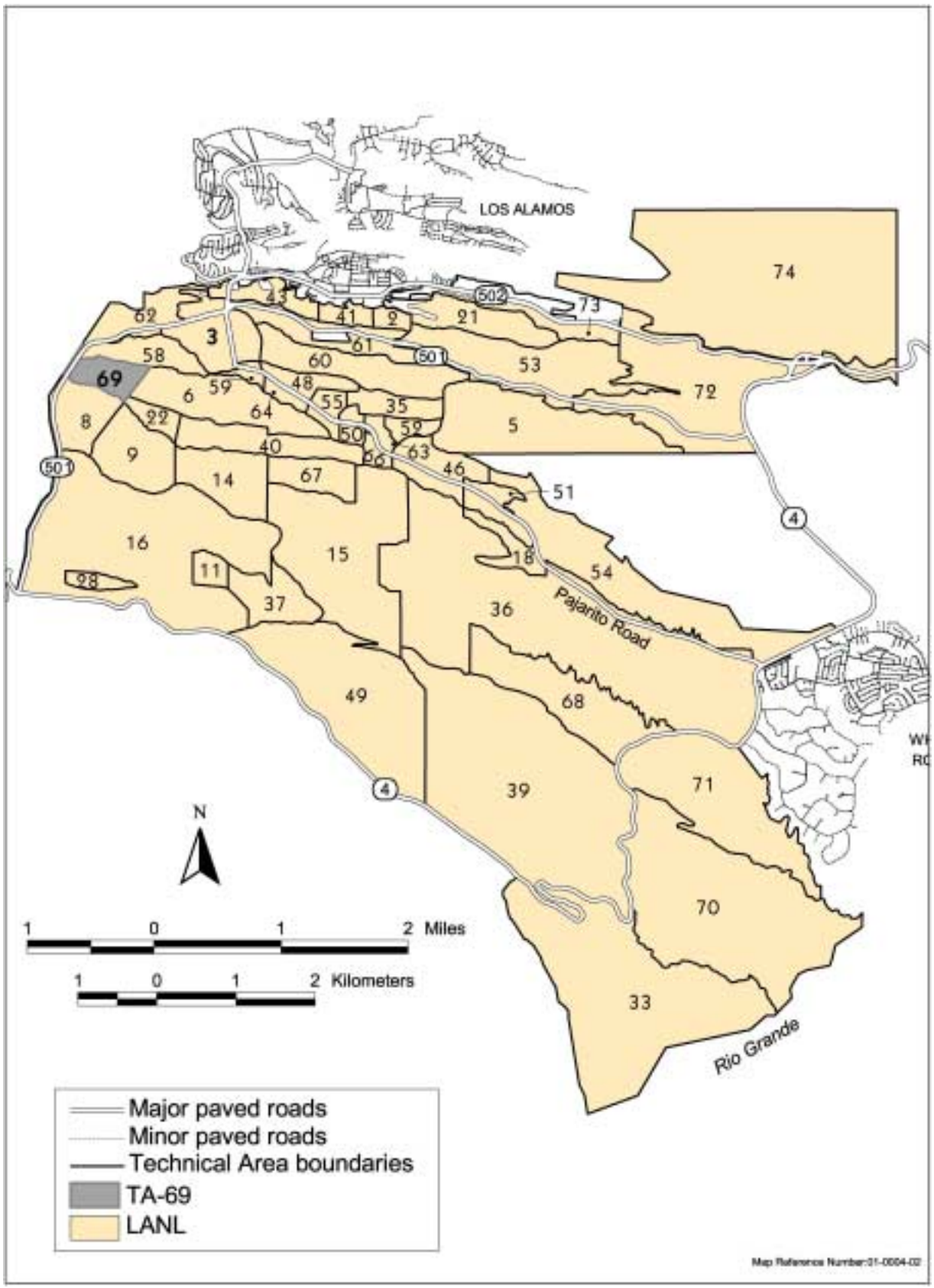

Figure 3. Technical areas at LANL with TA-69 highlighted

site. Construction of the Center and associated structures and utility connections would occur over about a two-year period. Construction is planned to begin in 2002.

2.1.1 Proposed Location of the New Center

The proposed site for a new Center is located within TA-69 just west of Guard Station 502, Building 69-0004, on Anchor Ranch Road, the entry point for secure LANL areas. Primary access to this site would be either from the north from West Jemez Road (State Road [SR] 501) via the LANL area, which would connect it to both of the communities of Los Alamos townsite and White Rock; or from the south on West Jemez Road (SR 501), which would connect it to Bandelier National Monument and the village of Jemez Springs (Figure 4). In addition, there are two internal LANL roads that provide access to the site through the interior of LANL. Anchor Ranch Road crosses TAs 69, 6, 40, 67, 15, 36, and 18 to provide access to Pajarito Road and beyond; and an unpaved and unimproved extension of Mercury Road, which crosses TAs 69, 58, and 3 with access to Diamond Drive and beyond. This second road, which is about 1 mile (mi) (1.6 kilometers [km]) long, would be improved through the application of asphalt, together with any required drainage ditches or culverts, to allow all-weather site access as a part of this Proposed Action. In all, there would be four means of access to the Center site making the new Center easily accessible to people required to staff response actions to bring into control an emergency situation at LANL and at nearby off-site locations.

The proposed building site is located within two TEL hazard circles for chlorine (due to the Los Alamos County potable water treatment facility and associated storage tank nearby); a single 1-rem radiological TEL hazards circle (due to operations in the TA-3 Chemistry and Metallurgy Research CMR Building); and three EPZ circles (due to nearby TA -3 test facilities that use beryllium). The Center would be located upwind from LANL facilities where potentially hazardous releases could occur during accident events about 87 percent of the time based on a LANL 25-year wind study. By comparison, the existing EOC is located within a greater than 100-rem TEL hazard circle (due to CMR Building operations), within three TEL hazard circles for chlorine (due to chlorine used at potable water treatment facilities within Los Alamos County and due to activities at LANL's TA-55 Plutonium Facility) and within numerous EPZ circles (due to a variety of LANL facilities nearby). The EOC would only very rarely be located sufficiently upwind from LANL facilities where potentially hazardous releases could occur during accident events. As a best management practice (BMP), the occupied building would be sited and built no closer than 50 feet (ft) (15 meters [m]) from a known fault line. This would provide additional safety beyond the design and construction of the Center.

2.1.2 Site Preparation and Construction

Site Preparation

An area of approximately 5 ac (about 2 ha) would be disturbed for building construction, parking, and utility and communication lines (Figure 5). The proposed construction site is undeveloped, so there would be no demolition activities involved as part of the Proposed Action. The building site was previously disturbed and tree thinning has recently occurred in this area. The Proposed Action site is not known to contain any potential release sites (PRSs). Nevertheless, the potential exists that construction-related activities such as soil excavation could result in the discovery of previously unknown hazardous, toxic, or radioactive material. If such material were discovered, it would be removed and disposed of in accordance with all applicable laws and regulations and in accordance with LANL's waste management program. Trees would

