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Environmental Assessment for the Installation and Operation of Combustion Turbine Generators at Los Alamos National Laboratory, Los Alamos, New Mexico

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Department of Energy
National Nuclear Security Administration
Los Alamos Site Office

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ACRONYMS AND TERMS

AOCs	areas of concern
BLM	Bureau of Land Management
BMPs	best management practices
BTU	British thermal units
CAA	Clean Air Act
CFR	Code of Federal Regulations
CNMIP	Colorado–New Mexico Intertie Project
CO	carbon monoxide
CTG	combustion turbine generator
dBA	decibels A-weighted frequency scale
DOE	Department of Energy
EA	environmental assessment
EIS	environmental impact statement
EPA	Environmental Protection Agency
ER	Environmental Restoration
FONSI	Finding of No Significant Impact
ft	foot
ft^2	square feet
FY	Fiscal Year
gal.	gallons
HE	high explosives
HRSG	heat recovery steam generator
HVAC	heating, ventilation, and air conditioning
JMVF	Jemez Mountains volcanic field
km	kilometers
kV	kilovolt
LANSCE	Los Alamos Neutron Science Center
LANL	Los Alamos National Laboratory
lb	pound
M	million
m	meter
m^2	square meters
m^3	cubic meters
MAP	Mitigation Action Plan
mi	miles
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emission Standards for Hazardous Air Pollutants
NH	Norton- Hernandez
NMAAQS	New Mexico Ambient Air Quality Standards
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
PCBs	polychlorinated biphenyls

Plan	Contractor Safety Plan
PNM	Public Service Company of New Mexico
Power Pool	Los Alamos Power Pool
PPE	personal protective equipment
PRS	potential release site
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
RCRA	Resource, Conservation, and Recovery Act of 1969
ROD	Record of Decision
ROW	right-of-way
SCR	selective catalytic reduction
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWEIS	Site-Wide Environmental Impact Statement
SWMU	solid waste management unit
SWPPP	Storm Water Pollution Prevention Plan
TA	Technical Area (at LANL)
TLV	threshold limit value
tpy	tons per year
UC	University of California
U.S.	United States
yd^3	cubic yards

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	grams (g)
pounds (lb)	0.45	kilograms (kg)
short ton (ton)	0.91	metric ton (t)

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EXECUTIVE SUMMARY

The National Nuclear Security Administration[1] (NNSA) has assigned a continuing role to Los Alamos National Laboratory (LANL) in carrying out NNSA's national security mission. To enable LANL to continue this enduring responsibility requires that NNSA maintain the capabilities and capacities required in support of its national mission assignments at LANL. To carry out its Congressionally assigned mission requirements, NNSA must maintain a safe and reliable infrastructure at LANL. In order to accomplish its mission support activities, a reliable, increased electric service supply system is necessary. NNSA needs to provide the capability to meet enhanced electric power requirements of LANL facilities in a timely, fiscally prudent manner. Upgrades to the various utility services at LANL have been ongoing over the years together with routine maintenance activities. However, the replacement of site utilities is now necessary as these elements have been operating well beyond their original design estimates for the past 20 to 30 years and their components are suffering from normal stresses, strains, and general failures. NNSA has been contemplating upgrading or replacing the aging electric power generators within Technical Area (TA)-3 at LANL for the past 10 to 20 years or more as the generators have aged and the repair rate and associated expenses have increased.

The Proposed Action is to install and operate two new simple-cycle gas-fired combustion turbine generators (CTGs), each with an approximate output of 20 megawatts of electricity (rated at 7,400 feet [ft] or 2,220 meters [m] elevation) as stand-alone structures within the Building-22 Co-generation Complex at TA-3. Installation of the CTGs would occur consecutively over a period of years and would also include installation of two new compressors to provide the gas pressure required for operation of the CTGs. The Proposed Action has two options: (Option A) installation of two CTGs (CTG 1 and CTG 2) that would be used long-term as simple-cycle gas-fired turbine generators without co-generation capabilities or (Option B) installation and subsequent conversion of one or both of the installed CTGs from simple-cycle operation to combined-cycle co-generation at some future date. In addition to these two options for installing and operating the proposed CTGs, the existing steam turbines in the TA-3 Co-generation Complex would be maintained and refurbished and would continue to be operated long-term with the CTGs.

Under the No Action Alternative, DOE, NNSA would not install the CTGs in the Co-generation Complex. The existing aged steam turbines would continue to serve LANL as a supplemental supply of electric power and steam. The existing turbines would not provide the reliability of an additional source of electricity and may not provide the power required for peak loads and emergency operations that LANL operations require. LANL would not be assured of adequate power for existing and approved operations. Under the No Action Alternative, the proposed CTGs would not provide the energy required to supply LANL with power in the event of a loss of import capability or in times of emergency. LANL would not have the ability to meet future minimum electric loads for LANL and Los Alamos County in the event of a total blackout of the northern New Mexico grid. This is not an alternative that meets NNSA's purpose and need for action.

[1] The NNSA is a separately organized agency within the Department of Energy (DOE) established by Congress in 2000 under Title 50 United States Code Chapter 41, Subchapter I, Section 2401.

The Proposed Action would be located in TA-3, a highly developed area of LANL. The installation site is located in an area that would be cleared of non-essential existing small structures (two cooling towers). The installation site is immediately adjacent to existing structures and vehicle parking areas. No undeveloped (so called "green field") areas would be involved. There is one potential release site in the area; if affected by the Proposed Action, this area would be sampled and remediated in accordance with New Mexico Environment Department requirements before installation activities could proceed. Traffic congestion in the area is not expected to increase. There would be adequate parking for University of California (UC) personnel and construction workers. Construction and demolition waste would be trucked to a licensed commercial landfill or reused for backfilling. Construction, excavation, and demolition activities for the proposed CTG installations would be expected to produce only temporary and localized air emissions. Once installation is complete, operational emissions would increase in the Co-generation Complex. However, under both Option A and Option B of the Proposed Action, nitrogen oxide (NOx) emissions from all equipment at the TA-3 Co-generation Complex, including the three existing boilers and any new CTGs, would all have to remain under 99.6 tons per year, as specified in the air quality permit for the existing TA-3 Co-generation Complex. Installation of the CTGs under the Proposed Action would have no effects on ecological resources, cultural resources, visual resources, water quality, land use, or traffic, and no adverse health effects on UC employees or construction workers. Installation of the new CTGs and compressors would not be sited over fault traces or within 50 ft (15 m) of any known active fault.

Cumulative effects of the Proposed Action, along with past, present, and reasonably foreseeable actions, on LANL and surrounding lands are anticipated to be negligible. Air quality, waste management, and environmental restoration are discussed further under cumulative effects. This analysis concludes that there would not be cumulatively significant effects on these resources. Moreover, some positive effects to resources, including utilities and infrastructure, and environmental restoration would occur as a consequence of the Proposed Action to install and operate two new CTGs in the TA-3 Co-generation Complex.

1.0 PURPOSE AND NEED

Chapter 1 presents the United States (U.S.) Department of Energy (DOE), National Nuclear Security Administration's (NNSA) requirements under the *National Environmental Policy Act of 1969* (NEPA), background information on the proposal, the purpose and need for agency action, and a summary of public involvement activities.

1.1 Introduction

NEPA requires Federal agency officials to consider the environmental consequences of their proposed actions before decisions are made. In complying with NEPA, the U.S. DOE, 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 (EIS) or issue a Finding of No Significant Impact (FONSI).

At this time, the NNSA must make a decision regarding installing, operating and maintaining two approximately 20 Megawatt (MW) combustion turbine generators (CTGs) within the Technical Area (TA)-3 Co-generation Complex (Building 3-22) at Los Alamos National Laboratory (LANL). LANL is a Federal facility located at Los Alamos, New Mexico, that comprises 43 square miles (111 square kilometers) of buildings, structures, and forested land (Figure 1). LANL is administered by NNSA for the Federal government and managed and operated under contract by the University of California (UC). This EA has been prepared to assess the potential environmental consequences of the Proposed Action—installing and operating two CTGs—and of the No Action Alternative.

The objectives of this EA are to (1) describe the underlying purpose and need for DOE 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 indirect, direct, and cumulative effects to the existing environment from implementation of the Proposed Action; and (5) compare the effects of the Proposed Action with the effects of 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. The EA process provides NNSA with environmental information that can be used in developing mitigation, if necessary, to minimize or avoid adverse effects to the quality of the human environment and natural ecosystems should NNSA decide to proceed with implementing the Proposed Action at LANL.

Ultimately, the goal of NEPA, and this EA, is to aid NNSA officials in making decisions based on an understanding of environmental consequences and taking actions that protect, restore, and enhance the environment.

[2] The NNSA is a separately organized agency within DOE established by Congress in 2000 under Title 50 United States Code (USC) Chapter 41, Subchapter I, Section 2401.

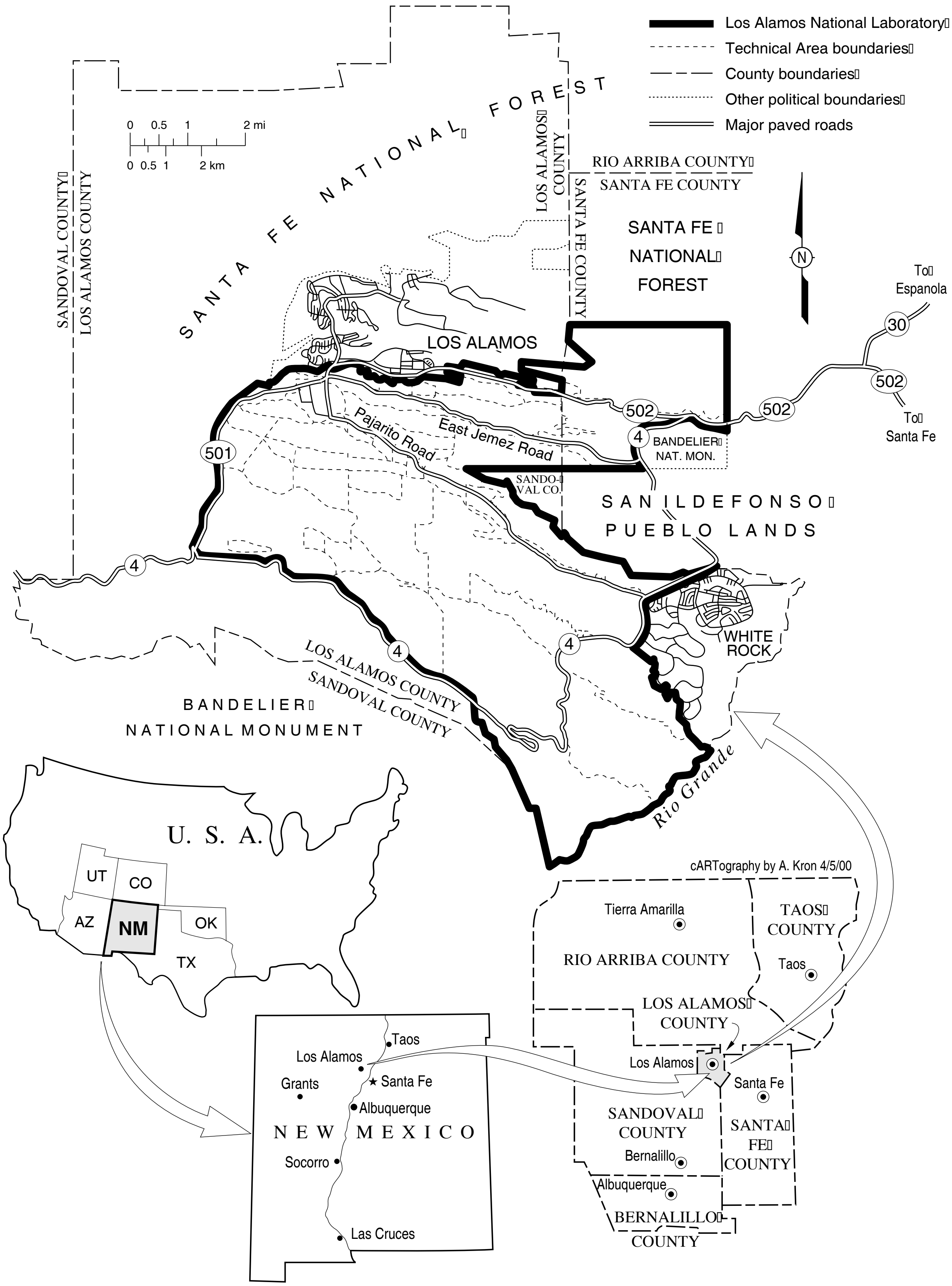

Figure 1. Location of Los Alamos National Laboratory.

1.2 Background

The U.S. National Security Policy requires the NNSA to maintain core intellectual and technical competencies in nuclear weapons and to maintain a safe and reliable national nuclear weapons stockpile. NNSA fulfills its national security nuclear weapons responsibilities, in part, through activities performed at LANL. LANL is one of three national security laboratories that support DOE and NNSA responsibilities for national security, energy resources, environmental quality, and science. The NNSA's national security mission includes the safety and reliability of the nuclear weapons in the stockpile; maintenance of the nuclear weapons stockpile in accordance with executive directives; stemming the international spread of nuclear weapons materials and technologies; developing technical solutions to reduce the threat of weapons of mass destruction; and production of nuclear propulsion plants for the U.S. Navy. The energy resources mission of DOE includes research and development for energy efficiency, renewable energy, fossil energy, and nuclear energy. The DOE's environmental quality mission for the DOE includes treatment, storage, and disposal of DOE wastes; cleanup of nuclear weapons sites; pollution prevention; storage and disposal of civilian radioactive waste; and development of technologies to reduce risks and reduce cleanup costs for DOE activities. DOE's science mission includes fundamental research in physics, materials science, chemistry, nuclear medicine, basic energy sciences, computational sciences, environmental sciences, and biological sciences, and often contributes to the other three DOE missions. LANL provides support to each of these departmental missions, with a special focus on national security.

To carry out its Congressionally assigned mission requirements, NNSA must maintain a safe and reliable infrastructure at each of the national security laboratories. The 1999 Final *Site-Wide Environmental Impact Statement for Continued Operations of the Los Alamos National Laboratory* (SWEIS) (DOE 1999a) discusses each of the previously identified DOE missions in greater detail and analyzes four different levels of operations at LANL that support these missions. The SWEIS identified the various TAs at LANL and their associated activities and buildings. The SWEIS also identified the existing circumstances of the natural and human-made environment at LANL. Part of the discussion of infrastructure at LANL includes the following statements from the SWEIS (Chapter 3, pages 3-57 and 3-58, Section 3.6.2.9): "Peak electrical demand under the No Action, Expanded Operations, and Greener Alternatives exceeds the power supply in winter and summer; this may result in periodic brownouts. (Power supply to the Los Alamos area has been a concern for a number of years, and DOE continues to work with other users in the area and power suppliers to increase this supply). Natural gas demand is not projected to change across the [SWEIS] alternatives, and this demand is within the existing supply of natural gas to the area; however, the age and condition of the existing supply and distribution system will continue to be a reliability issue for LANL and for residents and other businesses in the area." In the Record of Decision (ROD) for the SWEIS, DOE chose the Expanded Operations Alternative for implementation with some modification regarding certain weapons related operations.

Many buildings and structures and the infrastructure at LANL were built during and immediately after World War II in the mid-1900s. The original installation for the research and development of the world's first nuclear weapon was established at Los Alamos, New Mexico, in 1943 by the Manhattan District of the U.S. Army Corps of Engineers, as a temporary, short-term use facility. The original installation has evolved over the past nearly 60 years into the LANL facility of today. It is currently under the administration of the NNSA and was designated as a national security laboratory in 1999 when Congressional Act established the NNSA. Upgrades to the various utility services at LANL have been ongoing over the years together with routine maintenance activities. However, the replacement of site utilities is now necessary as these elements have been operating well beyond their original design estimates for the past 20 to 30 years and their components are suffering from normal stresses, strains, and general failures. The TA-3 Co-generation Complex (the Power Plant generates both steam and power) is now 50 years old. The reliability of utility service to LANL and to the residents and commercial businesses of the Los Alamos town site, White Rock community, and residences and businesses beyond Los Alamos County depends upon having intact supply and delivery systems (systems that do not leak product or lose transmission capacity). Reliability of the utility supply and delivery systems also depends upon having redundant system networks. Population growth within Los Alamos County has been far exceeded by population growth of Rio Arriba and Santa Fe Counties over the past 30 years. Expectations are for this upward trend in population growth to continue over the next several decades. Increases in the population of northern New Mexico and increased service demands require the augmentation of certain utility service systems at LANL and within northern New Mexico.

Ownership and distribution of utility services for LANL are currently split between NNSA and Los Alamos County. NNSA owns and distributes most utility services to LANL facilities, and the County provides these services to Los Alamos, White Rock, and in some cases, to nearby Bandelier National Monument located to the south of LANL. Utility services at LANL include electrical power, natural gas, steam, water, wastewater treatment, and waste management and disposal. LANL is supplied with electrical power through the Electric Coordination Agreement, a cooperative arrangement with the County of Los Alamos and the NNSA, known as the Los Alamos Power Pool (Power Pool), which was entered into in 1985. Electric power is supplied to the Power Pool through two existing regional 115-kilovolt (kV) electric power transmission lines, one from the Santa Fe area Norton Substation (the Norton Line) that is owned by NNSA and one from the Albuquerque area Bernalillo-Algodones Substation (the Reeves Line), that is owned and operated by Public Service Company of New Mexico (PNM). Electrical service includes NNSA ownership of a 115-kV power transmission line from the Norton Substation west into LANL and a combination steam heating and electrical power generation plant (a Co-generation Complex) at TA-3 that is operated on an as-needed basis. Secondary power system components include about 34 miles (mi) (45 kilometers [km]) of 13.2-kV distribution lines connecting to the input line side of secondary transformers at LANL facilities. Natural gas service for LANL and the surrounding residential and commercial neighborhoods is purchased from the Meridian Oil Company (Los Alamos County) and the Defense Energy Support Center (LANL) in the San Juan Basin of northwestern New Mexico. PNM owns the main gas transmission supply pipeline feeding into LANL, Los Alamos town site, and beyond into the city of Española. LANL uses most of the natural gas supply provided by PNM to the Los Alamos area. About 90 percent of the natural gas consumed by LANL is used for heating (both steam and hot air) with the remainder being used for steam-generated electrical power.

NNSA has been contemplating upgrading or replacing the aging electric power generators within TA-3 at LANL for the past 10 to 20 years or more as the generators have aged and the repair rate and associated expenses have increased. Additionally, NNSA has also been considering ways to retain the reliability of its electric power service to LANL (for example, NNSA has proposed the construction and operation of a third, redundant electric power line into LANL [DOE 2000a]), and has also been considering ways to increase the amount of electric power service transmission to LANL for the increased demands projected by the SWEIS. The current electric power and steam generating plant at TA-3 is capable of producing up to 20 MW of electric power that is shared by the Power Pool under contractual arrangement. The Power Pool purchases most of the electric power necessary to meet the use requirements of LANL and Los Alamos County customers from offsite generators. The TA-3 electric power generators are used primarily during peak demand periods of LANL operations and during system outages. Electric power purchases have been at increased cost recently, and future availability of electric power for purchase is uncertain. The TA-3 Co-generation Complex currently provides the additional electric power needed to meet peak load demands when demand exceeds the allowable supply, delivered by two 115-kV transmission lines. When electric power generation is required, steam generation is increased (additional gas is burned), and the extra steam is routed to three steam turbines for power generation. Typically, this occurs only a few months out of the year when the Los Alamos Neutron Science Center (LANSCE) is fully operational. LANSCE is LANL's major accelerator and development complex and home of the linear accelerator that requires large amounts of power. In FY 2000, LANSCE was responsible for approximately 31 percent of the entire electric consumption at LANL (LANL 2001b). Further information about LANSCE is available in the SWEIS (DOE 1999a).

Curtailment due to reductions in network capability of the regional electric transmission system would result in reduction of system capacity and the TA-3 Co-generation Complex would become the major source of electric power to maintain existing LANL electrical demand. Fire damage to transmission systems from the Cerro Grande Fire in 2000 resulted in the shutdown of both 115-kV transmission lines that supply power to LANL and Los Alamos County. The steam turbines at the TA-3 Co-generation Complex were operated and the critical electric power requirement of approximately 15 MW was maintained until the transmission lines could be repaired and power delivery through them resumed.

Historically, offsite power system failures have also disrupted operations in LANL facilities. For example, a near total electrical blackout in New Mexico in 2000 was caused by a grass fire near Farmington, New Mexico. Interruption of the electrical power supply, which has happened several times in the past two to three years, has both direct and indirect consequences to LANL. A one-day shutdown of LANL would have a direct cost (salaries only) of $3M to $5M per day and incalculable indirect costs to research and development, national security programs, and future funding.

Given their current unreliability due to age, it is unlikely that the existing TA-3 electric power generators can consistently meet the demands placed upon them for delivery of the necessary electric power. The existing regional electric power transmission system has been evaluated and found to be deficient in a study conducted by technical representatives of PNM, Plains Electric, and the Power Pool (LM&A 1994). An operating plan intended to minimize the potential for a complete loss of electric service to the Power Pool has been discussed and partially implemented. This plan calls for improved load monitoring, equipment upgrades, and optimization of some available power sources. The local power transmission and distribution lines and the TA-3 Co-generation Complex suffer from several deficiencies. Power line breakdowns due to deterioration and the inefficiencies of the TA-3 Co-generation Complex compromise the continued reliability of electric power delivery to the Power Pool.

Dependence upon only two power lines to supply LANL and Los Alamos County is inconsistent with prudent utility industry practices for fully redundant power line service to large, critical load areas. Consistent with these practices, other major electricity users in the northern New Mexico area are served by multiple power lines (three or more). Multiple power lines are necessary to provide a contingency supply capability in case of, for example, power line failure due to storms or other natural events or in case of a scheduled outage for maintenance.

The reliability of the Norton Line and the Reeves Line that serve the Power Pool is additionally compromised because they cross at one location within LANL. In doing so, they do not provide physically separate avenues for the delivery of power from independent power supply sources. The crossing of power lines results in a situation where a single outage event, such as a conductor or structural failure, could potentially cause a major power loss to the Power Pool. If such an event occurred when the TA-3 Co-generation Complex was not operating or was being serviced or repaired, there would be no power available to the Power Pool. A single outage event could have serious and disruptive consequences to LANL and to the citizens of Los Alamos County. This vulnerability was noted by the Defense Nuclear Facilities Safety Board.

Heightening concern for reliable delivery of electricity to Power Pool customers is the anticipated growth of load requirements at LANL and within Los Alamos County. If preferred alternatives analyzed in the SWEIS were to be fully implemented, they would result in additional power demands being placed on the Power Pool and, in turn, on the regional electric transmission system. These demands may not be able to be met under the current import agreements for electric power. Power shortages (brownouts) could become more frequent during peak use periods unless greater electric power capability is made available. If one of the two existing transmission lines that bring electric power into the Power Pool fails, dependence on the remaining line would add to reliability concerns. In the event of a single line failure, the remaining line would not be able to transmit the electricity needed to meet the forecasted customer loads, which would result in brownouts or power outages (blackouts).

1.3 Statement of Purpose and Need for Agency Action

The DOE, NNSA has assigned a continuing role for LANL in carrying out its national security mission. To enable LANL to continue this enduring responsibility requires that NNSA maintain the capabilities and capacities required in support of its national mission assignments at LANL. In order to accomplish its mission support activities, a reliable, increased electric service supply is necessary. NNSA needs to provide the capability to meet enhanced electric power requirements of LANL facilities in a timely, fiscally prudent manner.

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 air quality in the LANL area. This EA, therefore, presents in-depth descriptive information on air 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 amount of air emissions), a bounding analysis is often used to assess potential effects. When this approach is used, reasonable maximum assumptions are made regarding potential aspects of project activities (Sections 2.0 and 3.0 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 review could be performed. A decision to proceed or not with the action(s) would then be made.

1.5 Public Involvement

DOE provided written notification of this NEPA review to the State of New Mexico, the four Accord Pueblos (San Ildefonso, Santa Clara, Jemez, and Cochiti), Acoma Pueblo, and the Mescalero Apache Tribe and to over 30 stakeholders in the area on March 22, 2002. In addition, upon release of this draft EA, DOE will allow for a 21-day comment period. Where appropriate and to the extent practicable, concerns and comments will be considered in the final EA.

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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section discusses the Proposed Action and a No Action Alternative. Section 2.1 describes the Proposed Action for the EA 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 for comparison with the consequences of implementing the Proposed Action. Alternatives that were considered but dismissed from further analysis in this EA are discussed in Section 2.3, and related actions are discussed in Section 2.4.

2.1 Proposed Action

The Proposed Action is to install and operate two new gas-fired CTGs, each with an approximate output of 20 MW of electricity (rated at 7,400 feet [ft] or 2,220 meters [m] elevation) as stand-alone structures within the Building 3-22 Co-generation (the Power Plant generates both steam and power) Complex (Figure 2) at TA-3. Installation of the CTGs would occur consecutively over a period of years and would also include installation of two new compressors to provide the gas pressure required for operation of the CTGs. The Proposed Action has two options: (Option A) installation of two CTGs (CTG 1 and CTG 2) that would be used long-term (defined for this EA as extending over the next 25 years), as simple-cycle[3] gas-fired turbine generators without co-generation capabilities or (Option B) installation and subsequent conversion of one or both of the installed CTGs from simple-cycle operation to combined-cycle[4] co-generation at some future date. In addition to these two options for installing and operating the proposed CTGs, the existing steam turbines in the TA-3 Co-generation Complex would be maintained and refurbished and would continue to be operated over the long-term with the CTGs.

Option A: Installation and operation of two new simple-cycle CTGs.

Option A of the Proposed Action would be to install and operate two new simple-cycle CTGs and their accompanying compressors. The first simple-cycle CTG (CTG 1) and its compressor would be brought onsite and installed on concrete pads during the FY03–FY04 timeframe. A second similar CTG (CTG 2) is expected to be added to the TA-3 Co-generation Complex within the FY07–FY13 timeframe. CTG 2 would provide a reliable, onsite backup for CTG 1 and for the aging TA-3 steam turbines. The CTGs would be maintained and operated as simple-cycle units and would be used to provide supplemental power during periods of peak demand and to ensure a reliable electric service supply system to meet emergency and essential LANL power requirements. Under Option A, demolition of decommissioned cooling tower, Building 3-285, would be performed after the installation of CTG 1 to provide the space required for CTG 2, if necessary.

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[3] Simple-cycle generator is a gas turbine generator running with all exhaust flue gas exiting to the atmosphere. In this method of operation approximately 63 percent of the fuel energy is passed to the atmosphere.

[4] Combined-cycle generator is a gas turbine generator with a heat recovery steam generator and steam turbine converting exhaust flue gas energy to steam energy to be used as heat or to make electrical energy. In this method of operation approximately 45 percent of the fuel energy is passed to the atmosphere.