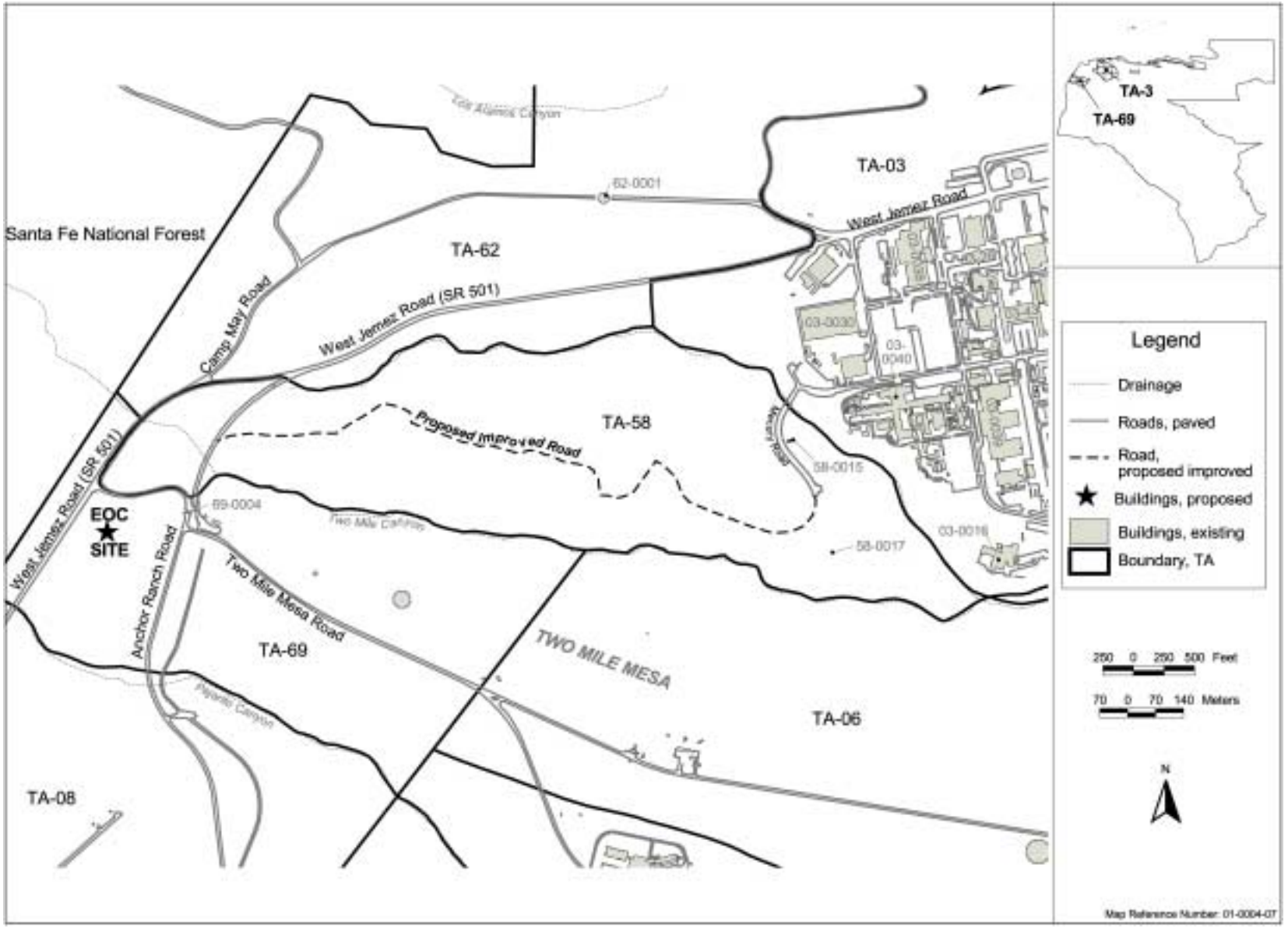

Figure 4. Center road access map

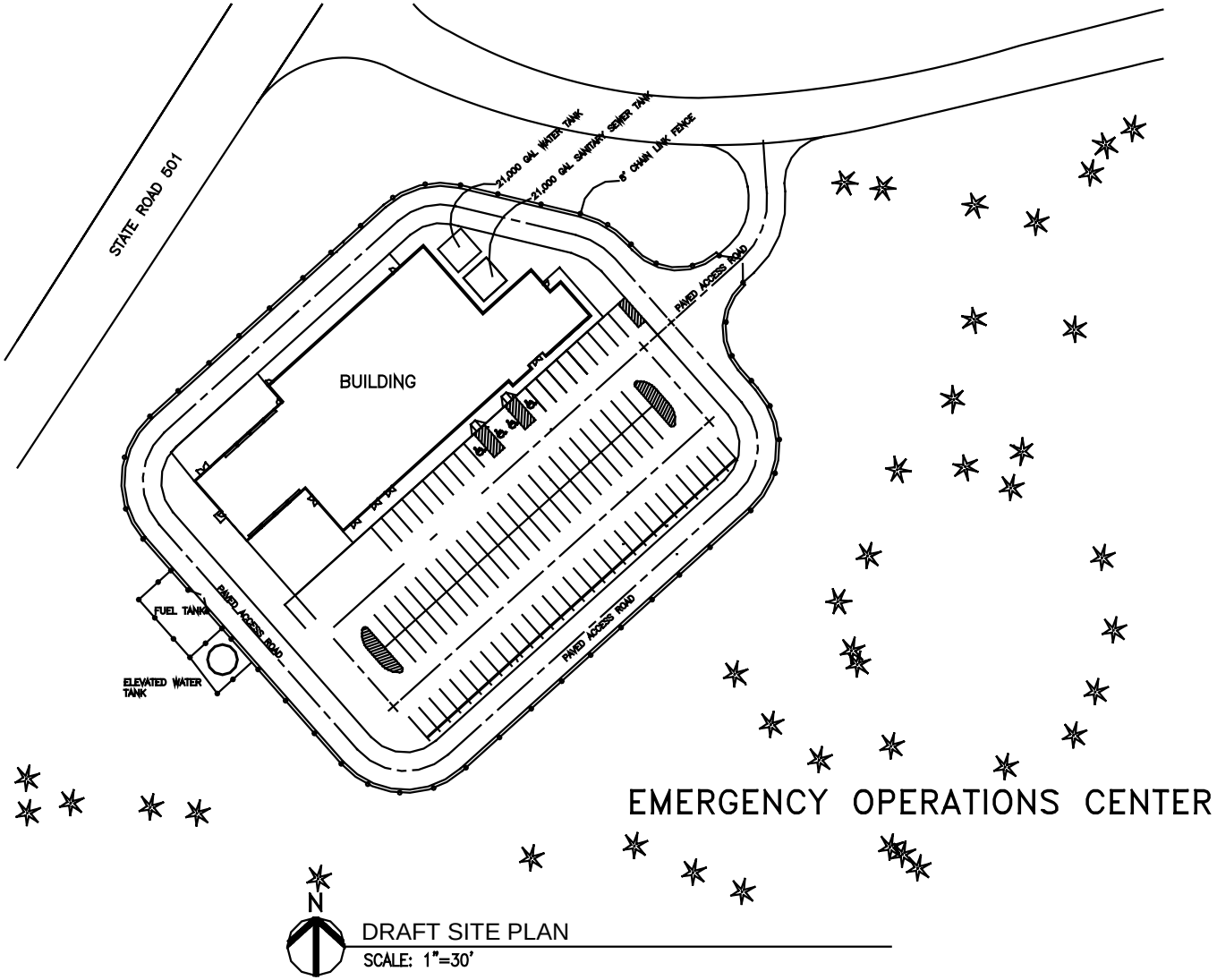

Figure 5: Conceptual draft site plan

be removed from within 100 ft (30 m) of the building footprint to reduce fuel loading at the Center. Historic explosive testing within the general area may have resulted in shrapnel contamination on these trees. These trees would be disposed of according to LANL's Wildfire Hazard Reduction Project Plan (LANL 2001a). Subsoil would be excavated as required for the building foundations and footings, fuel oil storage tank, potable water storage tank, sanitary waste storage tank, fire suppression water storage tank, radio antenna, and utilities. The excavated soil would be backfilled to level the site. Small amounts of waste generated during construction, such as packaging and strapping material, excess gypsum board pieces, broken or bent nails and screws, and empty material containers would be disposed of at the Los Alamos County Landfill or its replacement commercial facility. The lay down construction area, storage and construction worker parking would all be located within the building site. A temporary construction office trailer would also be located on site.

No known cultural resource sites are within the proposed construction site. Excavation activities during site preparation have the potential to encounter previously buried, culturally-significant materials. If buried materials or remains of cultural significance are encountered during construction, activities would cease until their significance was determined and any appropriate actions were undertaken.

There are no floodplains or wetlands affected by this project. The construction site is outside potential habitat areas of plants and animals that are designated as federally protected threatened and endangered species by the Endangered Species Act of 1973, as amended (50 CFR 17.11).

Throughout site preparation and construction activities, heavy equipment including backhoes, graders, concrete mixers, paving equipment, cranes, and other similar equipment could be used. Standard dust suppression methods (such as water spraying) would be used to minimize the generation of dust during all phases of construction activity. Noise at the site would occur mainly during daylight hours and would be audible primarily to the involved workers. Vehicles would operate primarily during daylight hours and would be left on-site overnight. Activities that generate construction noise would be restricted as much as possible at night. Construction equipment would be well maintained and kept as quiet as reasonably possible. Worker protection from noise would be provided in the form of earmuffs or earplugs depending on expected noise levels. Workers would also be required to wear additional personal protective equipment such as steel-toed boots, hard hats, and eye protection as necessary.

A Storm Water Pollution Prevention Plan (SWPPP) would be in place for the site during construction and various storm water control measures BMPs would be installed as identified in the SWPPP. These BMPs generally consist of bales of straw, silt fencing, and the use of plywood diversion panels that keep silt from leaving the site and ultimately from being drawn to any water stream.

Construction

The proposed Center building (see Figure 5, Conceptual Site Plan) would be a multistory building about 50 ft (15 m) in height and would have about 30,000 ft^2 (2,700 m^2) of usable interior floor space. The Center would consist of two distinct structural elements (see Figures 6 and 7). The first element would be the two-story primary and secondary situation rooms, which

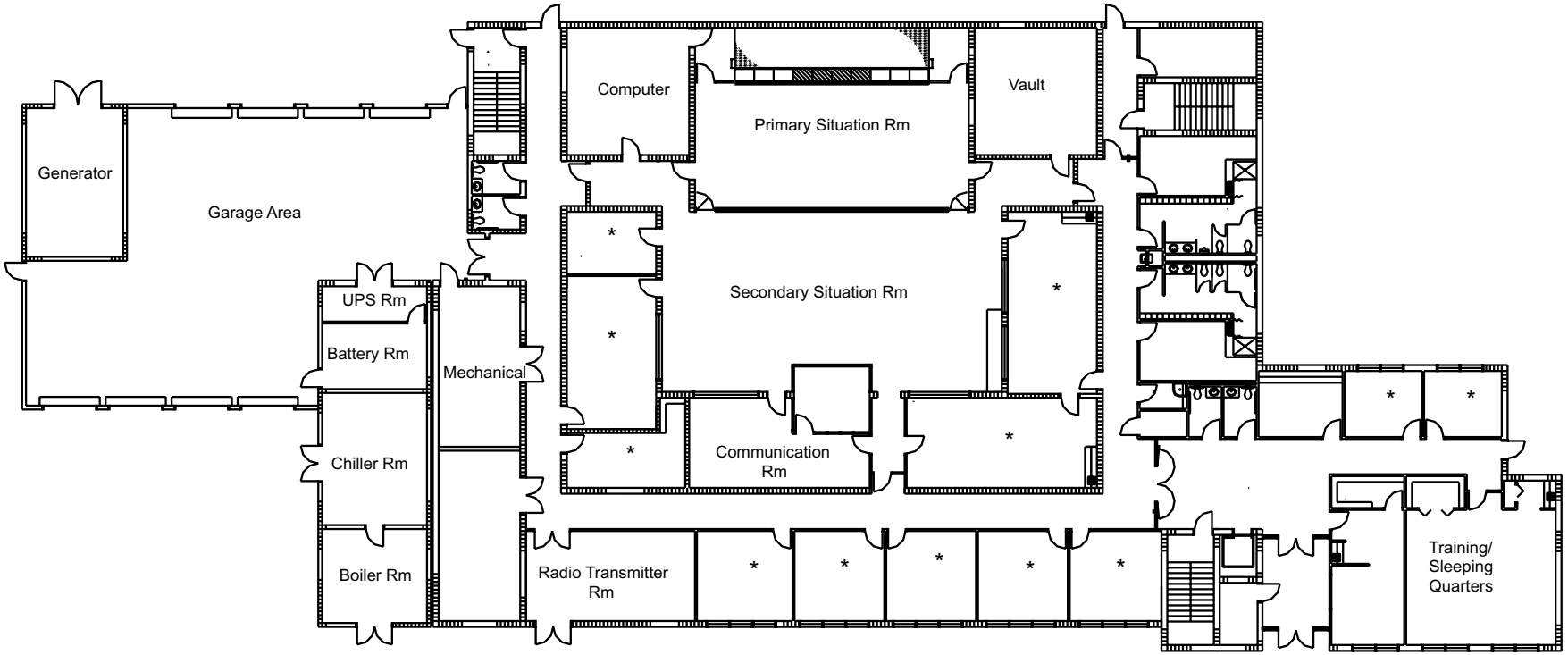

Figure 6. Conceptual draft - First floor plan

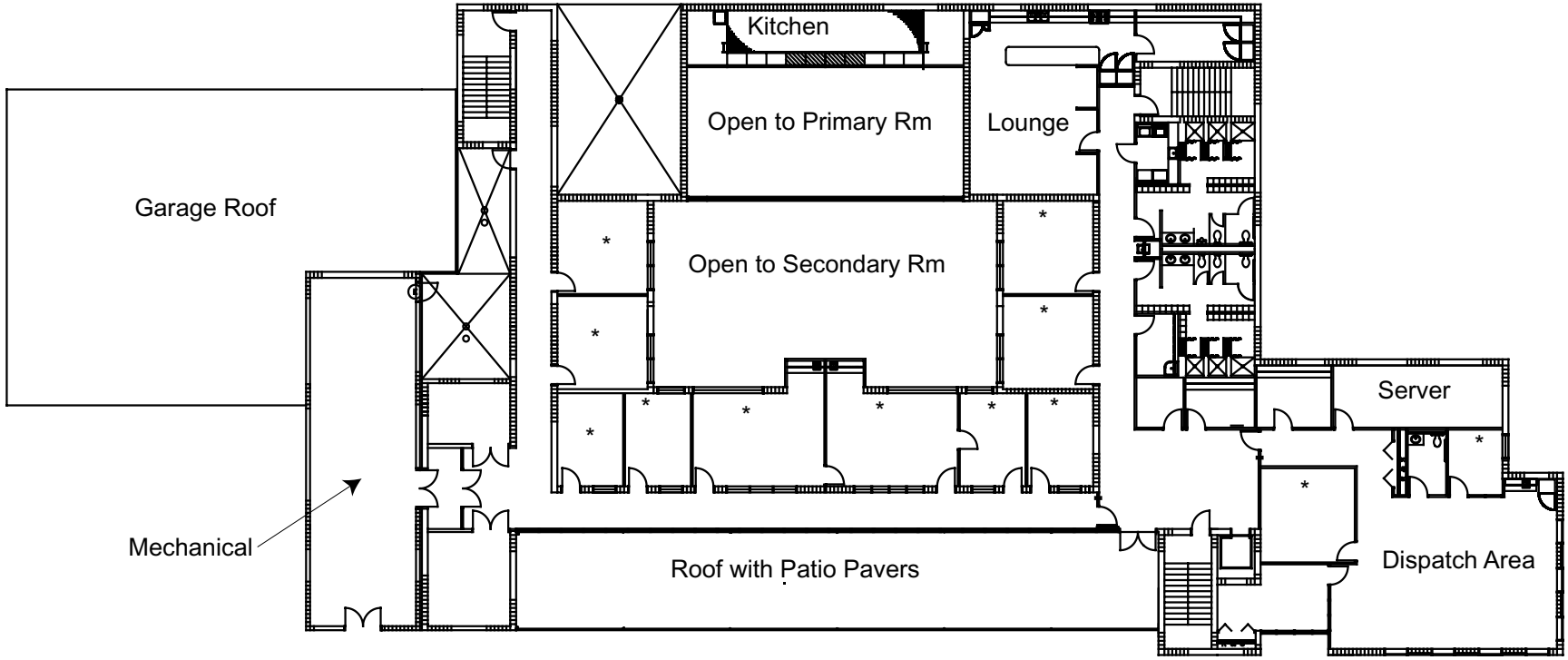

Figure 7. Conceptual draft - Second floor plan

would be the central core of the entire structure. The second element would consist of a series of office spaces surrounding the perimeter of the Center core. Additional descriptions of the Center's rooms and associated features are discussed in detail in Section 2.1.3. The Center's design would include features that would allow the building to operate with maximum electric and water use efficiencies and would incorporate recycled and reclaimed materials into its construction. For example, the new Center would incorporate fire-retardant building and finish materials, carpets and furnishings made of reclaimed and recycled materials, low-flow lavatory fixtures to minimize potable water use, and energy-efficient lighting fixtures and equipment to reduce energy consumption. The finished landscaping of the involved construction area would utilize captured precipitation, reused and recycled materials, and native plant species. Other operational administrative activities (such as recycling) would be employed at the building that would enhance the overall LANL waste minimization effort and efforts to reduce the use of potable water and energy resources.