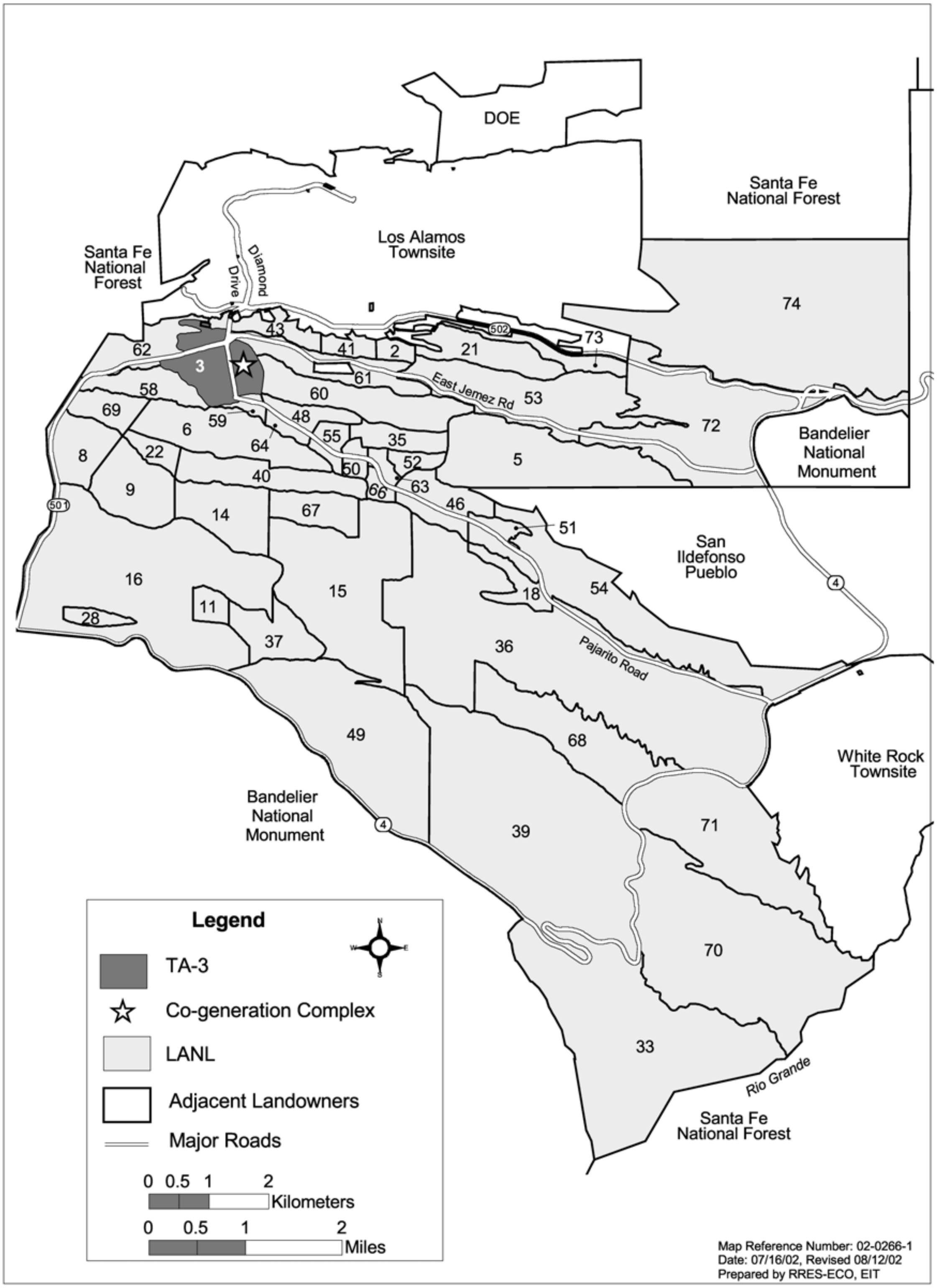

Figure 2. Site of TA-3 Co-generation Complex.

Option B: Conversion of the new simple-cycle CTGs to combined-cycle co-generation CTGs.

Option B of the Proposed Action would be to convert one or both of the installed simple-cycle CTGs (as described in Option A) to a combined-cycle CTG capable of co-generation at some time in the future. Conversion to combined-cycle co-generation CTGs would be accomplished by the addition of heat recovery steam generators (HRSGs) to the installed simple-cycle CTGs. This conversion is discussed in more detail in Section 2.1.3. The combined-cycle co-generation CTG would operate under base-loaded[5] conditions, as opposed to peak demand conditions as described in Option A. The installation of bypass valves in the CTG system would provide the option of utilizing either CTG, or both CTGs, as simple-cycle units. Under Option B, the demolition of decommissioned cooling tower, Building 3-58, would be performed to make space available for the addition of the HSRG.

2.1.1 Project Elements Common to Both Options of the Proposed Action

The Proposed Action would be located in TA-3 (Figure 2), which is a highly developed area. The TA-3 Co-generation Complex is located on the east side of Diamond Drive between East Jemez Road and Eniwetok Drive. The aging TA-3 steam turbines would be maintained and refurbished, as required, and would continue to be operated as part of the Proposed Action. The TA-3 Co-generation Complex currently provides the additional electric power needed to meet peak load demands when demand exceeds the allowable supply at LANL. The Co-generation Complex has a design capacity of 20 MW, but the deficiencies within the existing cooling system (composed of low-pressure steam condensers, pumps, valves, cooling towers, and piping) limit the generating capacity to 17 MW in the summer. Various upgrades of the aging steam turbine generators, cooling tower piping, battery banks, circuit breakers, metering, and power generation controls are needed. It takes approximately two years to rebuild a steam turbine. During the time required to rebuild one of the existing turbines, the power provided by the new CTGs under either Option A or Option B of the Proposed Action would supplement the power provided by the remaining two existing TA-3 steam turbines. When refurbishment of the existing steam turbines is complete, total electric output including the two CTGs, would be approximately 60 MW. Each CTG would have the potential to generate approximately 20 MW of electricity and the existing steam turbines would generate an additional 20 MW at peak winter heating steam demand. Annual LANL hourly electric demand varies between 40 MW and 83 MW. All electric power generated by LANL could be consumed onsite. However, the Power Pool would have the option and possibly the requirement to sell available power from offsite resources to the grid if the need arises. If the CTGs are no longer required to meet LANL's electric power needs, they could be taken out of service until such time as their output is needed to sustain future LANL projects and growth. The Proposed Action would include removal of certain structures (cooling towers) that are no longer needed. The resulting available space would be used for the Proposed Action option of choice.

[5] Base-loaded means that the unit would be operated at full-power 24 hours per day, seven days per week, and approximately 335 days per year. The only time the unit would be down would be about two weeks per year for preventive and corrective maintenance.

The proposed CTG installation site is immediately adjacent to existing structures and vehicle parking areas. No undeveloped (so called "green field") areas would be involved. No installation activities would be conducted within a floodplain or wetland. The CTGs would not be installed over a known fault or within 50 ft (15 m) of a known fault line. New lighting sources installed would be as minimal as practicable. When installation of the CTGs and compressors is complete, existing fencing would be modified within the TA-3 Co-generation Complex and the site would be landscaped, as appropriate.

The Proposed Action would be conducted in accordance with general design criteria (LANL 1999) and DOE Order 413.3 (EO 413.3). Consistent with DOE Order 413.3, the sustainable design would be space efficient, incorporate recycled and reclaimed materials into the construction whenever practicable, and integrate the building and site to maximize environmental benefits without compromising productivity.

Best management practices (BMPs) for soil erosion control purposes would be implemented for demolition and excavation activities and for the installation of the CTGs. These BMPs may include the use of hay bales, plywood, or synthetic sedimentation fences with appropriate supports. A National Pollutant Discharge Elimination System (NPDES) General Permit Notice of Intent would be filed. A Storm Water Pollution Prevention Plan (SWPPP) would be required for the construction activity and the SWPPP for the Co-generation Complex would have to be updated before construction is completed.

All phases of the Proposed Action, including demolition, installation, and operation, would be conducted in accordance with LANL's requirements for waste management (LANL 1998). These requirements specify that waste shall be reduced as much as technically and economically feasible. Waste minimization practices (such as material substitution, source reduction, hazard segregation, recycling, and reuse) would be incorporated into all waste-generating activities. Every effort would be made to encourage recycling and re-use of the demolition materials. LANL has existing recycling contracts for the following materials: metals, paper, cardboard, scrap wood (such as pallets), concrete, asphalt, wire, and plastics. To the maximum extent possible, the demolition contractor would be required to segregate these materials for recycling. Disposal of waste would be employed only when other options are not safe or are not technically or economically feasible. A Waste Minimization Plan would be prepared for the project.

Site preparation and installation activities would produce a type of waste called "construction and demolition" waste, which is a nonhazardous subcategory of solid waste as defined in New Mexico State regulations. Solid waste[6] refers to the regulatory definition of waste in 40 CFR 261.1 and not to its physical state; solid wastes may be solid, liquid, or gaseous. Soil, reclaimed asphalt material and crushed concrete rubble are classified as construction and demolition waste. Reclaimed concrete rubble, reclaimed asphalt material, and clean soil would be staged at the building-debris storage yards on Sigma Mesa (TA-60) or at another approved material management area for recycling or for future use at LANL. Non-reclaimable debris would be disposed of at the Los Alamos County Landfill or its replacement facility. Reclaimed wire,

[6] Solid waste, as defined in the Code of Federal Regulations (40 CFR 261.1) and in the New Mexico Administrative Code (20 NMAC 9.1), is any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

copper, and scrap metal would be sent offsite to a recycle facility. Re-usable items, such as pumps, light fixtures, panel boxes, and fan motors, would be recycled through a salvage facility. Approximately 250 cubic yards (yd^3) [190 cubic meters (m^3)] of solid waste is expected to be generated during installation of CTG 1. A similar amount is likely to be generated during the installation of CTG 2. Waste that cannot be recycled would be disposed of at the Los Alamos County Landfill or another approved facility. It is estimated that approximately 13 truckloads (each containing 20 yd^3 [15 m^3]) would be sufficient to remove material from the site after each installation activity. The installation contractor would be prohibited from using chemicals that generate Resource Conservation and Recovery Act (RCRA)-regulated wastes onsite.

Installation, demolition, and excavation activities would be performed using common construction industry methods. Operation of the CTGs would not involve potential hazards that would entail unique structural requirements or uncommon installation methods. Standard industry practices would be employed during the installation phase. Work at the site would require the use of heavy equipment such as cranes, cement trucks, forklifts, dump trucks, trackhoes, front-end loaders, backhoes, soil compactors, and related equipment such as a trencher and welders, as well as other similar construction and installation equipment. It would also require the use of a variety of hand tools and equipment. Installation, demolition, and excavation vehicles would specifically be expected to include two cranes, one dump truck, one trackhoe, one front-end loader, one backhoe, two soil compactors, five pickups, and related equipment such as a trencher and welders. These vehicles would operate primarily during the daylight hours and would be left onsite over night. No permanent additional exterior artificial lighting is expected to be required for the installation activities. If necessary, temporary task lighting would be directed toward the work area.

Site work would be planned and managed to ensure that standard worker safety goals are met and that work would be performed in accordance with good management practices, regulations promulgated by the Occupational Safety and Health Administration, and various DOE orders involving worker and site safety practices. For example, noise at the site would be audible primarily to involved workers and to workers housed in the adjacent LANL core area. Maximum noise levels emitted from heavy equipment would be less than 85 decibels (dBA) at 10 ft (3 m). Involved site workers would be required to wear appropriate personal protective equipment (PPE), including hearing protection, if required. To prevent serious injuries all site construction contractors would be required to submit and adhere to a Contractor Safety Plan (Plan). This Plan would be reviewed and approved by UC staff at LANL before construction activities could begin. Following approval of this Plan, UC staff at LANL and NNSA site inspectors would routinely verify that construction contractors are adhering to the Plan, including applicable Federal and State health and safety standards. Construction and installation workers would be drawn primarily from local communities and communities across northern New Mexico. The project would be expected to start in FY03 and take approximately one year to complete.

CTG installations including utility corridor trenching activities could potentially disturb some potential release site (PRS)[7] areas of contaminated soil. Should an unsuspected contaminated

[7] PRSs are potentially contaminated sites at LANL that are identified either as solid waste management units (SWMUs) or areas of concern (AOCs).

site be disclosed during subsurface construction work, LANL's Environmental Restoration (ER) Project staff would review the site and would identify procedures for working within that area. At least one known PRS is present within the identified footprint structure at the construction site. Confirmatory sampling and characterization would be required and remediation of the PRS may be required before the proposed demolition or construction would proceed through this PRS area. If remediation is necessary, the contaminated soil would be disposed of through the LANL Waste Management Program.

Demolition, excavation, and installation activities during site preparation would have the potential to generate dust and to encounter previously buried materials. Standard dust suppression methods (such as water spraying) would be used onsite to minimize the generation of dust during site activities. If buried material or cultural remains were to be encountered during site preparation, activities would cease until an assessment could be performed and appropriate subsequent actions taken. LANL personnel would ensure that the New Mexico and National Air Quality Standards for particulate emissions are met throughout any demolition, excavation, and installation activities.

During the installation phase, space in the immediate vicinity would be available for parking, equipment storage, and material staging. Vehicular traffic could be affected for short periods during delivery of construction materials and the CTGs and by the addition of construction workers in the area. Approximately 20 construction workers would be onsite during the peak construction period, adding approximately 10 vehicles to local roadways during the construction period. These workers would park their personal vehicles either in existing parking lots or in other designated parking areas.

2.1.2 Demolition and Site Preparation

Two existing structures, cooling towers Building 3-58 and Building 3-285 (Figure 3), may be demolished at various times during the site preparation stage. CTG 2 would be installed where Building 3-285 is presently sited. Building 3-58 would be demolished to install the HRSG system for combined-cycle co-generation operation as described in Option B. Demolition of these structures would provide adequate available space for the location of the CTGs, HRSGs, and compressors and would provide more room for maneuverability of construction workers and equipment in addition to more parking spaces for project workers.