The interior two-story walls of the primary and secondary situation rooms would be solid grout-filled concrete masonry unit (CMU) construction or concrete cast-in-place walls. The exterior wall system of the Center would also consist of CMU construction or concrete cast-in-place walls. Non-structural interior walls will be constructed of gypsum board on steel studs. The foundation system for the entire building would consist of cast-in-place concrete. An enclosed garage space no more than 50 ft (15 m) tall with radiant gas heat would be provided to store six emergency response vehicles and, at a maximum, a 24-ft (7-m) trailer. The garage may be constructed attached to the facility or may be a free-standing, pre-engineered structure.

An asphalt paved parking area for about 130 vehicles would be included as part of the Proposed Action. This area would include four handicap parking spaces and one van-accessible space adjacent to the Center building. Depending on the final design for this project, the parking lot may be able to accommodate a helicopter landing in the lot during an emergency. A 120,000-gallon (gal.) (456,200-Liter [L]) fire suppression water storage tank to service the new Center would also be constructed. This tank would be constructed at the edge of the building site away from the Center and across a slightly lower topographic depressed area. If elevated, the water tank would extend no higher than 150 ft (45 m) above grade. An all-weather access road would be installed to provide vehicle access to the tank and drainage improvements would be made to control runoff from the site. The tank may also serve as the support structure for antenna equipment. The new Center building, parking lot, and fire suppression water storage tank would be located within a standard 8-ft-high (2-m-high) industrial security fence with an electronic gate for access control.

No potable waterlines exist in the vicinity of the proposed Center. The closest available potable water service is located at the TA-69 potable water storage tanks along Two-Mile Mesa Road, about 2,400 ft (720 m) from the site. The Proposed Action would provide a pump station installed at the TA-69 tank site. A trench would be excavated and a water service pipe laid from this potable water storage tank to the site to provide potable water service to the Center. A 21,000-gal. (79,800-L) buried potable water storage tank would be installed at the Center to furnish water for 14 days use to Center occupants under restricted water use conditions.

No sanitary sewage facilities are located adjacent to the new Center. At the Center site a new sewage lift station would be installed to transfer flow to a new 8-inch (in.) (20-centimeter [cm])

sanitary sewer line installed along Anchor Ranch Road to Two-Mile Mesa Road where it would connect to an existing 6-in. (15-cm) force main in TA-22. This would require trenching and pipe line installation along a distance of about 4,500 ft (1,350 m). Because of the possibility of power failure at downstream facilities during emergency event conditions, a 21,000-gal. (79,800-L) buried sewage storage tank would be installed at the Center. Flow would be diverted to this tank in the event of loss of downstream lift stations and it would be pumped dry upon restoration of service or as needed. The Center's sanitary waste water needs would normally be accommodated by the LANL sanitary waste consolidation facility located at TA-46.

No natural gas service is adjacent to the Center site. The nearest service is a 12-in. (30-cm) diameter, 100 pounds per square inch line that crosses Two-Mile Mesa Road about 3,300 ft (990 m) from the site. A trench would be excavated and a 2-in. (5-cm) diameter line would be installed to service the Center from this 12-in. (30-cm) distribution line.

The electrical power supply to the Center would originate from an existing overhead distribution 13.2-kilovolt feeder located near West Jemez Road. About 4,300 ft (1,312 m) of trenching would be required to install a new communications duct bank, which is an underground array of conduits or ducts for communication service. This duct bank trenching would cross Anchor Ranch Road to connect to the TA-22 utilities duct bank. The majority of the duct bank would be installed along existing utility corridors.

The access road from TA-3, which is currently a mostly unimproved dirt roadway extension of Mercury Road, would be resurfaced using asphalt. Heavy equipment including dump trucks and asphalt-laying equipment would be required for a short period of time to upgrade this about 1 mi (1.6 km) length of road.

The Center site would be restored using plant materials. Native grasses, plants, and shrubs would be planted as appropriate.

2.1.3 Center Description and Operations

The proposed Center would be an approximately 30,000-ft^2 (2,700-m^2) multistory structure. To meet programmatic goals for emergency management, the Center would be designed as follows (see Figures 6 and 7):

Situation Rooms – The Center would be designed with primary and secondary situation rooms (also known as primary and secondary EOC) on the first floor. The primary situation room would be the strategic and logistics command center for 16 senior management and policy makers, and the secondary situation room would provide the strategic and logistics support for primary emergency operations. While these two distinct spaces would have occupants and activities specific to each, they would be separated by a partial glass wall. This would allow people located in the secondary situation room to have a view of the electronics and graphics displays in the primary situation room. During non-emergency operations, these rooms would be used for meetings or training purposes.

Conference Rooms – Two large conference rooms (each about 500 ft^2 [45 m^2] in size) and two small conference rooms (each about 375 ft^2 [34 m^2] in size) would be located adjacent to the primary and secondary situation rooms. These rooms would be used as offices and

meeting areas under normal operations. During emergency operational status, these areas would provide workstation space for personnel that would staff the Center to support an emergency response.

Emergency Technical Support Room – Three to four persons would use this room on a fulltime basis. This room would serve the personnel that would provide background research and strategizing in support of the primary and secondary situation room decision-makers during an emergency response. Activities during an emergency situation could include consequence assessment, atmospheric modeling, inventory activities, utility information gathering, and strategizing protective actions. During emergencies, this room would be designed to accommodate about 20 persons.

Communication Room – This centrally located room would contain the necessary communications devices utilized during an emergency response. This room would include devices such as radio, satellite, and secure telephone systems.

Administration Space – Reception, offices, and training and storage rooms would be provided for the day-to-day operations and staffing of the Center. Each area would be flexible enough to function effectively for day-to-day operations and emergency responses.

Dispatch Area – The County fire, police, and 911 dispatch area would be located on the second floor of this facility and would be manned 24 hours per day, 7 days per week. Supervisor and support areas for this function would be included. The dispatch area would serve about two to six personnel during the day and two personnel at night.

Auxiliary Support Areas – The Center would also have areas that accommodate photocopiers and plotting equipment as well as necessary facilities for long-term occupancy. These would include locker rooms, a laundry room, and a kitchen. Space for electric power generators, mechanical, electrical, and data equipment, antennas, and a battery-operated uninterruptible power supply would be included.

Uninterruptible Electric Power Supply – An uninterruptible power supply (UPS) system would provide temporary backup power for the Los Alamos County dispatch area and for the Center computers. The UPS system would utilize gel cell batteries, which, unlike conventional acid-filled batteries, do not have liquid acid as an electrolyte for the chemical reactions that are required for the production of energy. The gel cell batteries are less prone to produce hydrogen gas during the charging cycle and, since there is not a liquid to evaporate, the maintenance on the cells is less than that of a standard acid filled storage cell.

The Center would be designed to allow continued operation in a “safe status.” Response of a facility to hazardous material requires one of two immediate protective actions: shelter-in-place or evacuation. The Center would be designed with “safe status” features that would provide the capability of operating the ventilation system in a number of different modes, allowing different levels of shelter-in-place protective actions.

The heating, ventilation, and air conditioning (HVAC) system would be designed to draw air from the outside through a standard set of dust type filters or a set of specialty filters. During normal operations, none of the specialty filters or "safe status" features would be used. In the

event of a hazardous materials release, the specialty filters could be used to filter out airborne particulates of varying sizes, certain acidic gases, sulfur and nitrogen oxides, and sparks or flammable solid material. The HVAC system could also be secured from the outside air by shutting a set of dampers and recirculating the inside air through specialty filters designed to remove particulate materials or remove certain gases. In coordination with the filters, a door monitoring system would be used to ensure that makeup air was only coming from the specialty filters and not through open doors. The door indicators would indicate any open door and administratively controls would ensure that all doors remain shut.

If conditions worsened or if the system was allowing the buildup of particulates or gases, the doors would be shut and the suction dampers could be closed and all ventilation fans secured. All openings to the outside would be sealed to the extent practical. If inside air monitoring showed dangerous levels of gas or particulates, the building and area would be evacuated.

In order to make the facility habitable for emergency responders for up to 14 days, the Proposed Action would also include the following:

Backup Diesel Generator – A diesel generator system for emergency electrical power would be located in a segregated area of the Center. This area would only be used to house the diesel generator and associated ancillary equipment including spare parts. Additionally, an approximately 200-gal. (760-L) free-standing, double-wall, steel, fuel-oil immediate-use tank would be provided in the diesel generator room.

Dual-Fuel HVAC Boilers – Steam heating for the building would be provided by installing two dual-fuel natural gas and diesel-fired hot water boilers located in the boiler room. During normal operating conditions, natural gas would be used. During emergency conditions, diesel fuel may be used. The two boilers and their immediate-use fuel tanks, one 50-gal. (189-L) tank for each boiler, would be located in the boiler room.

Fuel Oil Storage Tank – A 50,000-gal. (190,000-L) fuel oil storage tank would be installed to provide fuel for backup diesel electric power generator and HVAC hot water boilers. The tank would be a remote, double-walled steel tank located either above ground or in a below grade concrete vault. If this tank is located below grade, the concrete vault would be sized to contain 110 percent of the volume of the steel tank and allow for visual inspection of the tank as needed.

Fire Suppression Water Storage Tank – At the Center, a 120,000-gal. (456,000-L) capacity, at grade or elevated, fire suppression water storage tank would be installed to reliably provide fire suppression water flow. If elevated, the water tank would extend no higher than 150 ft (45 m) above grade. The tank would be designed and painted a color to visually blend into the background.

Potable Water Storage Tank – A 21,000-gal. (79,800-L) buried or ground level potable water storage tank would be installed to provide potable water to emergency responders occupying the Center for up to a 14-day supply under restricted use conditions. A booster potable water pump would be installed to provide water to the building and a non-gaseous rechlorination facility would be installed as well.

Antenna Systems – The antenna systems for the communications systems at the Center would be mounted to either the Center building, the fire suppression water storage tank, or on a free-standing tower. The antennas would extend no higher than 150 ft (45 m) above grade regardless of their mounting location. These antenna systems may include VHF and UHF, satellite phone, GPS, digital cellular phone, microwave, satellite cable television, amateur radio, and local trunk radio.

Operations

The Center would be designed to operate as a typical office building, which, together with the garage, would have a minimal lifetime use expectancy of about 30 years of operation. At the end of each facility's useful life, final decontamination and demolition would be performed as needed. A separate NEPA compliance review would be performed at that time. During the operational life of the building and various structures, the performance of routine maintenance actions would be expected. No radioactive and only limited amounts of hazardous materials common to office buildings for equipment use and structure upkeep and maintenance would be stored in the Center.

Operation of the Center would increase traffic in the immediate site area with about 30 staff reporting to this building during normal working hours. About 15 vehicles would be introduced into the local traffic volume (assuming a 0.45 vehicles per employee ratio). During emergency conditions when a much larger number (up to 120) personnel and their automobiles could be involved, general through traffic may be restricted in this area or blocked entirely.

The Center, support equipment, and related utility equipment would be located within a fenced Property Protected Area for security purposes. Two motorized gates would control access and egress to and from the facility. The primary entrance to the facility would contain badge readers that would control access through the entrance portal's outer doors. A vault and crypto room would be used to maintain LANL classified information and provide appropriately cleared personnel a secure location to discuss and disseminate sensitive information that may arise during an emergency situation. Exterior cameras would be installed and configured such that complete video coverage would be realized throughout the facility's fenced boundary. Exterior perimeter illumination would be present on-site and would coordinate with security camera placement. The facility would be continuously lit, but the lighting would be directed towards the facility and away from roads and canyons as much as possible.

2.1.4 Disposition of the Existing EOC (TA-59, Building 1)

The present EOC space would be remodeled and then reused for offices by other LANL personnel. Some specialized furniture could be moved to the new Center, but no excess waste equipment or furnishings is anticipated. Waste volumes generated during remodeling activities are not expected to exceed 100 yd^3 (36 m^3).

2.2 No-Action Alternative

Under the No-Action Alternative, the EOC would continue to be used as it is currently configured. This is not an alternative that meets NNSA's purpose and need for action. Under this alternative, no reconfiguration of the existing EOC would occur. The EOC would fail to

meet programmatic needs because (1) the EOC does not meet present day seismic construction standards for housing emergency operations centers; (2) its operation is totally dependent on outside sources of food, water, sanitation requirements, and diesel fuel (for periods of operation greater than four days in duration); (3) it does not have the required escape routes for Center occupants as there is only one exterior building egress; (4) it does not meet Americans with Disabilities Act standards; (5) its ventilation system draws air from outside the building through HEPA filters subject to breaching and clogging, which can operate with a negative air pressure; (6) due to the its location below ground level it could become filled with heavier-than-air gasses; (7) it is too small to accommodate more than 16 people comfortably in the performance of their duties during an emergency situation; (8) it has no dedicated provisions for 24-hour occupation by people staffing the EOC; (9) the communications system is limited and inadequate; (10) its physical space is not organized and physically arranged to facilitate multi-agency use; (11) it is located within a flammable structure; and (12) it is within four TEL hazard circles and numerous EPZs with only two routes for site access.

2.3 Alternatives Considered but Dismissed

2.3.1 Upgrade Existing EOC

The Upgrade Existing EOC Alternative would involve continued use of the existing EOC facility with upgrades. Potential upgrades could include the construction of another exit for a secondary escape route, construction ramps and other requirements of the Americans with Disabilities Act, installation of air sensors and an additional air monitoring and air handling system to detect or remove gases, construction of additional space, and installation of more communications equipment. This alternative would also require a total upgrade of the sanitary system, potable water supply, electrical distribution system, and other infrastructure to bring the systems up to the present life safety and building codes. The cost to upgrade the existing EOC to meet life safety and building codes and seismic requirements would be more costly than building a new facility. In addition, the upgraded EOC would still not meet current seismic codes leaving it vulnerable to earthquakes, and would remain within multiple TEL circles and EPZs, which could render the building inaccessible during many hazardous material emergencies. The EOC facility would continue to be too small to reasonably provide adequate space for all the personnel present during an emergency. Also, the EOC facility could not be reorganized to accommodate multiagency use or for overnight occupation by staffing personnel. The EOC would also still be located in a flammable structure.

Upgrade Existing EOC was dismissed as an alternative because the EOC would continue to fail to provide the capability to meet requirements expected. This alternative does not meet NNSA's purpose and need and is not analyzed further in the EA.

2.3.2 Use of Other Space at Alternate Locations at LANL or within Los Alamos County

NNSA has determined that no suitable space of a size greater than the existing EOC was identified as being available within LANL. No other suitable adequate space to lease or purchase was immediately available in Los Alamos County. Additionally, other potential existing locations within Los Alamos County and LANL had access limitations that made them undesirable for use as an EOC. Given the security requirements, the cost of appropriately

equipping a rental space, such as in the Los Alamos Research Park, would not be fiscally prudent. This Alternative does not meet NNSA's purpose and need and is not being analyzed further in this EA.

2.3.3 Construct a New Center at Alternate Locations at LANL or within Los Alamos County

Originally six general site locations were identified by NNSA and the County as possible sites for a new Center based on very general criteria of ease of accessibility for persons without a NNSA security clearance; availability of ingress and egress routes; and availability of adequate site acreage. These sites were located across both LANL and Los Alamos County. A further screening matrix identifying site use limitations, health and safety considerations, and environmental sensitive resource considerations was developed to weigh the six general sites. Based on these site characteristics, all but one of the general areas was eliminated from further consideration. Five specific building locations within the best general area were then identified. These potential site locations were then reviewed and scored using a matrix of hazards and considerations. Based on the site use limitations and other site considerations, the most suitable location that offered the most site advantages was chosen as the Proposed Action location (LANL 2001b PM-1 Division Approved Siting Notification). There is no viable site within the Laboratory or Los Alamos County that would not be within chlorine hazard circles.

The building that currently houses the EOC could be demolished and a new EOC could be constructed on the existing spot. The new structure could be built to all applicable life safety and building codes and could be designed to meet seismic requirements. Provisions could be added to meet the 14-day habitability requirement including supplies of food, water, sanitation, filtered air, showers, berthing, backup power, and other systems that do not exist in the present EOC. However, the physical location of the building renders the present location unsuitable for an EOC. The EOC is located in an area between Category 2 nuclear facilities[7], and within several TEL circles, threatening the lives of the EOC occupants and hampering the ability to respond to emergencies. Persons who would occupy the EOC in emergency conditions could be exposed to higher radiation doses in the process of reporting to the EOC. Additionally, hazardous materials, both chemical and radiological, are routinely transported on the road directly adjacent to the EOC. Any hazardous material, accident on this road, or releases from any of seven individual facilities could render the EOC uninhabitable and therefore useless as a controlling center. Upgrade

Based on this site determination process, locating the EOC at another site may have resulted in either slightly greater or lesser environmental effects to specific resource areas than the Proposed Action analyzed. However, due to the overall similarity of possible sites considered from an environmental setting viewpoint, it is likely that other sites would have resulted in very similar overall environmental effects. From that standpoint the site proposed is representative of the six general site locations originally identified for consideration. Therefore, additional sites around LANL and Los Alamos County are not considered further in this EA analysis.

[7] Category 2 Nuclear Hazard – has the potential for significant onsite consequences. DOE-STD-1027-92 provides the resulting threshold quantities for radioactive materials that define Category 2 facilities.

2.3.4 Enhanced Use of the Alternate EOC at TA-49

In the event that the primary EOC is unable to be used, LANL emergency response operations are coordinated through the Alternate EOC. This dedicated Alternate EOC is located at TA-49, which is 10 mi (16 km), normally upwind, from the core LANL TA-3 area. The facility is within a fenced site and the building is separated from other buildings. The Alternate EOC may be further secured, and is well ventilated. The Alternate EOC is well equipped and, with few exceptions, as operational as the primary location. It can accommodate 60 people maximum. The Alternate EOC contains numerous multiple-line telephones, mobile and fixed radios with common frequencies, status boards (manned by administrative personnel for display of information), positions for the Emergency Management Team and administrative support personnel, and secure and open facsimile machines. If the nature of an emergency dictates, the alternate EOC may be secured commensurate with DOE policy and the LANL Security Plan for classified operations.

The secondary EOC is located at a distance that intentionally makes it remote for the purpose of survival from the various disasters that may affect the primary EOC. The remoteness of this structure renders it unacceptable as the primary EOC because of the following factors: (1) normal response time to the center of LANL is excessive; (2) response time of persons reporting to the EOC during activation is excessive; (3) utility infrastructure to the site is limited and major, costly improvements would be needed to meet current requirements. Additionally, major facility improvements would be needed to provide the habitability, filtration, power, food preparation, and other requirements of the present EOC. DOE Order 151.1 page IV-4 requires an alternate location for use if the primary command center (Primary EOC) is not available (Secondary EOC). The same identified problems already discussed in Sections 2.3.2 and 2.3.3 would result in this alternative not meeting NNSA's purpose and need for action. This alternative was not analyzed further in this EA.

2.4 Relationship to Other DOE NEPA Documents or Analysis

2.4.1 Final SWEIS for the Continued Operation of the Los Alamos National Laboratory (DOE/EIS-0238)

The final LANL SWEIS (DOE 1999), dated January 1999, was issued in February of that year. A Record of Decision (ROD) was issued in September 1999 and a Mitigation Action Plan was issued in October 1999. As discussed in these documents, DOE will continue operating LANL.

The SWEIS noted that DOE was then studying a variety of options for the renovation of infrastructure at LANL that would include replacing a number of aging structures either individually or as part of a multi-building effort (DOE 1999). Consideration of the proposed Center is now ripe for decision supported by this separate EA.

3.0 Affected Environment and Environmental Consequences

Chapter 3.0 describes the natural and human environment that could be affected by the Proposed Action and the No-Action Alternative. Based on the proposed project description, potential environmental resources that may be affected as a result of implementing the Proposed Action have been considered. Environmental issues were identified and either addressed in this chapter or not, based on the "Sliding Scale Approach" (see Section 1.4). Table 1 identifies the subsection where potential issues are discussed or notes why they are not addressed in this document.

Table 1: Environmental Issues Considered

Environmental Category	Applicability	New Center EA Section
Land Use	Yes	3.2.1
Traffic and Infrastructure	Yes	3.2.2
Visual Resources	Yes	3.2.3
Geologic Setting	Yes	3.2.4
Air Quality	Yes	3.2.5
Waste Management	Yes	3.2.6
Human Health	Yes	3.2.7
Socioeconomics	Yes	3.2.8
Noise	Yes	3.2.9
Ecological Resources, Wetlands, Floodplains	No. The proposed project would be located in a previously disturbed area. This building site is adequately distant from potential habitat for areas designated as sensitive habitat for Federally listed threatened and endangered species so that there are no special protective restrictions required regarding site activities. There are no floodplains or wetlands affected by this project, including the work on the unimproved road to TA-3.	N/A
Environmental Justice	No. Populations that are subject to Environmental Justice considerations are present within 50 mi (80 km) of Los Alamos County; potential effects of this project would be localized within a 10-mi (16-km) radius. Populations nearest to the construction site and within this radius are not predominantly minority and low-income populations.	N/A
Water Resources	No. There would be no effect on water quality and no increase in water use. A SWPPP would be developed to prevent sediment runoff into local streams.	N/A
Potential Release Sites	No. No PRSs have been identified in the area designated for the Proposed Action.	N/A
Cultural Resources	No. The Proposed Action would not affect cultural resources in this area. Significant archaeological resources are located in the vicinity of the proposed location for the Center but would be fenced and avoided during project construction activities to prevent inadvertent damage during construction activities.	N/A

3.1 Regional Setting

The Proposed Action would be located within the area of Los Alamos County that includes LANL. LANL is a government-owned, contractor-operated, multidisciplinary research facility that is located on 43 mi^2 (111 km^2) of land in north-central New Mexico approximately 60 mi (97 km) north of Albuquerque. It comprises a large portion of Los Alamos County and extends into Santa Fe County. LANL is situated on the Pajarito Plateau along the eastern flank of the Jemez Mountains and is divided into 49 technical areas. The Pajarito Plateau slopes downward

towards the Rio Grande along the eastern edge of LANL and contains several fingerlike mesa tops separated by relatively narrow and deep canyons.

Commercial and residential development in Los Alamos County is confined primarily to several mesa tops lying north of the core LANL development, in the case of the Los Alamos Townsite, or southeast, in the case of the communities of White Rock and Pajarito Acres. The lands surrounding Los Alamos County are largely undeveloped wooded areas with large tracts located to the north, west, and south of LANL that are administered by the Santa Fe National Forest, the National Park Service – Bandelier National Monument, and Bureau of Land Management to the east.

Detailed descriptions of LANL's natural resources environment, cultural resources, socioeconomics, waste management, regulatory compliance record, and general operations are described in great detail in the *Site Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory* (DOE 1999a). Additional information is available in *Environmental Surveillance and Compliance at Los Alamos During 1999 – 30th Anniversary Edition* (LANL 2000a) and the *Special Environmental Assessment for the Department of Energy, National Nuclear Security Administration – Actions Taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico,* (DOE 2000). These documents may be found in the LANL library and are available on the world-wide-web at http://lib-www.nepa.eh.doe.gov/eis0238/eis0238.html; at http://lib-www.lanl.gov/la-pubs/la-13775.pdf; and at http://lib-www.lanl.gov/pubs/doesea-03.htm , respectively.