Site preparation would include placement of concrete foundations to support the CTGs and compressors and installation of electrical and natural gas tie-ins. When the site is ready for installation, the CTGs and compressors would be brought onsite and placed on the concrete slabs. Connections would then be made to the necessary utilities.

Small-scale demolition work would be accomplished using hand-held or small-scale mechanically-operated equipment (as in the case of the removal of fan boxes, panel boxes, light fixtures, and copper wiring). Large-scale demolition would use heavy machinery to remove the concrete foundations, piping, and walls of the cooling towers.

A small amount of hazardous waste, lead-based paint, has been identified associated with the cooling towers and the building. There may be small amounts of incorporated asbestos-

Figure 3. Structures to be demolished and existing Co-generation Complex at TA-3.

containing building material that would require an asbestos removal program as well. The lead-based paint would be chemically stabilized by spraying or painting with a bonding material to render the material non-hazardous. The residual substance would then be removed and disposed of in the Los Alamos County Landfill or its replacement facility. Asbestos-containing material would be removed, packaged appropriately, and shipped offsite for disposal at a specifically permitted disposal facility.

After the structures are demolished, their concrete slabs and other building debris would either be crushed onsite for fill material or would be moved to the Los Alamos County Landfill for inclusion in the LANL concrete recycling program or for disposal, as appropriate. The excavated area would be backfilled with soil. Heavy equipment would be used to grade the site. Site preparation would include soil compaction and soil density testing. Engineered fill material may be brought to the site if necessary to provide appropriate site compaction and grade.

2.1.3 Option A. Installation and Operation of Two New Simple-Cycle CTGs

2.1.3.1 Combustion Turbine Generator Number One (CTG 1)

A concrete pad, about 4,500 square feet (ft^2) (405 square meters [m^2]) in size, would be poured to support CTG 1. The dimensions of the concrete pad for the CTG would be approximately 100 ft (30 m) by 45 ft (15 m). A second small concrete pad, about 196 ft^2 (18 m^2) in size, would be poured to support the compressor. The dimensions of this concrete pad would be approximately 14 ft by 14 ft (4.2 m by 4.2 m). The first simple-cycle CTG (Figure 4), CTG 1, and its compressor would be brought onsite and installed on the concrete pads during the FY03–FY04 timeframe. CTG units are basically self-contained with packaged control and monitoring equipment and a sound-baffling enclosure. Each unit consists of a steel superstructure designed to meet current manufacturer's loading, wind, and seismic standards. Requirements for these conditions can be found in the LANL Engineering Manual (LANL 1999) that is part of the specifications for the CTG. The new CTG 1 would have approximate dimensions of 71 ft (21.3 m) long by 13.5 ft (4.1 m) wide by 13.5 ft (4.1 m) high. The entire CTG 1, including the gas emissions stack, would not be any taller than adjacent structures within the Co-generation

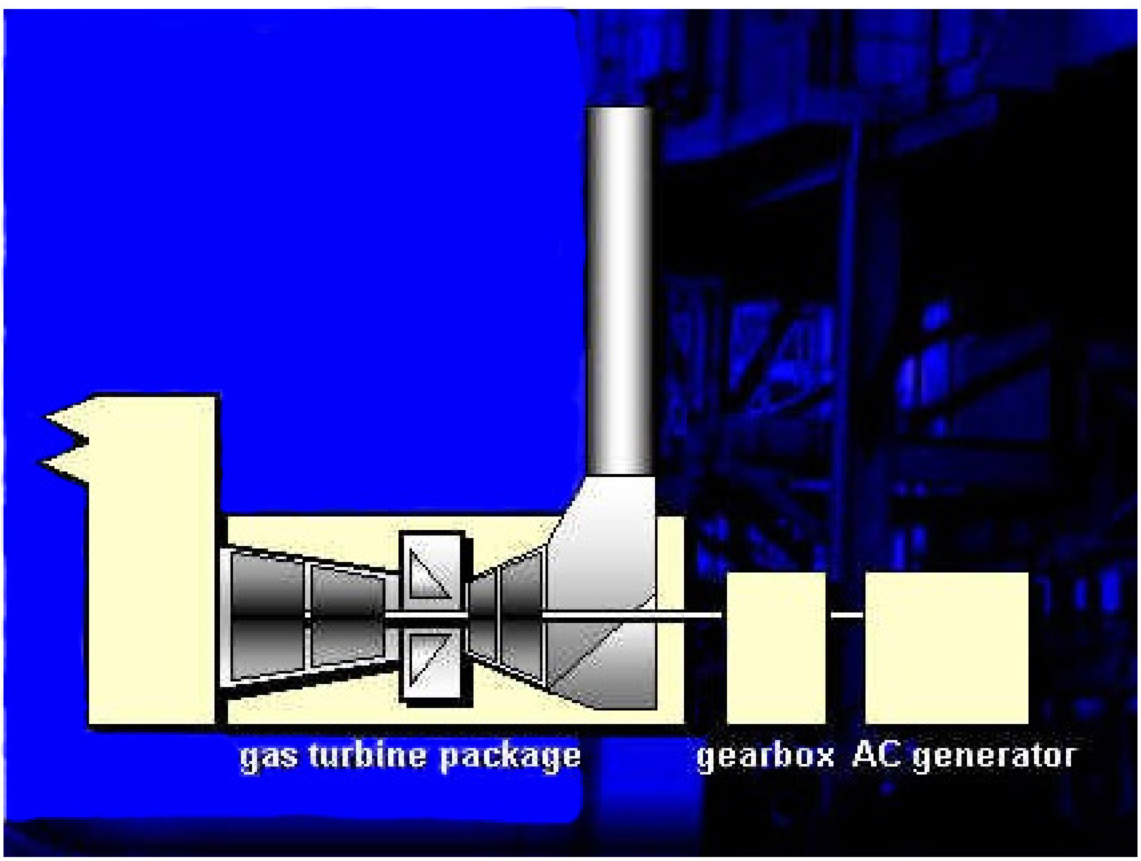

Figure 4. Simple-cycle co-generation combustion turbine generator.

Complex; the total height of the structure would be approximately 45 ft (14 m) above ground level.

The new simple-cycle CTG 1 would use approximately 38 percent less natural gas for an equivalent amount of power produced from the three existing steam turbines at the TA-3 Co-generation Complex. A breakdown of current usage and projected savings for natural gas consumption is as follows:

- Heat Rate of the Power Plant Steam Turbines = 16,000,000 British Thermal Units (BTU) per megawatt-hour (MWh)
- Projected Heat Rate of the Simple-cycle CTG = 9,856,000 BTU per MWh
- Natural Gas Savings = 6,144,000 BTU per MWh = (16,000,000 BTU per MWh, the heat rate of the power plant steam turbines) – (9,856,000, the projected heat rate of the simple-cycle CTG) (approximately 38 percent savings)
- Combined-cycle Co-generation CTG - Approximately 0.8 standard cubic feet of natural gas would be saved per pound (lb) of steam generated in the HRSG as compared to the existing steam boilers. The HRSG can generate approximately 75,000 lb of steam from the exhaust heat of the CTG.

The use of the proposed simple-cycle CTG 1 would save approximately 36,800 gallons (gal.) of water for each hour of operation for an equivalent amount of power as compared to the amount of water consumed by the existing Power Plant steam turbines. A breakdown of current usage and projected savings for water consumption is as follows:

- Water Usage of the Power Plant Steam Turbines = 1,840 gal. per MWh
- Water Usage of the Simple-cycle CTG = 0 gal. per MWh
- Water Savings = (1,840 gal per MWh) × (20 MW) = 36,800 gal. per hour
- Water Usage of the Combined-cycle co-generation HRSG should be about the same as the existing steam boilers

The natural gas fuel supply for each CTG would be provided by the existing LANL natural gas distribution system. Natural gas utility services within LANL are sufficient at the proposed installation site to serve each CTG. The Proposed Action would require the installation of a short (400 ft [20 m]) natural gas line that would be tied into an existing service line located adjacent to the proposed installation site. Minimal shallow trenching would be required. Currently, natural gas is supplied to the TA-3 plant through a pressure reducing station located just east of Building 3-22. The supply pressure at this point is 88 pounds per square inch (psi). In order to use gas from this supply point, additional fuel compression would be required. CTG 1 would use a new natural gas compressor that would be about 6 ft by 7 ft by 14 ft (1.8 m by 2.1 m by 4.2 m) in size. It would be located approximately 200 to 400 ft (60 to 120 m) from CTG 1 and would increase the normal operating gas pressure of about 88 psi to approximately 450 psi, which is the expected operating pressure that would be required by the CTG. A closed (dry) cooling system, similar to a car radiator, would be used as a cooling source for the CTG.

There are several overhead utility lines that would need to be relocated before CTG 1 could be brought onsite. The existing power lines cut across the site and would need to be relocated around the perimeter. There would be one new permanent power line pole. All other perimeter power line poles are currently in place. The service connection for various utilities and grounding for CTG 1 would require approximately 4,200 ft (1,260 m) of shallow trenching within previously disturbed areas. The trenching would include the individual utility tie-ins such as electrical service tie-ins, communications tie-ins, and grounding to existing grounding grids. After CTG 1 is installed, mounds of loose soil would be removed from the area. The surrounding area would be landscaped in accordance with the LANL Facility Engineering Manual (LANL 1999) and DOE Order N450.4 (DOE 2001), Assignment of Responsibilities for Executive Order 13148, Greening the Government through Leadership in Environmental Management.

2.1.3.2 Combustion Turbine Generator Number Two (CTG 2)

It is projected that the second CTG, CTG 2, and its compressor would be brought onsite and installed on concrete pads during the FY07–FY13 timeframe. Additional site preparation would be needed for the installation of CTG 2. CTG 2 and its compressor would be installed at the same site as, and adjacent to, CTG 1 in the area vacated by the demolition of cooling tower, Building 3-285. Installation of CTG 2 and its compressor would require two additional concrete pads that would be the same approximate size as the concrete pads put in place for CTG 1 (see previous Section 2.1.2.1). Approximately 1,000 ft (300 m) of new trenching would be required to accommodate utility service tie-ins and grounding grid installation.

Operation of the Simple-cycle Combustion Turbine Generators

The CTGs would be operated in accordance with manufacturer’s requirements. The estimated operational life for each CTG is approximately 100,000 hours of operation. The actual hours of operation would be determined by air quality permit restrictions that limit nitrogen oxides (NOx) emissions to 40 tons per year (tpy) and carbon monoxide (CO) emissions to less than 80 tpy. The use of dry, low NOx combustors would control and lower NOx emissions to less than 40 tpy, below the Prevention of Significant Deterioration (PSD) permitting thresholds, and ensure that the NOx emission limit in the New Source Performance Standards (NSPS) (40 CFR Part 60, Subpart GG) of the Clean Air Act (CAA) for gas turbines would be achieved.

CTG start up and operation are automated; CTGs can also be started remotely. Approximately two full-time employees would be required to maintain the CTGs. These personnel would maintain electrical equipment, mechanical equipment, and electronic equipment. Maintenance contract personnel would be onsite as needed for preventive maintenance or for repair activities and other additional related services. Routine maintenance of the CTGs would be performed as required throughout their operational lifespan.

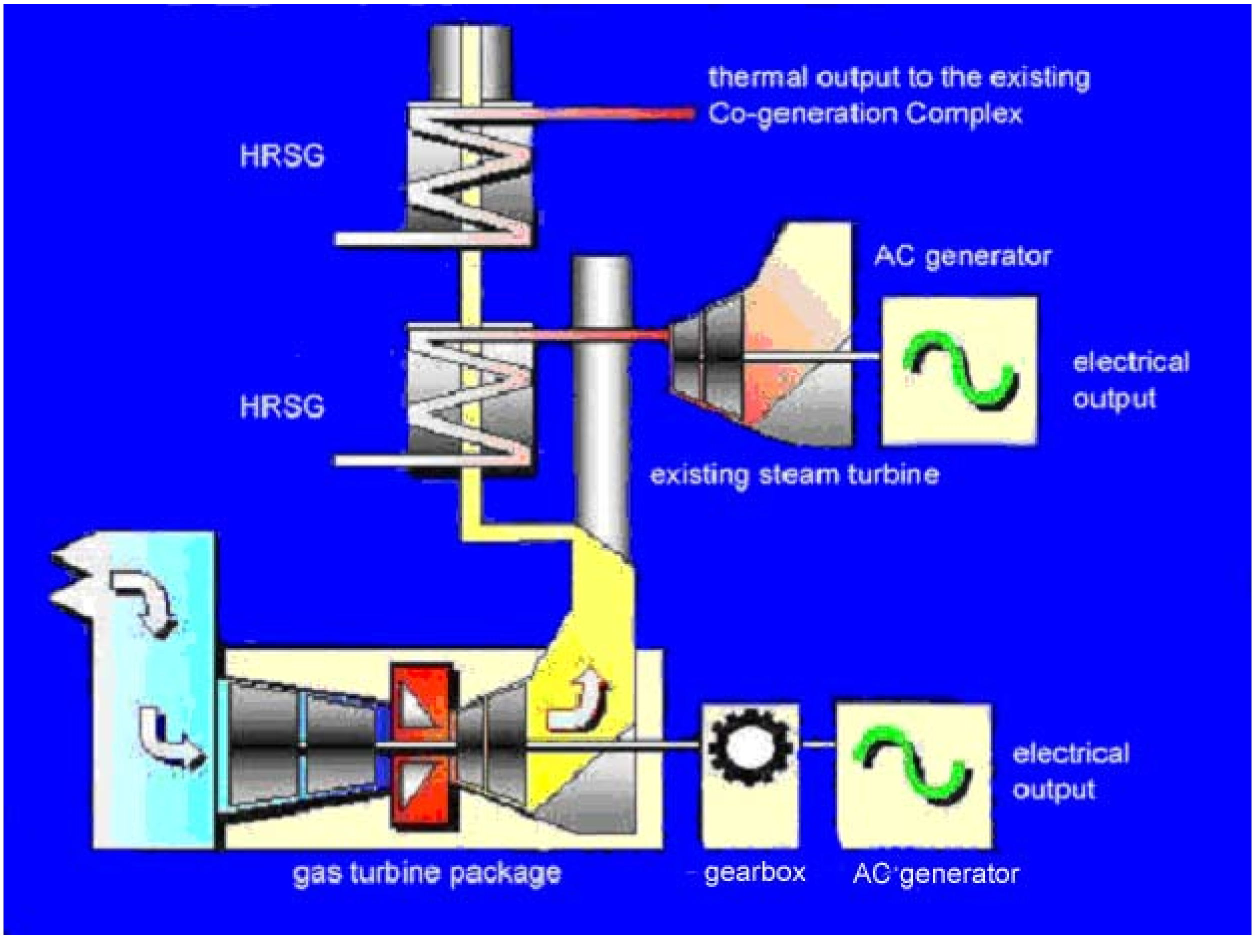

Figure 5. Combined-cycle co-generation combustion turbine generator.