3.2 Potential Environmental Issues

3.2.1 Land Use

3.2.1.1 Affected Environment

The TA-69 Center site is within the Experimental Engineering Planning Area of the Comprehensive Site Plan (CSP) 2000 (LANL 1999). The proposed Center site is located in the northwest corner of the planning area. This area is mostly vacant with only some roads and utilities crossing the site. The CSP 2000 and the Area Development Plan as described in the CSP 2000 both define the existing and future land use for this site as "Reserve." The adjacent surrounding land is also undeveloped. The nearest LANL developments, other than Building 69-0004 (Guard Station 502) on Anchor Ranch Road, are facilities within TA-8 and TA-22. The nearest facility in TA-8 is just over 0.5 mi (0.8 km) to the south and it is within 0.3 mi (0.5 km) of West Jemez Road (SR 501). TA-22 is about 1 mi (1.6 km) to the east (see Figure 5).

3.2.1.2 Proposed Action

The Proposed Action would not be in conflict with land use designations in this area. "Reserve" is a land use designation defined in the CSP 2000 as "areas that are not otherwise included in one of the previous (land use) categories, such as experimental or high-explosives R&D." Although this area of LANL is not envisioned for immediate development, it is not excluded as potential land for development. The proposed Center site would also be within land the CSP 2000 defines as good to excellent for future development potential. This determination is based on a

combination of physical and operational constraints developed and identified within the CSP 2000.

3.2.1.3 No-Action Alternative

Under the No-Action Alternative, the TA-69 site land would remain undeveloped. The current EOC location would continue in use and no changes to the land use designation for TA-69 would be required.

3.2.2 Traffic and Infrastructure

3.2.2.1 Affected Environment

One public transportation highway and a public infrastructure facility are located in the general area of the proposed Center site. The public transportation route is the adjacent West Jemez Road, also designated as New Mexico State Route 501 (SR 501). This highway is defined as an arterial road in the CSP 2000. This route is located along the western side of the Center site and would be within about 300 ft (90 m) of the Center. Two other internal LANL roads are located in this area: Anchor Ranch Road and Two-Mile Mesa Road. The entrance to both the Experimental Engineering and the Dynamic Testing areas (TAs 69, 8, 9, 15, 22) is located near the proposed Center site near Guard Station 502, which is off Anchor Ranch Road.

The public infrastructure facility is a potable storage water tank with associated piping currently owned by DOE and managed by the County of Los Alamos. The potable water storage tank is part of the potable water system scheduled to be transferred to the County in mid-2001. The potable water storage tank is about 0.5 mi (0.15 km) to the southwest of the Center site. Access to the potable water storage tank site for the County is permitted through an access corridor originating at West Jemez Road. The access corridor would be within 300 ft (90 km) to the north of the proposed Center site. Other infrastructure facilities nearby include power, water, gas, and sewer lines. There are utility corridors for these services along both Anchor Ranch and Two-Mile Mesa Roads.

3.2.2.2 Proposed Action

The proposed TA-69 location for the Center would have four access routes. To the south the Center personnel could access the Center along West Jemez Road (SR 501) via SR 4, from Bandelier National Monument or from the Jemez Mountains. Access to the Center site would also be available from the north from West Jemez Road (SR 501) via TA-3 and Los Alamos townsite from Española and Santa Fe. The Center could be accessed from the east across two internal LANL roads, which meet internally and lead from Pajarito Road at the east side of LANL (Anchor Ranch Road and Two-Mile Mesa Road). These roads would provide access routes to the Center for the NNSA and LANL senior management and County management. Access to the Center from TA-3 would also be possible from an existing unimproved road (continuation of Mercury Road) across TA-58 (known as Two-Mile Mesa North), which would be upgraded as part of the Proposed Action. Additionally, to the north is Camp May Road, which provides access to the top of Jemez Mountain to the Pajarito Ski Club facility. Helicopter access to the Center would be possible from the Pajarito Ski Club facility parking lots (and possibly at the parking lot of the Center itself).

The additional traffic generated by the expected daily traffic to the proposed Center would be a small increase to the existing traffic. The turning and access movements would not be off of West Jemez Road, but off the Anchor Ranch Road spur. During an emergency event the amount of traffic to and from the Center would increase up to four times the daily amount. However, the total amount of traffic would not over burden the existing system. Traffic into the new Center would not have to go through Guard Station 502. In an emergency very little public traffic may be allowed on these roadways after an evacuation occurs. An emergency unpaved access onto West Jemez Road from the Center site could be created if Anchor Ranch Road is blocked because of an accident or other emergency.

Utility access to the proposed TA-69 site would require the extension of several utilities to service the facility as described in Chapter 2. Potable water service would need to be extended and pumped about 0.5 mi (0.8 km) to a new potable water storage tank to service the proposed Center site. A fire suppression water storage tank would also be installed at the Center. Sewer service to the Center is available along Anchor Ranch Road. Electric service to the Center is available along West Jemez Road from an existing 13.2-kilovolt line. Utility trenches would need to be provided across both disturbed and undeveloped land to the proposed Center site for the individual utilities. Communication lines could be attached or routed along one or more of these individual utility corridors and would not require additional trenching.

3.2.2.3 No-Action Alternative

Under the No-Action Alternative, the TA-69 site would remain undeveloped. The additional roadway improvements would not occur. A fire suppression water storage tank and potable water storage tank would not be installed, and utility trenches and services would not be extended to this area of LANL.

3.2.3 Visual Resources

3.2.3.1 Affected Environment

The visual environment of LANL is described in the 1999 LANL Site-Wide Environmental Impact Statement. The natural setting of the Los Alamos area is panoramic and scenic. The mountain landscape, unusual geology, varied plant communities, and archaeological heritage of the area create a diverse visual environment. Portions of the viewshed underwent substantial changes during the Cerro Grande Fire. The fire burned large areas of the mountain slopes that form the scenic background in the Los Alamos area. The resulting landscape is both more stark and less uniform than before the fire (DOE 2000).

Much of the development within LANL is austere and utilitarian. Overcrowded conditions have often resulted in an unplanned, visually discordant assembly of structures. Much of the development has occurred out of the public's view. The most visible developments are a few tall structures, facilities at high, exposed locations, and those beside well-traveled, publicly accessible roads. Tall structures, such as the Rack Assembly and Alignment Complex in TA-60, and the extremely dense mixed development in areas such as TA-3 have been identified as adverse visual impacts (DOE 1999b).

The Proposed Action would be implemented within LANL's Experimental Engineering Planning Area (TA-8, -9, -11, -14, -16, -22, -28, -37, and -40, and parts of TA-67 and -69) and is adjacent

to LANL's Core Planning Area (TA-03, -06, -58, -59, -60, -61, and -62). The Core Planning Area contains most of LANL's worker population, buildings, and infrastructure. In the future, this area is expected to contain LANL's central administration functions and to be LANL's primary public interface area (LANL 2000b). The Experimental Engineering Planning Area contains a large number of older buildings, many of which are screened from the public by vegetation from viewing along West Jemez Road (SR 501).

3.2.3.2 Proposed Action

The Proposed Action would be visible from the townsite along with other discordant features, but not from higher elevation areas in both the Bandelier and Dome Wilderness areas. Construction of the proposed Center would produce temporary adverse visual effects along West Jemez Road (SR 501) because of the presence of construction vehicles, dust, and vegetation removed to reduce wildfire hazards. Once completed, the proposed Center would be visible from West Jemez Road (SR 501) and the fire suppression water storage tank and antenna structure would be visible at various points in the Los Alamos area. The tank would be designed and painted a color to visually blend in with the background. The proposed Center itself however, would be relatively low, would be landscaped with natural vegetation, and would not contrast with skylines or other natural scenic features. Built against the lower slopes of the Jemez Mountains, neither the proposed tank nor antenna would be highly visible from the north or east. Neither the tank nor the antenna would be visible from higher elevation areas of the Wilderness Areas of Bandelier National Monument and the Dome area.

3.2.3.3 No-Action Alternative

There would be no change in visual resources as a result of the No-Action Alternative. The new Center, parking area, and utility structures would not be built.

3.2.4 Geological Setting

3.2.4.1 Affected Environment

Geologically, LANL is located within the northern Rio Grande rift, a seismically active area. Although surface-rupturing earthquakes have not occurred during recorded history in the LANL region (within 60 mi [100 km] of LANL), geological evidence indicates that they have occurred during the Quaternary Period (1.6 million years). Three fault zones dominate geologic structures in this area: the Pajarito Plateau, Rendija Canyon, and Guaje Mountain faults. Evidence indicates that the most recent ground motion seismic events occurred approximately 1,300 to 2,300 years ago (Pajarito Plateau fault) with no other major seismic events occurring in the last 10,000 years. All three faults are geologically young and are capable of producing future earthquakes. The locations of faults in the area enclosing sides of LANL have been mapped. Other areas of LANL are in the process of being mapped. TA-69 is within about 830 ft (250 m) of the Pajarito fault. The area around TA-59, Building 1, has not been mapped with regard to potential geologic faults.

3.2.4.2 Proposed Action

The Proposed Action could be affected by the geologic setting. To determine the location and condition of a potential fault line in this area, a 300-ft (90-km) long seismic investigation trench was opened at the site. A Holocene period (10,000 years before, to the present) rupture was

identified and mapped. A probabilistic risk analysis was performed and the site has been determined to be within standards established by DOE's "Natural Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components," (DOE-STD-1021.93). This analysis indicates that the annual probability of surface rupture by an earthquake is less than one in ten thousand. This possibility is less than the required performance goal for the facility and in accordance with DOE orders and standards. The Center would be constructed to Uniform Building Code (UBC) seismic standards established for the LANL region.

3.2.4.3 No-Action Alternative

Under the No-Action Alternative, the Center and associated structures would not be built and the existing EOC would continue to be used. The No-Action Alternative would not impact the geology in this area. The current EOC does not meet the UBC and DOE seismic standards for new construction and would be likely to collapse or suffer major damage from an earthquake event or from ground motion greater than once in 1,000 years.

3.2.5 Air Quality

3.2.5.1 Affected Environment

Air quality is a measure of the amount and distribution of potentially harmful pollutants in ambient air. UC calculates annual actual emissions of regulated air pollutants and reports the results annually to the State of New Mexico Environment Department (NMED). In 1998, the most recent year for which data are available, LANL was in compliance with all air quality regulations. The ambient air quality in and around LANL met all Environmental Protection Agency (EPA) and DOE standards for protecting the public and workers (LANL 2000a).

LANL is considered a major source under the State of New Mexico Operating Permit program based on the potential to emit regulated air pollutants. Specifically, LANL is a major source of nitrogen oxides, emitted primarily from the TA-3 steam plant boilers. Combustion units are the primary point sources of criteria pollutants (nitrogen oxides, sulfur oxides, particulate matter, and carbon monoxide) emitted at LANL. Of all combustion units, the TA-3 steam plant is the primary source of criteria pollutants. Research and development activities are the primary source of volatile organic compound emissions (LANL 2000a). Mobile sources, such as automobiles and construction vehicles, are additional sources of nonradioactive air emissions.

3.2.5.2 Proposed Action

The Proposed Action would result in a minimal effect on air quality. Construction of the proposed Center would produce only temporary and localized nonradioactive air emissions. Normal operations at the Center would result in small emissions of regulated air pollutants. The emissions from natural gas heating and cooling systems and from the use of emergency generators would be similar to those of small office buildings at LANL and elsewhere.

Construction

Construction and earth-moving activities associated with the Proposed Action would temporarily increase localized particulate (dust) emissions. Standard dust suppression procedures would be used to control fugitive dust. Daily windblown dust is generally more of a contributor to particulate emissions than are those from soil excavation. Construction activities, which are not

considered stationary sources of regulated air pollutants under the air quality requirements, are exempt from permitting under Title 20 of the New Mexico Administrative Codes, Sections 2.72 and 2.70. There are no air quality requirements for paving of parking areas.