2.1.4 Option B. Conversion of the New Simple-cycle CTGs to Combined-cycle Co-generation CTGs

Under Option B, either one or both of the existing simple-cycle CTG plants installed and operated as described in the Option A discussion, would be converted to a combined-cycle co-generation CTG plant (Figure 5) by the addition of a HRSG.

The HRSGs would be fabricated offsite and shipped in sections to the gas turbine site. The sections would be joined together and attached to a concrete and steel support system. The HRSG footprint would be approximately 20 to 30 ft (6 to 9 m) wide, 30 to 40 ft (9 to 12 m) long, and less then 45 ft (14 m) high. The main components of a HRSG would be the following: steam drum, mud drum, economizer, floor and water wall tubes, supplementary natural gas burners, forced and induced draft fans, and a superheater with a Selective Catalytic Reduction[8] (SCR)

[8] A SCR system for combined-cycle plants normally operates between 660 and 800 degrees Fahrenheit. At this temperature range, the SCR is normally installed inside the HRSG. The SCR will typically reduce NOx by 60 percent to 70 percent. NOx is reduced by reaction between it and ammonia as the mixed gases pass through the catalyst.

system to scrub NOx. External piping that would need to be installed includes feed water supply from the Co-generation Complex, blowdown piping to the Co-generation Complex, steam piping to the steam distribution system, the Co-generation Complex turbines and natural gas supply. Bypass valves are expected to be installed to allow operation of the CTGs without the boiler, if needed. Ammonia tanks and piping would be constructed for NOx removal. Electric power to the fans and communication lines would also be required. The HRSG would be connected with ducting to the outlet stack of the CTGs and would have its own separate stack.

Each combined-cycle co-generation CTG would operate as a base-loaded unit (defined in Section 2.1). The only time the unit would be down would be approximately two weeks per year for preventative and corrective maintenance. Although LANL does not require an additional base-loaded plant at this time, the additional capacity may be needed in the future to support LANL operations, particularly if there is an overall failure of the regional electric transmission lines or of the existing TA-3 steam turbines.

Operation of the combined-cycle co-generation CTGs.

Operation of each unit would be similar to that of the simple-cycle CTG discussed in Section 2.1.2.3. The combined-cycle co-generation CTG would be operated in accordance with the manufacturer's requirements, as discussed under Option A. A breakdown of current usage and projected savings for natural gas and water consumption is described in Section 2.1.2.1. Routine maintenance would be performed as required throughout its operational lifespan. Approximately three full-time employees would be required to maintain it. These personnel would maintain electrical equipment, mechanical equipment, and electronic equipment. Maintenance contract personnel would probably be onsite as needed for preventive maintenance or when required for repair activities.

Similar to the simple-cycle CTGs discussed in Option A, it is expected that emissions from the combined-cycle co-generation CTGs would not exceed 40 tpy of NOx or 80 tpy CO because of the inclusion of a dry, low NOx system within the CTGs and the addition of a SCR system to the boiler. The SCR system would reduce NOx emissions by an additional 60 percent to 70 percent.

Emissions Information Common to Both Options

Under both Option A and Option B of the Proposed Action, NOx emissions from all equipment at the TA-3 Co-generation Complex, including the three existing boilers and any new CTGs, would all have to remain under 99.6 tpy, as specified in air quality permit No. 2195B for the existing TA-3 Co-generation Complex. CO emissions would be required to remain below 81.3 tpy as specified in the permit. Both the proposed simple-cycle CTGs and the combined-cycle co-generation CTGs would be subject to the requirements of the NSPS Subpart GG which specifies emission standards for NOx and sulfur dioxide (SO_2) from gas turbines and fuel monitoring for nitrogen and sulfur content. Although NOx is the primary concern and focus for CTGs, the next pollutant of concern for gas-fired CTGs is CO because of potential permit issues, such as PSD permitting. CO, itself, is not harmful until it reaches higher concentrations than other pollutants. For this reason, PSD review for a modification is triggered at 100 tpy for CO emissions, as opposed to 40 tpy for NOx emissions. NOx and CO emissions under both Option A and Option

B would be controlled and reduced to below PSD permitting thresholds. LANL would permit the proposed CTGs as a "minor stationary source."

2.2 No Action Alternative

The No Action Alternative provides a description of current conditions to compare to the potential effects of the Proposed Action. This alternative must be considered even if NNSA is under a court order or legislative command to act [10 CFR 1021.32 (c)]. Under the No Action Alternative DOE, NNSA would not install the CTGs in the TA-3 Co-generation Complex. The existing aged steam turbines would continue to serve LANL as a supplemental supply of electric power and steam until they failed and were rebuilt. The existing turbines would not provide the reliability of an additional source of electricity and may not provide the power required for peak loads and emergency operations that LANL operations require. LANL would not be assured of adequate power for existing and approved operations pursuant to the SWEIS ROD and Mitigation Action Plan (MAP) (DOE 2000b).

Under the No Action Alternative, NNSA would not have the capability to supply LANL with power in the event of a loss of import capability or in times of emergency. FY02 peak electrical demand was 86 MW. When peak electrical loads exceed import and onsite resources, the only alternative would be to curtail LANL operations. Current minimum electric demand for LANL and Los Alamos County is approximately 40 MW. LANL would not have the additional 20-MW to 40-MW capability added to the existing 20-MW steam generating capability at the TA-3 Co-generation Complex (at least until the older units fail permanently). LANL would not have the ability to meet future minimum electric loads for LANL and Los Alamos County in the event of a total blackout of the northern New Mexico grid.

Under the No Action Alternative, there would be no installation or demolition debris that would require disposal. There would be no air emissions from new CTGs.

2.3 Alternatives Considered but Dismissed

2.3.1 Additional Regional Transmission Capacity

The preferred method of supplying additional reliable power to meet LANL capability requirements would be to bring in power by another transmission line from external power sources. Two future regional transmission developments, when completed, would add capability to supply power to the northern New Mexico regional transmission systems and LANL.

Tri-State (Colorado based electric utility) is proceeding with final approvals for the construction of a 113-mi (182-km), 230-kV line known as the Colorado–New Mexico Intertie Project (CNMIP) from Gladstone, New Mexico, to Walsenburg, CO. This project is scheduled to be completed by 2004. However, right-of-way (ROW) problems may delay the project. The CNMIP in concert with the proposed correction of the Norton-Hernandez (NH) thermal overload problem described in subsequent paragraphs, could create up to a 209-MW increase in the import rating of the northern New Mexico regional transmission systems.

Additionally, DOE-Albuquerque has offered to work with PNM to develop a joint project to correct the NH thermal overload problem. Efforts need to proceed to negotiate extension of the ROW easements, which traverse approximately 6.6 mi (10.6 km) of federally-administered lands, 5.4 mi (8.7 km) of San Ildefonso Pueblo lands, 5.2 mi (8.4 km) of Santa Clara Pueblo lands, 0.6 mi (1 km) of privately owned lands, and 2.6 mi (4.2 km) of San Juan Pueblo lands. However, the PNM ROW through San Ildefonso Pueblo lands expires on December 31, 2002. If this ROW renewal effort were successful, the NH line may be rebuilt as a high-capacity 115-kV circuit. There is no timeline established for this project.

Neither of these transmission developments is yet underway and their futures are uncertain. Although these regional transmission developments would add capability to the northern New Mexico transmission system, including LANL, the increased import capability still would not provide LANL with the reliability of a redundant power generating system. An independent electrical power supply is essential for continued LANL operations in the event of interruption or destruction of the import transmission lines or a blackout of the northern New Mexico power supply due to human-made or natural disaster. Therefore, this method of addressing the NNSA's need for action is not analyzed further in this EA.

2.3.2 Development of Alternative Power Generating Technology

The development of alternate power generation at LANL was considered. This scenario would involve the development of local or onsite alternative power technologies such as solar, wind, fuel cells, nuclear, micro turbines, geothermal, or coal to deliver the needed electricity. An alternative power generating technology would be costly and time-intensive due to the technical and environmental challenges involved. These challenges are an inherent part of the make-up of the technologies. Solar- and wind-generated power have such low capacity factors (percent of time during the day when power is available) that they may not be available for continuous use or may not be available when needed. In addition, the land area required for such facilities to supply 20 MW to 40 MW of power would be prohibitive. LANL does not have an abundance of available real estate that would be required for large wind or solar farms. LANL is not located in a favorably windy area such as the flat lands of eastern New Mexico. Fuel cells and micro turbines are proven technologies, but individual units are not very large. To meet the capacity requirements, numerous units and utility tie-ins would be required. The installation of small, natural gas fired power generation units at individual buildings could not be achieved at a reasonable cost and within a reasonable timeframe as this would include the need for installation of an additional gas services. These units are expensive and difficult to put in service all at once if power were required in a short timeframe. The nearest geothermal resource is miles away and LANL does not own the subsurface geothermal rights, nor are they readily available. Clean coal technology is very expensive, and would require delivery of the coal by rail. Los Alamos County does not have rail service, so this technology would not be feasible. The development of alternate power generation has been dismissed from further consideration in this EA.

2.4 Related Actions

2.4.1 Final Site-Wide Environmental Impact Statement for the Continued Operation of the Los Alamos National Laboratory

The Final LANL SWEIS (DOE 1999a), dated January 1999, was issued in February of that year. A ROD was issued in September 1999, and a MAP was issued in October 1999 (DOE 1999b). The SWEIS (p. 4–179) included the information that the existing electric transmission line has been evaluated and found to be deficient and that loss of power from the regional electric distribution system results in system isolation where the TA-3 Co-generation Complex is the only source of sufficient capacity to prevent a total blackout. In addition, the SWEIS (p. 4–181) includes the information that the TA-3 Co-generation Complex is over 50 years old and needs various upgrades. An analysis of the effects of supplementing the existing electrical services was not included in the SWEIS (DOE 1999a).

The SWEIS included an analysis of impacts for operations of the existing TA-3 Co-generation Complex operations at levels that were greater than are currently being forecast as needed in the foreseeable future. The analysis of impacts is therefore bounding of the operations as they would be conducted if the Proposed Action's installation of the CTG were to occur. This EA tiers from the SWEIS and a re-analysis of the operations per say will not be provided in this EA. Any points of difference from the effects attributable to installation of the CTG will, however, be included in the Section 3 analysis of effects within this EA.

2.4.2 Demolition of Vacated Buildings

The demolition of vacated buildings and structures is ongoing at LANL. Demolition activities are evaluated for NEPA compliance purposes. Some of the TA-3 buildings and structures, other than those involved in the Proposed Action, have been categorically excluded from the need to prepare either an EA or an EIS. Some of these structures were included in other EAs—DOE/EA-1238, *Environmental Assessment for the Proposed Construction and Operation of the Nonproliferation and International Security Center*; DOE/EA-1375, *SM-43 Administration Building Replacement Environmental Assessment*; DOE/EA-1407, *Proposed TA-16 Engineering Complex Refurbishment and Consolidation*; DOE/EA-1410, *Environmental Assessment for the Proposed Disposition of the Omega West Facility at Los Alamos National Laboratory, Los Alamos, New Mexico*.

2.4.3 DOE/EA-1247 Environmental Assessment for Electrical Power Systems Upgrades at Los Alamos National Laboratory

This EA, issued in March 2000, analyzed the effects of upgrading the electrical power supply system for LANL to increase the reliability of the system to meet current and future needs. The EA provided sufficient evidence and analysis to determine that a FONSI was appropriate for the Proposed Action and Alternatives 1 and 2. The Proposed Action included construction of a 115-kV power transmission line across Bureau of Land Management (BLM)-, United States Forest Service-, and DOE-administered lands; and the uncrossing of two other 115-kV lines within LANL. The Proposed Action included the operation of a 115-kV power line that would originate at the existing Norton Substation and proceed westerly to its intersection with the existing

Reeves Line and then primarily north across the Rio Grande to LANL. The line would then continue northwesterly mostly through the central portion of LANL to the proposed West Technical Area Substation. The first three ROW segments would be constructed using 345-kV-type structures; the remaining ROW segment would be constructed using 115-kV-type structures. Two short 115-kV line segments are needed to extend an interior transmission "loop" from TA-3. The No Action Alternative was also considered.

3.0 AFFECTED ENVIRONMENT

Section 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 Action description, environmental resources that may potentially be affected as a result of implementing the Proposed Action have been considered. Environmental issues were identified and either addressed in this section or not, based on the "Sliding Scale Approach" discussed earlier in this EA (Section 1.4). Table 1 identifies the subsection where potential environmental issues are discussed or notes why they are not addressed in this document.