Mobile sources, such as construction equipment and waste transport vehicles, would produce low-levels of air pollutants (such as sulfur dioxide). The emissions from these equipment and vehicles would be expected to be similar to those from other recent construction actions at LANL, such as those involved in the construction of the Strategic Computing Complex and the Nonproliferation and International Security Center.

Operations

None of the activities proposed for the new Center would produce new air emissions, except the new emergency generator, which would require permitting. Combustion sources (such as electrical generators and furnaces), cooling systems, fire suppression systems, and storage tanks may also need to be reported to NMED. Emissions from these types of systems are expected to be similar to other office buildings.

Vehicle use associated with the Center would result in negligible localized increases in some non-radioactive air emissions.

3.2.5.3 No-Action Alternative

There would be no change in air quality effects associated with implementing the No-Action Alternative. Temporary and localized emissions from current mobile sources, such as automobiles, would continue unchanged.

3.2.6 Waste Management

3.2.6.1 Affected Environment

Both LANL and Los Alamos County residents send their solid waste to the Los Alamos County Landfill, which is located within LANL at TA-61. The Los Alamos County Landfill also accepts solid waste from other neighboring communities. The Los Alamos County Landfill receives about 18,850 tons of solid waste per year (17,100 metric tons of solid waste per year), with LANL contributing about 2,860 tons per year (2,600 metric tons per year). Los Alamos County has plans to close the landfill by June 2004. Several existing landfills within New Mexico could possibly be used after 2004, such as one located in Rio Rancho, which is approximately 85 highway mi (137 km) south of Los Alamos. Access to this landfill is along state highways and Interstate 25. The current Los Alamos County Landfill would be capped and would enter the monitoring phase of its life cycle. A portion of the site would be used as a transfer station. The existing recycling center located at the landfill would continue to operate.

Hazardous waste generated during construction that is regulated under the Resource Conservation and Recovery Act (RCRA) would be transported to TA-54 at LANL for management there, which is carried out in accordance with applicable laws, regulations, and DOE Orders.

Sanitary liquid wastes are delivered by dedicated pipelines from LANL technical areas to the Sanitary Wastewater Systems Consolidation plant at TA-46. The plant has a design capacity of

600,000 gal. (2.27 million L) per day, and in 1995 processed a maximum of about 400,000 gal. (1.5 million L) per day (DOE 1999a).

3.2.6.2 Proposed Action

This project would require the handling and disposal of site and construction solid waste material. Construction waste is estimated at 1,000 cubic yards (yd^3) (760 cubic meter [m^3]) and would be hauled to the Los Alamos County Landfill or its replacement facility. Construction debris, primarily comprised of wood, metal, and asphalt, would be the typical waste expected to be generated during construction of the new Center, parking lot, and garage.

Solid waste generated during the operation of the Center would be disposed of at the Los Alamos County Landfill or other appropriate solid waste landfill. The amounts of waste generated during operation of the new Center would not increase substantially from current volumes generated at the EOC. The Center would be designed, constructed, and operated to incorporate, to the extent practical, the recommendations provided in the Pollution Prevention Design Assessment for this project. A Waste Minimization Plan would be prepared by the construction contractor to minimize the generation of waste during the construction phase of the project. The Center would also operate in accordance with LANL waste management and pollution prevention guidelines. Piping would be installed and sanitary liquid waste would be delivered to the Sanitary Wastewater Systems Consolidation plant at TA-46.

3.2.6.3 No-Action Alternative

Under the No-Action Alternative, no additional waste would be generated as a result of the construction of the Center, parking, and utilities. Sanitary waste volumes generated by current EOC operations would continue at much the same rate as the Proposed Action and would be disposed of in a similar fashion.

3.2.7 Human Health

3.2.7.1 Affected Environment

This section considers the health of people who would work at the Center, other nearby LANL workers, and members of the public. These three categories are considered in this EA because each category of worker or member of the public would either be involved in the routine operation of the proposed new Center building under non-emergency response conditions or under emergency response events.

The health of LANL workers is routinely monitored depending upon the type of work performed. Health monitoring programs for LANL workers assess a wide range of potential concerns including exposures to radioactive materials, hazardous chemicals, and routine workplace hazards. In addition, LANL workers involved in low-hazard operations or office work are trained to identify and avoid or correct potential hazards typically found in an office environment (e.g., tripping hazards, falls, electric shock). Because of the various health monitoring programs and the requirements for routine health and safety training, LANL workers are generally considered to be a healthy workforce with a below average incidence of injuries and illnesses.

LANL monitors environmental media for contaminants. This information is reported through various permits and reporting mechanisms and it is used to assess the effects of routine operations at LANL on the general public. For those persons that routinely work within the boundaries of LANL and are likely to be exposed to radiation materials, their doses are monitored in the same manner as UC workers. For detailed information about environmental media monitoring see LANL's annual Environmental Surveillance Reports (LANL 2000a)

3.2.7.2 Proposed Action

The Proposed Action presents an unusual condition in that workers at LANL would usually be evacuated from the facility in the event of an emergency that could potentially place them in harms way. In the case of the Proposed Action, however, the operation of the Center would result in Center workers remaining on-site during an emergency event. To fully evaluate human health effects of operating the Center, the effects to Center workers from emergency events, including accidents at other LANL facilities, should be considered and are included in this section.

Construction

The Proposed Action is not expected to have an adverse effect on the health of any non-LANL construction workers. Approximately 40 construction workers would be actively involved in potentially hazardous activities such as heavy equipment operations, soil excavations, and the handling and assembly of various building materials. Construction activities would take approximately 20 months to complete. Appropriate personal protection programs would be a routine part of the construction activities and would involve the use of such personal protection equipment as gloves, hard hats, hard-toed boots, eye protection, and hearing protection.

Center workers would not be directly involved in the construction of new buildings or structures but UC and NNSA staff would be active in construction management, site inspections, and utility hook-ups. Approximately ten LANL and NNSA workers would support construction activities. Applicable construction health and safety training would be required for anyone involved in site inspections or utility work. Because of the limited involvement of UC workers in the construction of the new building and support activities, no adverse effects to LANL workers is anticipated.

Potentially serious exposures to various hazards or injuries are possible during the construction phases of the Proposed Action. Adverse effects could range from relatively minor (e.g., lung irritation, cuts, or sprains) to major (e.g., lung damage, broken bones, or fatalities). To prevent serious exposures and injuries, all site construction contractors are required to submit and adhere to a Construction Safety and Health Plan (Plan). This Plan is reviewed and approved by LANL staff before construction or demolition activities can begin. Following approval of this Plan, LANL and NNSA site inspectors would routinely verify that construction subcontractors are adhering to the Plan, including applicable federal and state health and safety standards. In addition, LANL staff would provide site-specific hazard training (e.g., construction safety, waste handling, etc.) to construction contractors as needed. Adherence to an approved Construction Safety and Health Plan and completion of appropriate hazards training is expected to prevent any major adverse effects on construction workers.

Operation

The Proposed Action is not expected to have an adverse effect on the health of any LANL workers Los Alamos County at the Center under normal operating conditions (i.e., non-accident conditions). Approximately 24 LANL staff would be relocated from the existing EOC building in TA-59 to the new Center building in TA-69. Including County staff, about 30 people could be located at the new Center. Applicable safety and health training for new office workers would be required.

Under the Proposed Action, County of Los Alamos employees that have local emergency response responsibilities would work in the completed Center. As with LANL workers, these employees would be exposed to typical office hazards during regular Center operations. In addition, they and LANL workers at the Center could also be exposed to hazardous materials in the event of an actual emergency event at LANL. Fulltime Center employees would be trained to respond to and avoid potential hazards and may be entered into LANL health monitoring programs such as the personnel dosimetry program. Because of the low-hazard potential and the requirement for site-specific hazard training and protection afforded to Center workers from the building's design and operations features, adverse effects to people working in the Center are not anticipated even from high-consequence events occurring at other LANL facilities.

The planned Center site is outside explosive exclusion zones and outside areas identified as having unique physical or operational considerations, except for two TEL (chlorine) hazard circles and three EPZs (LANL 2001b, LANL n.d.). Workers at the proposed Center could still be affected by accidents at other facilities. Employees in the new Center could be exposed to 1 rem from TEL hazard circles due to operations at the CMR. The LANL SWEIS (DOE 1999a) provides an overall baseline for LANL from which potential accident hazards may be analyzed. The hazard and accident spectrum established in the SWEIS provides an "envelope" that adequately identifies hazards and encompasses any risks associated with operating the new Center. The highest risk to occupants of the new Center that comes from operation of other facilities at LANL would be from an accident occurring at the CMR Building. Ignoring planned building and site features at the Center that would minimize the consequence of a radiological accident at the CMR, Center tenants could receive up to 14 rem of radiation from an earthquake-induced collapse of the CMR Building (LANL 2001b) from radioactive dust. At a peak-emergency worker population of 120, the population dose of 1,680 person-rem could result in less than 1 (0.84) potential latent cancer fatality. Planned facility systems or operations that would likely minimize this exposure include multiple site access roads, HEPA and charcoal filtration, and air re-circulation capability with internal air supply. These features would reduce or prevent exposures to workers inside the Center building to inhaled radioactive material. Thus, no latent cancer fatalities are expected in the Center worker population. Safety systems and prevention controls that help prevent the consequences of events external to the Center are discussed in other documents (LANL n.d.).

3.2.7.3 No-Action Alternative

Under the No-Action Alternative, the potential for injuries to UC workers and non-UC construction workers would not occur from the construction or operation of the proposed new Center and supporting activities at TA-69. However, the continued use of the existing EOC at TA-59 could pose certain health and safety risks to LANL emergency response personnel and

certain members of the public that could also be working in the EOC. As a result of the Cerro Grande Fire, the immediate area around the current EOC was burned and most personnel were forced to evacuate to an alternate EOC. The existing EOC does not meet current seismic design requirements and it is located within several potential hazard zones at LANL. No potential health and safety risks from office work or building operations at the existing EOC would be expected under this alternative, but could occur during emergency response events.

3.2.8 Socioeconomics

3.2.8.1 Affected Environment

LANL operations in north-central New Mexico have a significant and positive influence on the economy of north-central New Mexico. The total funding for LANL in north-central New Mexico was $1.3 billion in fiscal year (FY) 1998, yielding a total economic impact of about $3.8 billion or about 30 percent of the total economic activity in the region. Total personal income impact was $1.11 billion in FY 1998 or about 26 percent of personal income derived in the three counties - Los Alamos, Santa Fe, and Rio Arriba. The employment multiplier was 2.84 for the region, meaning that the 9,757 average employment level of FY 1998 supported a total impact of 27,688. In effect, nearly one of every three jobs in the region was created or supported by LANL. Approximately 80 percent of the jobs created indirectly by LANL in the region occurred in the trade, finance, insurance, real estate, and services sectors (DOE/AL 1999).

3.2.8.2 Proposed Action

This project would not have a long-term effect on socioeconomic conditions in this area. The additional revenue generated by the construction projects would be limited in duration.

Construction of the Center and parking area would generate jobs and revenue into the local economy. During peak construction approximately 40 construction workers may be working on these new facilities. Close to $2 million would be spent for the design phase of this project and about $16 million for construction and oversight contracts. Construction is scheduled to take approximately 20 months beginning in late 2001 or early 2002.

Limited long-term effects on the socioeconomic environment are expected as a result of this project. An increase of about five to six new Los Alamos County emergency personnel is anticipated as a result of the Proposed Action.

3.2.8.3 No-Action Alternative

There would be no socioeconomic benefits as a result of the construction or operation of these facilities under the No-Action Alternative. Construction of these facilities would not occur and therefore no construction revenue would be generated for the local economy. An additional five to six Los Alamos County emergency personnel would not be hired.

3.2.9 Noise

3.2.9.1 Affected Environment

Noise is defined as unwanted sound. Sound is a form of energy that travels as invisible pressure vibrations in various media, such as air. The auditory system of the human ear is particularly sensitive to sound vibrations. Noise is categorized into two types: *steady-state noise*, which is

characterized as longer duration and lower intensity such as a running motor, and *impulse or impact noise*, which is characterized by short duration and high intensity such as the detonation of high explosives. The intensity of sound is measured in decibel (dB) units. In sound measurements relative to human auditory limits, the decibel scale is modified into an A-weighted frequency scale (dBA).

Noise measured at LANL is primarily from occupational exposures. These measurements generally take place inside buildings and are made through the use of personal noise dosimeters and other noise monitoring instruments. Occupational exposure data are compared against an established Occupational Exposure Limit (OEL). At LANL, the OEL is administratively defined as noise to which a worker may be exposed for a specific work period without probable adverse effects on hearing acuity. The OEL for both steady-state and impulse or impact noise is based on U. S. Air Force Regulation 161-35, "Hazardous Noise Exposure," which has been adopted by DOE. The maximum permissible OEL for steady-state noise is 84 dBA for each 8-hour work period. The OEL for impulse and impact noise is not fixed because the number of impacts allowed per day varies depending on the dBA of each impact. DOE also requires that Action Levels (i.e., levels of exposure to workplace hazards that are below the OEL but require monitoring or the use of personal protection equipment) be established for noise in the workplace. Action Levels at LANL for steady-state noise and impulse and impact noise are 80 dBA and 140 dBA, respectively, for each 8-hour day.

Environmental noise levels at LANL are measured outside of buildings and away from routine operations. These sound levels are highly variable and are dependent on the generator. The following are typical examples of sound levels (dBA) generated by barking dogs (58), sport events (74), nearby vehicle traffic (63), aircraft overhead (66), children playing (65), and birds chirping (54). Sources of environmental noise at LANL consist of background sound, vehicular traffic, routine operations, and periodic high-explosive testing. Measurements of environmental noise in and around LANL facilities and operations average about 80 dBA. Some measurements have been made to evaluate environmental impacts from operational and high-explosive detonation noise. For example, the peak noise level measured at the Pulsed High-Energy Machine Emitting X-Rays (PHERMEX) facility from a 20-lb (9-kg) trinitrotoluene explosion ranged from 140 to 148 dBA at a distance of 750 ft (229 m).

Measured values from limited ambient environmental sampling in Los Alamos County were found to be consistent with expected sound levels (55 dBA) for outdoors in residential areas. Background sound levels at the White Rock community ranged from 38 to 51 dBA (Burns 1995) and from 31 to 35 dBA at the entrance of Bandelier National Monument (Vigil 1995). The minimum and maximum values for the County ranged between 38 dBA and 96 dBA, respectively. Ambient noise levels in the vicinity of the Proposed Action are affected primarily by automobile traffic on West Jemez Road and routine guard station operations at TA-69.

3.2.9.2 Proposed Action

Construction workers at the Center may require hearing protection. The construction of a new Center and upgrading of utilities and access roads would require heavy equipment for clearing, leveling, and construction activities. Heavy equipment such as front-end loaders and backhoes would produce intermittent noise levels at around 73 to 94 dBA at 50 ft (15 m) from the work site under normal working conditions (Canter 1996, Magrab 1975). Limited construction truck

traffic would occur and would generally produce noise levels below that of the heavy equipment. The finishing work within the building structure would create noise levels slightly above normal background levels for office work areas. Noise levels may go up to around 80 dBA at the work site if light machinery is used in this stage of construction (Canter 1996). Workers would be required to have hearing protection if site-specific work produced noise levels above the LANL action level of 80 dBA for steady-state noise. Sound levels would be expected to dissipate to background levels at the LANL boundaries or nearby residential areas.

The additional construction worker personal vehicular traffic would be minimal and would not be expected to increase the present noise level produced by vehicular traffic on West Jemez Road. The vehicles of construction workers would remain parked during the day and would not contribute to the background noise levels during this time. Therefore, noise levels are not expected to exceed the established OEL.

After construction is completed, noise levels for workers, the general public, and the environment would be expected to be at background levels. Once the facility becomes operational, noise generated by building operations would be similar to noises encountered around typical office buildings (such as ventilation fans, testing of back-up power and emergency response systems, and light vehicle traffic).

3.2.9.3 No-Action Alternative

Under the No-Action Alternative, ambient noise levels would remain unchanged in the vicinity of the proposed Center. The environmental noise levels in and around facilities or operations at TA-69 would be expected to remain at or below 80 dBA on average. Noise associated with routine EOC operations would continue to occur at the location of the existing EOC at TA-59 under this alternative.

This Page Intentionally Left Blank

4.0 Accident Analysis

The health of non-LANL construction workers is monitored if potential hazards exist that would require it. Depending upon the presence and type of hazards, construction workers could be monitored in the same manner as UC workers. Construction of the Center would not generally require the monitoring of worker health by UC or NNSA.

No fatalities are expected during the construction of the Center facility. The 1993 incidence rate of serious injury or illness and death for all types of construction reported by the National Safety Council was 0.89 per 100 full-time employees (NSC 1994). Eliminating the injury or illness rate results in an annual death rate of 0.05 deaths per 100 fulltime employees. Twenty percent of this rate is from a type of construction ("heavy construction, except building") not pertinent to the Proposed Action, which further lowers the rate to 0.04 deaths per 100 fulltime employees.

Candidate hazards for operational accident analysis typically include actions involving physical insult, electricity, explosive materials, pressurized systems, cryogenics, biohazards, radiation, hazardous chemicals, combustible materials, inadvertent criticality, toxic gas leaks, and asphyxiants. These types of hazards are potentially included within site-wide accidents, such as initiated by natural phenomena or operational accidents.

Hazards have the potential to affect the public or workers, depending on the type of accident that may occur. During operation, the Center would be a low-hazard facility containing only hazards that are common to standard industry (LANL n.d.). The hazards of greatest concern are those presented to Center staff from other facilities during emergency conditions. Non-LANL employees would be involved in staffing the Center, and the potential for Center staff to be involved in an accident might be inherently greater than staff involved only in normal operations of LANL that could be evacuated during emergency conditions. Operations of the proposed Center are assumed to be similar to the existing EOC, however, the proposed Center would have substantially more technical support structures, systems, and equipment.

Although the proposed Center would not itself contain serious hazards or conduct hazardous operations, facilities in the vicinity of the proposed Center do conduct hazardous operations. Accidents at these facilities could affect the new Center. In addition, the proposed Center could also be affected by wildfires and transportation accidents. Potential external accidents would not likely affect workers at the proposed Center because of the design and operational features of the facility.

Under the No-Action Alternative, there would be no potential for new construction related accidents at the existing EOC but operational accidents and potential accidents from other nearby facilities would continue to pose some risk to EOC workers. The existing EOC does not meet current design criteria for seismic stability, building access, or various other features desirable for an EOC (see Section 2.2). The design features in the existing EOC could result in worker injuries during both routine operations, including emergency exercises, and under actual accident response conditions. The potential for accidents under routine EOC operations is considered to be minimal because of the various worker training and administrative requirements in effect for the EOC. The consequence of any operational accidents would be essentially the same at the existing EOC as is discussed above for the new proposed Center.

The effects of accidents from nearby facilities and operations on workers in the existing EOC can be estimated from the accident analysis in the LANL SWEIS. The most likely facilities to pose an elevated risk to the existing EOC include the operations at TA-55 and the CMR Building. Because of proximity (less than 1mi [1.6 km]), the potential dose to workers at the existing EOC from a radiological accident caused by an earthquake at either TA-55 or the CMR Building could be greater than the estimated dose to workers at the proposed Center. The LANL SWEIS estimates a worker dose range within about 1mi (1.6 km) of TA-55 and the CMR Building of between 20 rem to 247 rem depending on the severity of the earthquake and the extent of damage to the facilities. In addition, the existing EOC is located within numerous EPZs at LANL that could also pose a potential risk to workers in the event of a worker originated chemical or radiological accident in the vicinity of the building. The existing EOC is also vulnerable to wildfires. In May 2000, the existing EOC was evacuated and staff were forced to move to a temporary alternate EOC because of the proximity of the Cerro Grande Fire to the building. No injuries to EOC workers resulted from this fire.

In summary, the proposed facility is classified as a low-hazard category with potential hazards that would not pose any unusual threat to the public, workers, or the environment. This hazard classification is associated with operations that are not associated with nuclear operations. Earthquakes and potential chlorine releases pose the greatest risks to occupants of the Center. These hazards are addressed by the 1999 LANL SWEIS, and the consequences of potential accidents arising from these hazards are managed through the use of planned safety systems and prevention control standards. The new Center would be located in a 1-rem TEL hazard circle versus the greater than 100-rem TEL hazard circle in which the existing EOC is located. The Center would have four access routes serving the property and would be upwind 87 percent of the time based on historic data collected by LANL for a 25-year wind study. The existing EOC is served by only two access routes and, being surrounded by LANL operations, it is exposed to downwind hazards from one LANL operation or another at all times.

5.0 Cumulative Effects

Cumulative effects on the environment result from the incremental effect of an action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes them. These effects can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7). This section considers the cumulative effects resulting from the implementation of the Proposed Action and reasonably foreseeable future actions in the TA-69 and TA-3 area and adjacent lands.

LANL Operations at TA-69

A shift of employees from the EOC in TA-59 to TA-69 would occur as a result of the Proposed Action. An additional five to six employees are expected to be hired by Los Alamos County as emergency operations personnel to work in the new Interagency Center. A change in the current land use would occur in that TA-69 is primarily an undeveloped area. Access at Anchor Ranch Road into the Center would be shared with traffic going in and out of TAs 8, 9, 14, 15, 22, 39, and 40. Traffic into the Center, though, would exit Anchor Ranch Road after only a short distance from the turn off of West Jemez Road and not have to go through the guard station. The small number of people at the Center (about 30 employees) is not expected to affect traffic circulation in this area. No additional growth is projected for the other LANL TAs in the vicinity of this area within the next 5 to 10 years.

The overall visual quality within TA-69 would change with the introduction of the Center into this area. The Center and associated structures would be designed to blend in as much as possible, though the 150-ft (45-m) fire suppression water storage tank with antenna attachments would be visible from the Los Alamos townsite and surrounding higher elevational areas. The backdrop of large 50-to 60-ft (15-to 20-m) ponderosa pines and hills in this and the surrounding area would help diminish the visual effects of the Proposed Action. The negative effects on viewsheds of regional development and slight increased lighting in the night sky would be considered to be a regional impact. The Proposed Action is not expected to be a major contributor to this effect, however, as the parking lot would have lighting directed away from surrounding areas and down to the building site itself.

Implementing the Proposed Action would generate noise primarily during daytime hours during construction activities. This noise generated would be mostly confined to the immediate TA-69 area and would be mostly heard by the involved workers. Due to the general manner in which sound attenuates across mesas and canyons, residents located across the canyon from TA-3 should not be disturbed by the sounds originating from the Center site.

The Proposed Action, together with other planned or ongoing construction activities at LANL, is expected to have a cumulative beneficial effect on worker health at LANL under normal operations. Workers at LANL would benefit from the replacement of a substandard EOC facility with a new Center that meets current DOE requirements and UBCs. Substandard working conditions would be alleviated by the Proposed Action and other concurrent construction activities at LANL that improve individual working conditions.

Cumulative potential adverse health effects to construction workers should be minimal and cumulative beneficial or adverse effects on public health are not expected to occur under normal conditions. The cumulative increase in the amount of construction activity would increase the risk of construction worker injuries. However, because of the rigorous health and safety requirements at LANL and based on industry injury rates of 0.04 deaths per 100 fulltime workers, the potential for a major injury or fatality from all new construction activities at LANL would be expected to remain low.