Table 1. Potential Environmental Issues Applicable to this EA

Environmental Category	Applicability	Subsection
Air Quality	Yes	3.2
Waste Management	Yes	3.3
Environmental Restoration	Yes	3.4
Utilities and Infrastructure	Yes	3.5
Noise	Yes	3.6
Geology	Yes	3.7
Human Health	Yes	3.8
Land Use	No. Land uses and land use designations would not be affected as a result of the Proposed Action or alternatives.	N/A
Floodplains and wetlands	No. The Proposed Action would not be located in a floodplain and wetland. The Co-generation Complex outfall and Sandia Canyon wetland would not be affected as a result of this action.	N/A
Cultural Resources	No. There are no known archaeological or historic resources within the area of the Proposed Action.	N/A
Socioeconomic	No. Demolition and construction activities would employ only 20 new workers at the peak activity and would have little noticeable effect on local economy.	N/A
Environmental Justice	No. Populations that are subject to environmental justice considerations are not located within the area of influence of the Proposed Actions or alternatives. Populations nearest to the Proposed Action site are not predominantly minority and low-income populations.	N/A
Water Resources (Ground and Surface)	No. There would be no effect on water quality. There would be a decrease in water use. There would be no discharge to the Co-generation Complex outfall as a result of the Proposed Action. Cooling requirements for the CTGs are accomplished by a closed (dry) cooling system.	N/A
Visual Resources	No. All alternatives involve only local construction in an existing industrial area. No construction would result in buildings higher or more visible than the existing buildings.	N/A
Biological Resources	No. The Proposed Action would be located within previously disturbed and developed land or adjacent to disturbed areas within an industrialized area of LANL. The Proposed Action site is adequately distant from potential core habitat for areas designated as sensitive habitat for Federally listed threatened and endangered species.	N/A
Traffic and Transportation	No. The Proposed Action would not affect traffic rates or patterns on LANL or Los Alamos County roads.	N/A

3.1 Regional Setting

The Proposed Action would be located within the area of Los Alamos County that includes LANL. LANL 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 consists of 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 town site, 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 Department of Agriculture, Santa Fe National Forest and the Department of the Interior, National Park Service, Bandelier National Monument; and to the east by the Department of the Interior, BLM.

3.2 Air Quality

The Clean Air Act (CAA) (40 CFR 50) establishes air quality standards to protect public health and the environment from the harmful effects of air pollution. The act requires establishment of national standards of performance for new stationary sources of emissions, limitations for any new or modified structure that emits or may emit an air pollutant, and standards for emission of hazardous air pollutants (HAPs). In addition, the CAA requires that specific emission increases be evaluated to prevent a significant deterioration in air quality.

The Environmental Protection Agency (EPA) is the regulating authority for the CAA. However, EPA has granted the State of New Mexico primacy for regulating air quality under an approved State Implementation Plan[9] (SIP). In New Mexico, all of the CAA regulations, with the exception of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for radionuclides (40 CFR 61), certain provisions relating to Stratospheric Ozone Protection (40 CFR 82), and the Risk Management Program (40 CFR 68) have been adopted by the state as part of the SIP, and are regulated under the New Mexico Quality Control Act.

The New Mexico Environmental Improvement Board, as provided by the New Mexico Air Quality Control Act, regulates air quality through a series of air quality control regulations in the New Mexico Administrative Code (NMAC). These regulations are administered by the New Mexico Environment Department (NMED). Under the federal CAA and the SIP, LANL is subject to federal air quality regulations, including those that are not part of the SIP, and performs all work in accordance with EPA requirements and LANL standards. In addition to the existing federal programs, the 1990 amendments to the CAA mandate new program requirements that include control technology for hazardous air pollutants, enhanced monitoring, prevention of accidental releases, and chlorofluorocarbon replacement.

[9] The purpose of the SIP is to ensure that federal emission standards are being implemented and NAAQs are being achieved.

The Proposed Action would be located in Los Alamos County. This area is in attainment with all state and national ambient air quality standards[10]. Air quality is a measure of the amount and distribution of potentially harmful pollutants in ambient air. Air surveillance at Los Alamos includes monitoring emissions to determine the air quality effects of LANL operations. UC staff at LANL calculates annual actual LANL emissions of regulated air pollutants and reports the results annually to the NMED. The ambient air quality in and around LANL meets all EPA and DOE standards for protecting the public and workers (LANL 2001b).

Mobile sources, such as automobiles and construction vehicles, are additional sources of air emissions; however, mobile sources are not regulated by NMED. Diesel emissions from conveyance vehicles are not regulated as stationary sources of emissions. Mechanical equipment including bulldozers, excavators, backhoes, cranes, tamper compactors, trenchers, and drill rigs are exempt from permitting under Title 20 of the NMAC Part 2.72, *Construction Permits*. This type of exemption does not require notification to NMED.

Both EPA and NMED regulate nonradioactive air emissions. NMED does not regulate dust from excavation or construction, but UC or their subcontractors take appropriate steps during construction activities to control fugitive dust and particulate emissions using, for example, best achievable control measures of water sprays or soil tackifiers[11]. Excavation and construction activities are not considered stationary sources of regulated air pollutants under the New Mexico air quality requirements; these activities are not subject to permitting under 20 NMAC, Parts 2.70 and 2.72. Annual dust emissions from daily windblown dust are generally higher than short-term construction-related dust emissions. LANL would ensure that the New Mexico Ambient Air Quality Standards (NMAAQS) and the National Ambient Air Quality Standards (NAAQS) for particulate emissions are met throughout any construction activities.

Provisions of 20 NMAC 2.72 require construction permits for new or modified sources of regulated air pollutants. Currently, air quality permit No. 2195B limits NOx from the three existing Co-generation Complex boilers to 99.6 tpy. All new sources would be limited to 40 tpy NOx emissions per unit. The proposed simple-cycle CTGs and the combined-cycle co-generation CTGs would be subject to the Subpart GG of the NSPS for gas turbines which specifies emission standards for NOx and SO_2 and fuel monitoring for nitrogen and sulfur content. Although NOx is the primary concern and focus for CTGs, the next pollutant of concern for gas-fired CTGs is CO because of potential permit issues, such as PSD permitting. CO, itself, is not harmful until it reaches higher concentrations than other pollutants. For this reason, PSD review for a modification is triggered at 100 tpy for CO emissions, as opposed to 40 tpy for NOx emissions. Stack testing would be conducted on the proposed CTGs prior to submitting an air quality permit modification to NMED. Permitting would take approximately six months.

[10] Ambient air is defined in 40 CFR 50.1 as "that portion of the atmosphere external to buildings, to which the public has access." It is defined in the NMAC Title 20, chapter 2, part 72, as "the outdoor atmosphere, but does not include the area entirely within the boundaries of the industrial or manufacturing property within which the air contaminants are or may be emitted and public access is restricted within such boundaries."

[11] Tackifiers are chemical dust suppressants often added to water that act to disperse the chemicals, then evaporate after application. The chemicals that are left behind bind the soil particles together into larger particles that are less easily blown in the air.

3.3 Waste Management

LANL generates solid waste[12] from construction, demolition, and facility operations. These wastes are managed and disposed of at appropriate solid waste facilities. Both LANL and Los Alamos County use the same solid waste landfill located within LANL boundaries on DOE-administered land. The Los Alamos County Landfill also accepts solid waste from other neighboring communities. The Los Alamos County Landfill receives about 52 tons per day (47 metric tons per day), with LANL contributing about eight tons per day (seven metric tons per day), or about 15 percent of the total. When the current Los Alamos County Landfill closes, it would be capped and monitored and a portion of the site could be used as a transfer station and recycling center. NNSA and UC are currently investigating future waste management options for LANL solid waste.

Building-debris storage yards on Sigma Mesa, the Los Alamos County Landfill or other approved material management areas at LANL are currently used to store concrete rubble, asphalt, and clean soil for future re-use at LANL or for recycling offsite. Hazardous waste[13] regulated under RCRA is transported to TA-54 at LANL for proper management, which is carried out in accordance with applicable laws, regulations, and DOE Orders. Hazardous wastes and mixed wastes are both treated and disposed of offsite since LANL has no onsite disposal capability for these waste types. The offsite disposal locations are located across the US and are audited for regulatory compliance before being used by UC.

There is one consolidated PRS that is of potential concern to the Proposed Action. Depending on the selected orientation of the CTG and confirmatory sampling, remediation of this PRS may be required before installation activities could proceed.

3.4 Environmental Restoration

NNSA and UC staff at LANL are jointly responsible for implementing the DOE ER Program at LANL, which is a designated RCRA hazardous waste facility. The ER Project is governed primarily by the corrective action process prescribed in the RCRA, but it is also subject to other applicable laws and regulations and to LANL policies. The NMED administers RCRA in New Mexico. NNSA, through the Los Alamos Site Office, conducts site characterization and waste cleanup (corrective action) activities at PRSs at LANL. Site characterization and cleanup is needed to reduce risk to human health and the environment posed by potential releases of contaminants at ER project sites.

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[12] Solid waste, as defined in 40 CFR 261.2 and in 20 NMAC 9.1, is any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

[13] Hazardous waste, as defined in 40 CFR 261.3, which addresses RCRA regulations, and by reference in 20 NMAC 4.1, is waste that meets any of the following criteria: a) waste exhibits *any* of the four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, or toxicity; b) waste is specifically *listed* as being hazardous in one of the four tables in Subpart D of the CFR; c) waste is a mixture of a *listed* hazardous waste item and a nonhazardous waste; d) waste has been *declared* to be hazardous by the generator.

PRSs include SWMUs[14] and AOCs[15], collectively. PRSs at LANL include septic tanks and lines, chemical storage areas, wastewater outfalls (the area below a pipe that drains wastewater), material disposal areas (landfills), incinerators, firing ranges and their impact areas, surface spills, and electric transformers. PRSs are found on mesa tops, in material disposal areas, in canyons, and in a few areas in the Los Alamos town site.

The primary means of contaminant release from these sites are surface water runoff carrying potentially contaminated sediments and soil erosion exposing buried contaminants. The main pathways by which released contaminants can migrate are infiltration into alluvial aquifers, airborne dispersion of particulate matter, and sediment migration from surface runoff. The contaminants involved include volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls (PCBs), asbestos, pesticides, heavy metals, beryllium, radionuclides, petroleum products, and high explosives (HE). The 1999 LANL SWEIS (DOE 1999a) contains additional information on contaminants. There is one consolidated PRS that is of potential concern to the Proposed Action.

3.5 Utilities and Infrastructure

Section 4.9.2 of the 1999 LANL SWEIS (DOE 1999a) describes utility and infrastructure services at LANL. The utilities and infrastructure in and around LANL under the Preferred Alternative selected in the SWEIS ROD are described in detail in Section 5.5.9.2 of the SWEIS. Utility systems at LANL include electrical service, natural gas, communications lines, steam, water, sanitary wastewater, and refuse. The LANL Comprehensive Site Plan 2000 (LANL 2001c) documents that design redundancy into the power system is necessary to avoid potential curtailment of a large percentage of LANL operations in the event of a power line disruption.

The SWEIS Yearbook–2000 (LANL 2001a) notes that total gas consumption in FY2000 was less than projected by the SWEIS ROD (1.84 million decatherms) because of warmer than normal weather, however, more gas than anticipated was used for electric generation at the TA-3 Co-generation Complex. According to the Yearbook, LANL used about 1.43 million decatherms of natural gas in FY2000 and approximately 90 percent of this was used for heating (both steam and hot air). The remainder was used for electrical production to fill the difference between peak loads and electric contractual import rights.

3.6 Noise

Noise is defined as unwanted sound. Noise is categorized into two types: *continuous noise,* which is characterized as longer duration and lower intensity, such as a running motor, and *impulsive or impact noise,* which is characterized by short duration and high intensity, such as

[14] A SWMU is defined in the Hazardous and Solid Waste Amendments Module VIII of LANL's Hazardous Waste Facility Permit as "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released."

[15] Sites that potentially contain hazardous substances but not hazardous wastes or hazardous constituents as defined by RCRA are called AOCs. The different geologic media of the canyons system – sediments, aquifers, and parent material are categorized as AOCs.

the detonation of HE. The intensity of sound is measured in decibel units and has been modified into an A-weighted frequency scale (dBA) for setting human auditory limits.

Noise measured at LANL is primarily from occupational exposures that generally take place inside buildings. Occupational exposures are compared against an established Threshold Limit Value (TLV). The TLV is administratively defined as the sound level to which a worker may be exposed for a specific work period without probable adverse effects on hearing acuity. The TLV for continuous noise is 85 dBA for an 8-hour workday. The TLV for impulsive noise during an 8-hour workday is not fixed because the number of impulses allowed per day varies depending on the dBA of each impulse, however, no individual impulse should exceed 140 dBA. An action level (level of exposure to workplace noise that is below the TLV, but the use of PPE is recommended) has been established for noise in the workplace at LANL. The action level for continuous noise is 82 dBA for an 8-hour workday. Because of the nature of the operations and staffing requirements at the existing steam plant, a hearing protection program is in effect.

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: 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 HE testing. Measurements of environmental noise in and around LANL facilities and operations average below 80 dBA.

The averages of 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 LANL and the County ranged between 38 dBA and 96 dBA, respectively.

3.7 Geologic Setting

The Jemez Mountains volcanic field (JMVF) is located in northern New Mexico at the intersection of the western margin of the Rio Grande rift and the Jemez Lineament (Figure 6) (Smith et al., 1970; Gardner et al., 1986; Heiken et al, 1996). The Jemez Lineament is a northeast-southwest trending alignment of young volcanic fields ranging from the Springerville volcanic field in east-central Arizona to the Raton volcanic field of northeastern New Mexico (Heiken et al., 1996). The JMVF is the largest volcanic center along this lineament (ERP 1992). Volcanism in the JMVF spans a roughly 16-million-year period beginning with the eruptions of numerous basaltic lava flows. Various other eruptions of basaltic, rhyolitic, and intermediate composition lavas and ash flows occurred sporadically during the next 15 million years with volcanic activity culminating in the eruption of the rhyolitic Bandelier Tuff at 1.68 and 1.23 million years ago (Self and Sykes 1996). All of LANL property is within the JMVF and is sited along the western edge of the Rio Grande Rift. Most of the bedrock on LANL property is composed of Bandelier Tuff.

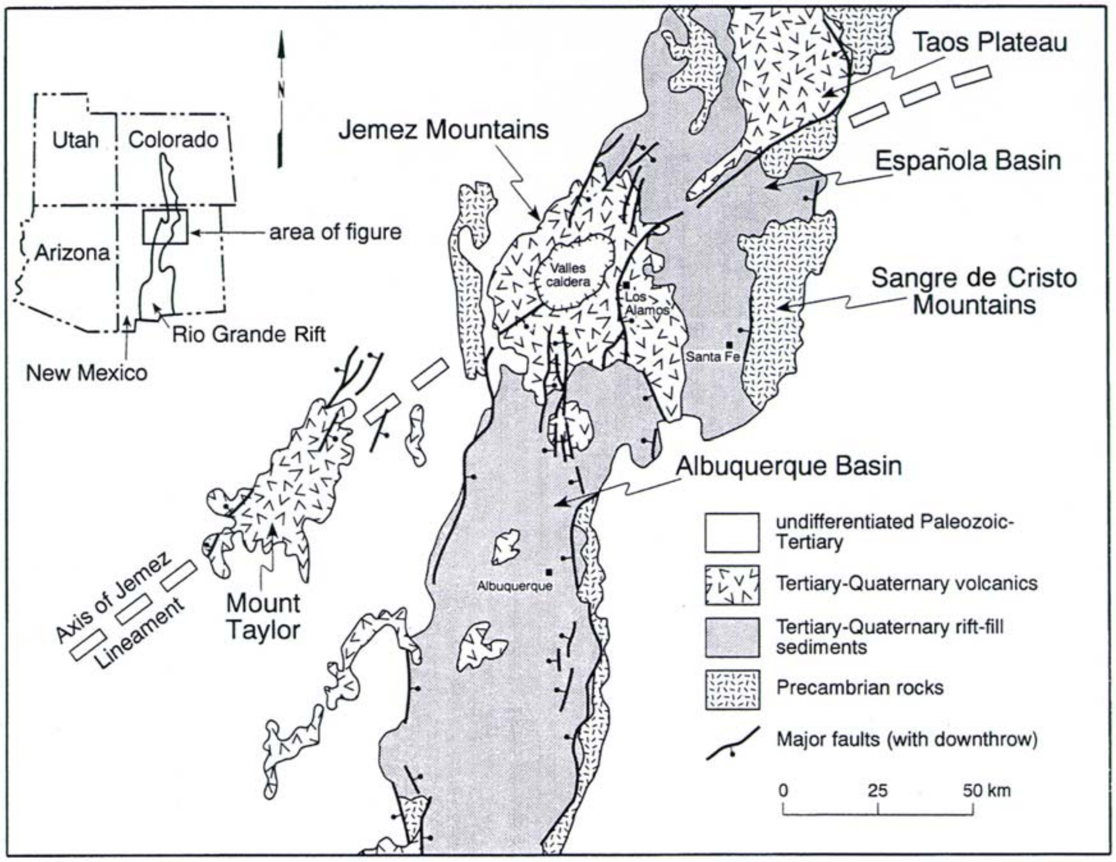

Figure 6. Generalized geologic map of the Rio Grande rift in the vicinity of the JMVF (Self and Sykes 1996).

The geologic structure of the LANL area is dominated by the north-trending Pajarito Fault Zone. The Pajarito Fault system forms the western structural boundary of the Rio Grande rift, along the western edge of the Española Basin (Figure 6), and the eastern edge of the JMVF. The Pajarito Fault zone consists of three major faults (Pajarito Fault, Rendija Canyon Fault, and the Guaje Mountain Fault) and numerous secondary faults with vertical displacements ranging from 80 to 400 ft (24 to 120 m). Estimates of the timing of the most recent surface rupturing paleoearthquakes along this fault range from 3,000 to 24,000 years ago (Reneau and Gardner 1999; Calpin 2000; Gardner et al., 1999, 2001).

3.8 Human Health

The health of LANL workers is routinely monitored depending upon the type of work they perform. Health monitoring programs for LANL workers consider a wide range of potential concerns including exposures to radioactive materials, hazardous chemicals, physical or environmental hazards, and routine workplace hazards. In addition, LANL workers involved in hazardous operations are protected by various engineering or process controls and required to wear appropriate PPE. Training is also required to identify and avoid or correct potential hazards typically found in the work environment and to respond to emergency situations. Because of the various health monitoring programs and the requirements for PPE and routine health and safety training, LANL workers are generally considered to be a healthy workforce with a below average incidence of work-related injuries and illnesses.

LANL staff monitors environmental media for contaminants that could affect non-LANL workers or members of the public. This information is reported to regulatory agencies, such as the NMED and to the public through various permits and reporting mechanisms and is used to assess the effects of routine operations at LANL on the general public. For detailed information about environmental media monitoring and doses to the public, see LANL's Environmental Surveillance Report for 2000 (LANL 2001a). For those persons that work within the boundaries of LANL as subcontractors or demolition workers and could be exposed to radioactive or other hazardous materials, their exposures are monitored in the same manner as UC workers. Site-specific training and PPE requirements also apply to these workers.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Anticipated Effects of Implementing the Proposed Action and the No Action Alternative

4.1.1 Air Quality

Proposed Action

Potential temporary effects on air quality would be associated with the Proposed Action. Installation activities, including demolition, site preparation, and trenching, would result in temporary, localized emissions associated with vehicle and equipment exhaust as well as particulate (dust) emissions from excavation and construction activities. Air emissions from the installed CTGs would not be expected to exceed either the NAAQS or the NMAAQs as adopted by the State of New Mexico in its SIP. Cumulative NOx emissions from the Co-generation Complex would not exceed 99.6 tpy per unit. Emissions from all new sources would be limited to 40 tpy NOx. Effects of the Proposed Action on air quality would be negligible.

Option A. NOx emissions from the simple-cycle CTGs would not exceed the PSD permitting threshold of 40 tpy per unit because of the installation of a dry, low NOx combustion system and the inclusion of this as an enforceable requirement in the minor source permit. The use of dry, low NOx combustors on the simple-cycle CTGs, with reduced fuel burning, would control and lower NOx emissions to below the PSD permitting thresholds, and ensure that the NOx emission limit in the NSPS for gas turbines would be achieved.

Option B. Similarly, the further addition of the SCR system on the combined-cycle co-generation CTGs would control and lower NOx emissions on these units by an additional 60 percent to 70 percent, to below the PSD permitting thresholds of 40 tpy NOx per unit, and ensure that the NOx emission limit in the NSPS for gas turbines would be achieved. Similar to Option A, emissions from each CTG would not exceed 40 tpy because of the installation of the SCR system.

If necessary, hazardous wastes from the PRS would be removed by the CTG project before the proposed construction activities begin. Remediation activities could potentially affect air quality on a temporary basis. Excavation activities for the purpose of removing contaminated soil from the PRS for treatment or transport could result in a minor amount of airborne fugitive dust. The amounts of air emissions would be kept to a minimum by the control measures proposed as part of the Proposed Action, such as the use of water spray trucks and soil tackifiers.

Emissions from internal combustion and diesel engine combustion products would result from excavation and construction activities. All air emissions associated with the operation of excavation and construction equipment would be within ambient air quality standards. Total emissions of criteria pollutants and other air emissions associated with the operation of heavy equipment for excavation and construction activities would contribute greater emissions than other vehicles due to the types of engines and their respective emission factors.

No Action Alternative

There would be no change from ambient air quality effects associated with implementing the No Action Alternative. Excavation, construction, and demolition activities would not occur. There would be no new emissions from the TA-3 Co-generation Complex area, because the gas-fired turbines would not be installed.

4.1.2 Waste Management

Proposed Action

The Proposed Action would require managing and disposing of wastes generated by construction and demolition activities. These activities would have a small effect on waste management resources in the area. As previously discussed in the Proposed Action description in Section 2.1, installation of the CTGs and potential conversion to combined-cycle operation would incorporate, to the extent practical, the recommendations provided in the Pollution Prevention Design Assessment for this project.

The waste management plan for the Proposed Action would be to dispose of the solid waste from construction and demolition at the Los Alamos Country landfill, a new regional facility, or other New Mexico landfills in accordance with practices required by LANL's Laboratory Implementing Requirement for General Waste Management (LANL 1998). A Waste Minimization Plan would be prepared by the installation contractor to minimize the generation of waste during the installation phase of the project. Reclaimed crushed concrete rubble would either be reused onsite during construction or would be staged at an approved material management area for future use at LANL or would be transported to the Los Alamos County Landfill for recycling through an existing LANL recycling contract. Uncontaminated soil that could not be reused onsite would be stored at an approved material management area for future use at LANL. Contaminated soil containing hazardous constituents which may result from PRS remediation activities would be disposed of appropriately as discussed in Section 3.3. The Proposed Action would not require the construction of any new waste landfills.

The waste quantities discussed for Option A and Option B have been developed from preliminary estimates and from similar post-project knowledge and are expected to bound the actual waste amounts generated. The estimates would be refined as additional information becomes available during the development of the project design.

Option A

Construction waste would be generated from the demolition of cooling tower Building 3-285 (see Figure 4). Approximately 2,250 yd^3 (1,710 m^3) of construction debris is estimated to result from demolition of this structure. Material that cannot be recycled would be disposed of at the Los Alamos County Landfill or other New Mexico solid waste landfills. Recyclable material would be transported to an appropriate recycling facility or would be staged at the Los Alamos County Landfill for recycling. Lead-contaminated items are RCRA-designated "characteristic" hazardous waste constituents. Lead-based paint would be chemically stabilized and rendered non-hazardous by spraying or painting with a bonding material and would then be disposed of in the Los Alamos County Landfill or its replacement facility.

Hazardous wastes would be identified and removed from the structures scheduled for demolition before general structural demolition begins. The only hazardous wastes expected to be generated by implementing the Proposed Action would be a small amount of asbestos from the demolition of the cooling towers and possibly contaminated soil resulting from cleanup of the PRS, if sampling and characterization activities indicate that this is required. Asbestos removal is stringently controlled. Asbestos disposal is regulated under RCRA as a nonhazardous waste. It is classified as a New Mexico Special Waste that has unique handling, transportation, and disposal requirements to ensure protection of the environment and the health, welfare, and safety of the public. Asbestos wastes generated during demolition activities are regulated under the NESHAP for Asbestos (Asbestos NESHAP [40 CFR 61, Subpart M]) and would be managed in accordance with all applicable regulations. Approximately 1.2 yd^3 (0.9 m^3) of asbestos-contaminated material would be appropriately disposed of offsite at permitted landfills. Depending on the results of soil sampling, contaminated soil may need to be removed from the PRS before construction activities begin. An upper bound estimate of 580 yd^3 (440 m^3) of soil may require disposal as hazardous waste.

Option B

Building 3-58 would be demolished to vacate space for the installation of the HRSG. Construction waste would be generated from the demolition of cooling tower Building 3-58 (see Figure 4). Approximately 2,750 yd^3 (2,090 m^3) of construction debris is estimated to result from demolition of this structure. Approximately 2.5 yd^3 (1.9 m^3) of asbestos-contaminated material would be disposed of offsite. Disposition of the demolition debris is the same as that discussed for Option A in the previous section.

If the project chooses Option B, conversion of the existing simple-cycle CTGs to combined-cycle co-generation CTGs, then additional soil sampling and characterization would need to be done at that time. Similar to Option A, remediation of the consolidated PRS may also be required under Option B. Disposal of this waste is discussed in Section 3.3.

No Action Alternative

There would be no additional waste generated under the No Action Alternative. There would be no demolition, excavation, or construction activities. The construction debris waste shipments to landfills or recycling centers would not occur. There would be no generation of asbestos-containing material or any other hazardous waste. There would be no cleanup of the consolidated PRS before its scheduled remediation.

4.1.3 Environmental Restoration

Proposed Action

The PRS of concern is a consolidated unit identified as SWMU 03-012(b)-00. ER Project documentation states that contamination found at the site of the Proposed Action is possibly from chemicals used in association with the cooling towers and other utility operations in the area.

The constituents of concern are chromates, lead, cyanide, mercury, and silver. In the past, chromates were used to treat the cooling-tower water for corrosion control and it is possible that the overspray from the towers is the cause of the contamination in the area. These constituents have been found in elevated concentrations that would cause some excavated material from this site to be treated as hazardous waste.

The CTG project, in consultation with the ER Project, would perform site characterization and sampling to determine the extent of contamination and if site remediation would be required before installation and utility corridor trenching activities could proceed. If analyses indicate that certain constituents in the soil are at elevated concentrations and would not pass the Total Concentrate Leachate Procedure test, the soil would be disposed of as a RCRA hazardous waste at an offsite treatment, storage, and disposal facility. Excavated material that is determined not to be hazardous would be returned to the site.

The environmental consequences would be the same for both Option A and Option B. If sampling and characterization indicate that remediation of this PRS is required, site cleanup would occur before construction. Hazardous wastes from the PRS affected by excavation, demolition, or construction activities would be removed and disposed of in accordance with LANL waste management requirements (Section 3.3) before installation activities begin.

No Action Alternative

Under the No Action Alternative, the proposed installation of the CTGs would not occur. The PRS in the proposed siting location would not be affected by construction activities. Site cleanup activities would not be accelerated to provide remediation of this particular PRS.