Nearby Areas within LANL and Off-site Areas Administered by Others

Other activities that will likely occur at or nearby to TA-69 over the next 10 years include the conveyance of a 15-ac (6-ha) portion of TA-43 to the County of Los Alamos, the subsequent demolition of the DOE Los Alamos Area Office (LAAO) Building at TA-43, and the construction of new multistoried residential units in place of the DOE LAAO Building and over its immediate surrounding area. Construction of housing within the County of Los Alamos to replace housing units lost during the Cerro Grande Fire will likely continue over the next several years (until or through about 2005). These actions will add to the overall amount of construction activities within the County and the number and availability of construction materials, workers and local housing in the vicinity. Traffic into and out of Los Alamos County is expected to increase over the current levels due to the trips made by construction workers, and the transport of materials. The visual character of the newly constructed buildings is expected to have a slight positive effect on the visual character of LANL and Los Alamos County and is not expected to result in but a very slight increase in nighttime lighting of the area. The overall "footprint" of urban development within Los Alamos County is expected to change slightly over the next 10 to 15 years. The possible development of Rendija Canyon would be a change as contemplated by the County of Los Alamos when NNSA conveys that tract to the County for their use (anticipated to occur before the end of 2007).

NNSA, the Forest Service, Bandelier National Monument, and the County will also be conducting wildfire hazard reduction activities that will include forest thinning activities over the Pajarito Plateau (including within LANL) and possibly some prescription burns outside the areas of immediate LANL and urban interfaces within the forested areas nearby. The resulting forest areas in and around LANL will be much more open in appearance than they are currently. The hazards from wildfires are expected to be reduced. Although wildfires would still occur, they would be much easier to bring under control and manage as lower and mid-level fires rather than as crown fires of the type exemplified by the Cerro Grande Fire. Within LANL, forests will be managed according to the Wildfire Hazard Reduction and Forest Health Improvement Program, with specific project plans, such as the Wildfire Hazard Reduction Project Plan (LANL 2001a).

Use of the forest areas west and south of LANL and Los Alamos County for recreation, habitat management purposes, and timber production (only within the Santa Fe National Forest) should remain unchanged. Critical habitat areas for the Mexican spotted owl have been established by the U.S. Fish and Wildlife Service within the Pajarito Plateau areas outside of LANL, and one area within LANL has been identified as being historically occupied by the Mexican spotted owl and is protected by NNSA as well. These areas will continue to be managed for the foreseeable future as appropriate for recovery of that species. Within LANL, potential or historically occupied habitat of federally protected threatened or endangered species is managed in

accordance with the LANL Threatened and Endangered Species Habitat Management Plan (discussed earlier). Additional management plans for biota at LANL are being developed cooperatively by NNSA and UC.

There may be some facility construction at LANL over the next 10 years in the vicinity of TA-55. One proposed action is to build a new building at TA-55 to house the TA-18 critical assembly and material storage operations; another proposed action is to construct a new electric power line from the general White Rock area up slope to the TA-8 area. Another proposal is to construct a new office building and related structures at TA-3.

Proposed actions elsewhere within LANL include 1) the decontamination of TA-18 facilities within Pajarito Canyon and their possible demolition (in whole or in part), 2) the demolition of the TA-2 and TA-41 structures and buildings within Los Alamos Canyon, 3) the demolition of Building 3-43 and 3-490 at TA-3, and 4) some small-scale building and structure construction and demolition activities within the TA-8 and TA-16 areas. Additional construction and demolition actions may be proposed at TA-3, TA-55, and other technical areas at LANL to replace aging structures and facilities. These are currently only contemplated in very general terms. These generally contemplated actions could include some additional construction and demolition work as infrastructure, structures, and buildings approach 50 years of continuous use.

The overall amount of developed area within LANL is expected to only slightly expand over the next 10 to 15 years. Overall electric utility use and potable water use within LANL is expected to remain fairly constant after the Strategic Computing Complex comes on line. Actions taken by UC to conserve and reduce usage of water and generation of waste during operations should actually decrease as various reuses of waste water and waste materials are undertaken over the next several years. The use of "gray water" from the LANL sewage treatment plant at the cooling towers for the Strategic Computing Complex is the first step.

Waste volume generation during the next 10 years, both from decontamination and demolition of buildings and through environmental restoration efforts, will be large. The waste will likely be of a variety of types, including nonhazardous waste, hazardous wastes, mixed wastes, and radioactive wastes (of both low level and transuranic [TRU] wastes). The Los Alamos County Landfill is anticipated to be closed within the next three years. LANL, along with the County, will have to dispose of their waste at another off-site solid waste disposal facility(s). Low-level radioactive waste is disposed of at Area G at LANL; this disposal site has adequate room to accommodate waste generation estimates beyond the next 10 years as identified in the 1999 LANL SWEIS and ROD. TRU waste generated at LANL from environmental restoration activities would be managed and stored at LANL. No disposal path is currently available for the non-defense generated waste type. Mixed wastes (both low-level mixed and TRU-mixed wastes) are managed and stored at LANL or treated and disposed of at off-site facilities. Hazardous wastes generated at LANL are managed and stored on-site and shipped off-site for treatment and disposal as adequate and appropriate facilities become available. Detailed projections of wastes by types are provided in the *1997 Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* and DOE's subsequent RODs based on that analysis. Additionally, the waste generated at LANL over the next 10 years will be managed in accordance with the analysis provided in the 1999 LANL SWEIS and the DOE's ROD. The implementation of the Proposed Action

considered in this EA together with other site waste generations would be in accordance with DOE's RODs and is not expected to result in any waste generation projection exceedances. Cleanup from the Cerro Grande Fire has mostly been accomplished; waste generation within the County of Los Alamos peaked in mid to late 2000 and early 2001. Waste generation is now within its historical range and no anticipated actions are expected that would result in greater than normal waste generation levels over the next 10 years.

Los Alamos County and LANL have historically been attainment areas for air quality with regards to criteria pollutants; visibility has also always been excellent. Implementation of the Proposed Action is not expected to change the overall air quality of the Pajarito Plateau. With the anticipated increase in the number of acres of forest to be treated over the next 10 years across New Mexico, which will include the use of prescribed burns, the number of days when visibility may be lessened will increase but overall air quality is not expected to be lessened. The issuance of burn permits by the State of New Mexico will be coordinated so that burning in the immediate LANL and Los Alamos County location will be staggered among the agencies that use this treatment method. DOE does not currently use burning as a forest treatment method but may make a decision to do so within the next 10 years. If so, this forest treatment method would be coordinated with the State of New Mexico and the Interagency Wildfire Management Team, a cooperative organization of land stewards across the Pajarito Plateau formed to communicate and provide support and action recommendations.

Data and analysis of LANL surface and groundwater quality samples taken from test wells indicate that LANL operations and activities have influenced the surface water within LANL boundaries and some of the alluvial and intermediate perched zones within the LANL region. Detail on the surface and groundwater quality can be found in the annual LANL Environmental Surveillance and Compliance Report (LANL 2000a). No LANL activities or projects are foreseen over the next 10 years that would cause increased deterioration of the surface and groundwater quality in the region.

Cultural resources are very prevalent over the Pajarito Plateau, particularly in the case of prehistoric sites. Historic sites of the Manhattan Project and the Homesteading Period in New Mexico's past are becoming few to rare as time passes. Wooden structures deteriorate and have been burned over the past 125 years. Structures representing the Cold War period are now approaching 50 years old in many cases. Many of the industrial structures of the Cold War period within Los Alamos County are located at LANL. There are many of these structures as the period extends over about a 30-year period. NNSA and UC are in the process of developing the LANL Cultural Resources Management Plan; this plan will eventually include a detailed assessment of its Cold War sites and structures. NNSA will determine which of these Cold War sites to consider for constructive reuse or refurbishment and which sites would eventually be demolished. The preservation of both industrial sites and homes within Los Alamos County will largely be a function of individuals as the County has little property under its direct ownership control.

6.0 Agencies Consulted

NNSA has determined that no consultation with the U.S. Fish and Wildlife Service regarding the potential effect of the Proposed Action on federally protected threatened or endangered species or their critical habitat is necessary as the Proposed Action would not affect such sensitive species or their critical habitat. Additionally, no consultation with the State Historic Preservation Officer is required as the Proposed Action would not affect cultural resources.

7.0 References

10 CFR 1021 U.S. Department of Energy, "National Environmental Policy Act Implementing Procedures," Code of Federal Regulations, Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office, Washington, D.C., revised as of January 1, 1999.

40 CFR 1500-1508 Council on Environmental Quality, Executive Office of the President, "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," reprint 1992.

50 CFR 17.11 U.S. Fish and Wildlife Service, Department of the Interior, "Part 17 – Endangered and Threatened Wildlife and Plants, Code of Federal Regulations, Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office, Washington, D.C., revised as of October 1, 2000.

BAER 2000 U.S. Interagency Burned Area Rehabilitation Team, Cerro Grande Fire Burned Area Emergency Rehabilitation Plan, National Park Service (June 2000).

Burns 1995 M.J. Burns, "White Rock Noise Measurements during PHERMEX Tests, 11 March 1995," Los Alamos National Laboratory memorandum DX-DO:DARHT-95-31 (March 13, 1995).

Canter 1996 L. Canter, *Environmental Impact Assessment*, McGraw-Hill, Inc., second edition, New York, NY (1996).

DOE 1993 U.S Department of Energy, Recommendation for the Preparation of Environmental Assessments and Environmental Impacts Statements, U.S. Department of Energy, Office of NEPA Oversight, May 1993.

DOE 1999 U.S. Department of Energy, "Site-Wide Environmental Impact Statement for the Continued Operation of Los Alamos National Laboratory," DOE/EIS-0238, 4 volumes (January 1999).

DOE 2000 U.S. Department of Energy, "Special Environmental Analysis for the Department of Energy, National Nuclear Security Administration, Actions Taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico," DOE/SEA-03 (September 2000).

DOE/AL 1999 U.S. Department of Energy, Albuquerque Operations Office, "Los Alamos National Laboratory Economic Impact – Fiscal Year 1998," in cooperation with Agriculture Experiment Station, College of Agriculture and Home Economics, New Mexico State University (August 1999).

DOE Order 151.1A U.S Department of Energy, "Comprehensive Emergency Management System" (November 2000).

DOE Order 420.1 U.S. Department of Energy, "Facility Safety," Change 3 (November 2000).

DOE-STD-1021.93 U.S. Department of Energy, DOE-STD-1021.93, "National Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components," Change Notice #1 (January 1996).

DOE-STD-1027.92 U.S. Department of Energy, DOE-STD-1027-92, "Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports," Change Notice #1, (September 1997).

LANL 1990 Los Alamos National Laboratory, "1990 Site Development Plan – Technical Site Information," LA-CP-90-405 (September 1990).

LANL 1999 Los Alamos National Laboratory, "Environmental Surveillance at Los Alamos during 1998," LA-13633-ENV (September 1999).

LANL 2000a Los Alamos National Laboratory, "Environmental Surveillance and Compliance at Los Alamos During 1999 – 30th Anniversary Edition," LA-13775-ENV (December 2000).

LANL 2000b Los Alamos National Laboratory, "Comprehensive Site Plan 2000," LA-UR-99-6704 (January 2000).

LANL 2001a Los Alamos National Laboratory, "Wildfire Hazard Reduction Project Plan," LA-UR-01-2017 (April 2001).

LANL 2001b Los Alamos National Laboratory, "Approved Siting Notification for the new EOC," Site Planning and Development Group (PM-1), SM# 4492 (January 11, 2001).

LANL n.d. Los Alamos National Laboratory, "Preliminary Hazards Analysis for the Emergency Operations Center Project," LANL unpublished report (in preparation).

Magrab 1975 E.B. Magrab, "Environmental Noise Control," Wiley-Interscience Publication, John Wiley & Sons, New York, NY (1975).

NSC 1994 National Safety Council, "Accident Facts, 1994 Edition," Itasca, IL.

Vigil 1995 E.A. Vigil, "Noise Measurement at State Road 4 and Bandelier Turn-Off at State Road 4 during PHERMEX Test on March 11, 1995," Los Alamos National Laboratory memorandum no. ESH-5:95-11825 (March 17, 1995).