4.1.4 Utilities and Infrastructure

Proposed Action

Option A and Option B under the Proposed Action would have negligible adverse effects during construction, but would produce a long-term positive benefit. The proposed 20-MW simple-cycle CTGs and combined-cycle co-generation CTGs would assure there is adequate power for existing and approved LANL operations. The Co-generation Complex is operating at a fraction of its 20-MW capacity because one of its three turbines is in need of repair. Peak LANL demand (86 MW) occurred in September 2001 when the LANSCE facility was operating. The proposed CTGs would extend this margin consistent with the Expanded Operations scenario analyzed in the SWEIS, approved by the ROD and required by the MAP (DOE 1999b). The proposed CTGs would enhance power reliability at LANL by providing redundancy in the event of service disruptions. The approximately 40-MW capability from the proposed CTGs and the potential 20-MW steam-generating capability at the TA-3 Co-generation Complex could provide the capability to meet minimum electric loads for LANL and Los Alamos County in the event of a total blackout of the northern New Mexico grid.

No-Action Alternative

Under the No-Action Alternative, NNSA would not install two new approximately 20-MW CTGs and, consequently, the cooling towers now occupying the proposed site would not be demolished and would not require disposal. DOE/NNSA and LANL would need to seek other power sources, such as an additional high-voltage electric power transmission line, to support mission requirements and provide backup capability.

4.1.5 Noise

Proposed Action

The environmental consequences would be the same for both Option A and Option B. The Proposed Action would result in limited short-term increases in noise levels associated with various demolition and construction activities. Following the completion of these activities, noise levels would remain below 82 dBA at 10 ft (3 m) from the proposed new CTGs. Noise generated by the Proposed Action is not expected to have an adverse effect on LANL workers, members of the public, or on the environment.

The demolition of existing structures, earthmoving activities, and structure construction would require the use of heavy equipment for removal of debris, dirt, and vegetation and for installation of the new concrete pads. Heavy equipment, such as front-end loaders and backhoes, used during construction 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). Truck traffic would occur frequently but would generally produce noise levels below that of the heavy equipment. PPE would be recommended if site-specific work produced noise levels above the LANL action level of 82 dBA. Based upon a number of physical features, such as attenuation factors, noise levels should return to background levels within about 200 ft (66 m) of the noise source (Canter 1996). Since sound levels would be expected to dissipate to background levels before reaching most publicly accessible areas or undisturbed wildlife habitats, sounds from construction activities should not be noticeable to most members of the public and should not disturb most local wildlife.

The proposed new CTGs would house equipment that generates noise at levels well above the LANL action level of 82 dBA. Noise levels that exceed the action level would typically trigger the implementation of a hearing conservation program for workers. However, the proposed new facility would be designed so that the turbines would be isolated or enclosed to reduce noise levels to 85 dBA or less at 3 ft (1 m) from the enclosures. In addition, no permanent staff would be located within the enclosures or within 3 ft (1 m) of the enclosures. Therefore, a hearing conservation program would not be required for workers at the proposed new CTGs.

Traffic noise from commuting workers would not be expected to noticeably increase the present traffic noise level on roads at LANL. The vehicles of workers would remain parked during the day and would not contribute to background noise levels. Therefore, noise levels are not expected to exceed the established TLV.

Long-term maintenance of the CTGs would not require the use of heavy equipment. Routine maintenance operations under the Proposed Action would not result in noise levels any higher than these already existing in the Co-generation Complex.

No Action Alternative

Under the No Action Alternative, ambient noise levels would remain unchanged in the vicinity of TA-3. Potential noise from operation, demolition, and construction activities associated with the Proposed Action would not occur.

4.1.6 Geology

Proposed Action

The environmental consequences to this resource would be the same for both Option A and Option B. The local geologic setting is expected to have minimal effects on the Proposed Action. Seismic activity may affect the new CTGs, however, the probability of a seismic event is very low.

The entire TA-3 area lies within the Diamond Drive Graben (a basin bounded by two faults) which is bounded by the Pajarito Fault on the west and the Rendija Canyon Fault on the east (Gardner et al., 1999). As such, the Proposed Action is in an area of generally higher potential for seismic surface rupture relative to locations farther removed from the Pajarito Fault Zone (Gardner et al., 2001). The location for the proposed CTGs is greater than 50 ft (15 m) from any known fault line (Figures 7 and 8). However, probabilistic analysis of 1 in 10,000 year seismic events suggests that significant seismic events are only expected to occur along, or on, the main trace of the Pajarito Fault (Gardner et al., 2001) west of State Road 501. Even though probabilities are low, the Pajarito Fault Zone must be considered active or "capable" in the definitions of 10 CFR 100 Appendix A.

A surface rupturing seismic event within or near the Pajarito Fault Zone could have consequences for the new CTGs and other structures within the area. As such, the new CTGs may require additional structural reinforcements to meet current building codes with respect to seismic hazards.

No Action Alternative

Under the No Action Alternative, the new CTGs would not be installed. Therefore, there would be no effects to consider.

4.1.7 Human Health

Proposed Action

This section considers the health of LANL and non-LANL construction and maintenance workers. These two categories are considered in this EA because each category of worker would either be involved in the installation or the maintenance of the new CTGs at LANL under the Proposed Action. LANL workers would be the primary users of the proposed CTGs. Members of the general public unaffiliated with LANL are not considered because they would not be allowed access to the proposed CTGs.

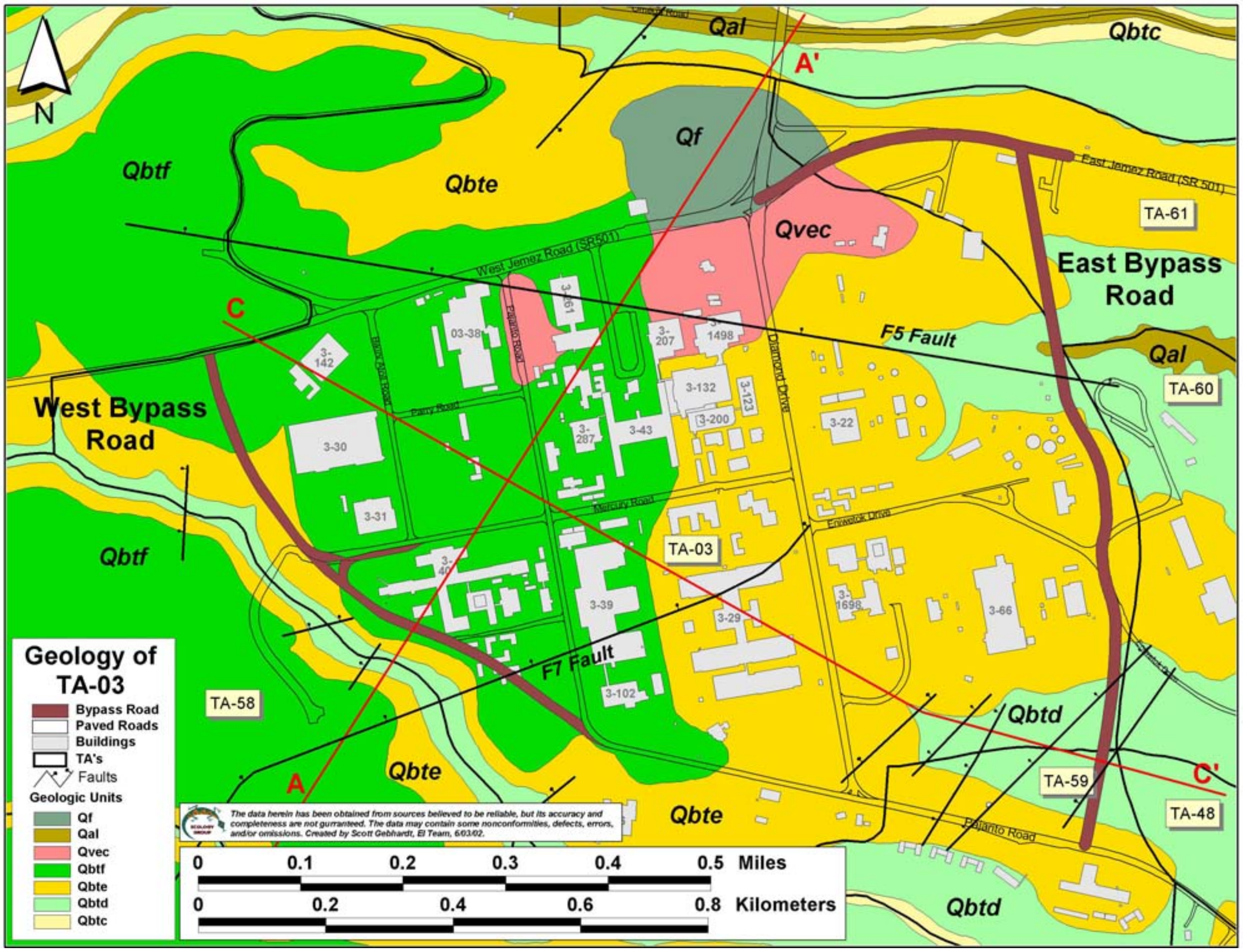

Figure 7. Simplified geologic map of TA-3 showing the locations of known geologic faults (bar and ball on down-thrown side). Red lines A-A' and C-C' are cross-sections depicted in Figure 8. (Data from Gardner et al., [1999] and Rogers [1995]).

The environmental consequences would be the same for both Option A and Option B. Building demolition, installation activities, and routine maintenance work planned under the Proposed Action would not be expected to have any adverse health effects on LANL workers. UC workers at LANL would not be directly involved in demolition, site clearing, earthmoving, heavy equipment operations, or installation activities. Non-UC support and maintenance contractors would be actively involved in demolition, installation, and maintenance activities under the Proposed Action. Approximately two NNSA workers and about 20 LANL workers would perform site inspections and monitor demolition activities during periods of peak activity. Applicable safety and health training and monitoring, PPE, and work-site hazard controls would be required for these workers.

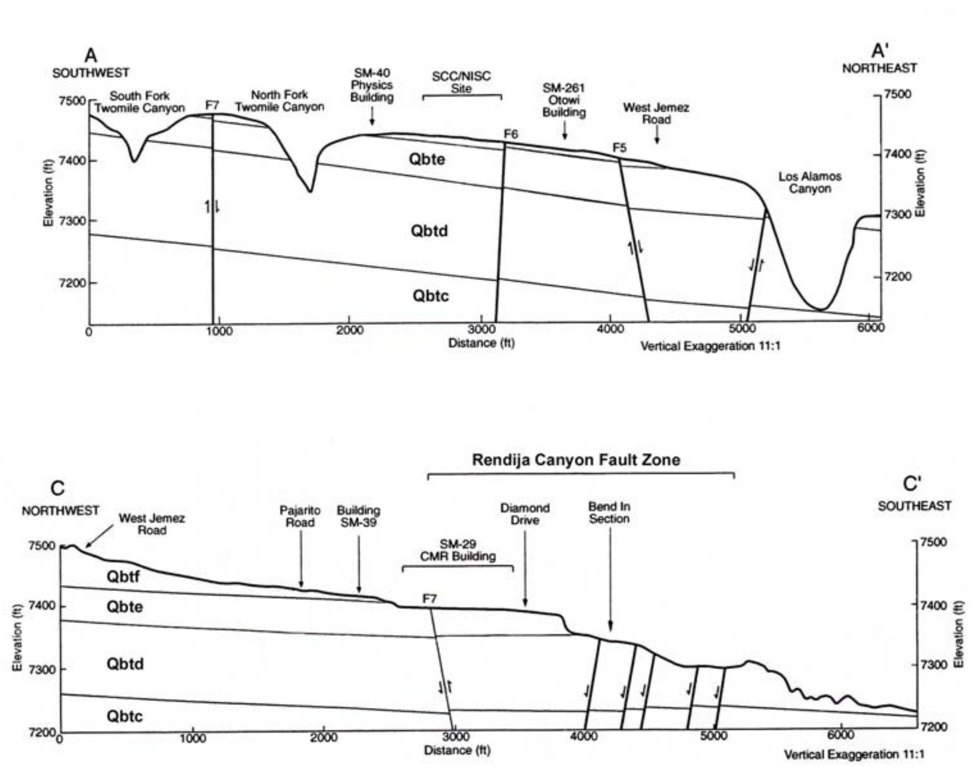

Figure 8. Simplified geologic cross-sections along lines A-A' and C-C' shown on Figure 7. (Data from Gardner et al., [1999] and Rogers [1995].) (Geologic symbols are shown in Figure 7.)

The Proposed Action is not expected to result in adverse long-term effects on the health of construction or maintenance workers. Approximately 20 peak-period construction workers would be actively involved in potentially hazardous activities at the various construction and demolition locations within the TA-3 Co-generation Complex. Installation activities would take about one year to complete and involve some heavy-equipment operations. Large earthmoving machines could be used at various times at the subject location. Potentially serious exposures to various hazards or injuries are possible during the demolition and installation phases of the Proposed Action. Adverse effects during installation activities could range from relatively minor events (such as cuts or sprains) to major injuries (such as broken bones or fatalities). To prevent serious injuries, all non-LANL site workers are required to adhere to a Contractor Safety Plan (Plan) for construction activities. Adherence to an approved Plan, use of PPE and engineered controls, and completion of appropriate hazards training are expected to help prevent adverse long-term health effects on demolition and construction workers.

Routine maintenance of the proposed new CTGs would be performed in accordance with standard practices used at LANL for conducting work on buildings and infrastructure. Hazards associated with routine maintenance operations could pose a minimal health risk to non-LANL maintenance workers. Adherence to required and applicable hazard control plans and completion of appropriate training would help to prevent adverse health effects on these workers.

No Action Alternative

Under the No Action Alternative, there would be no potential for injuries to LANL workers and non-LANL demolition and construction workers from activities planned under the Proposed Action. No exposures to demolition activities, earth moving, or installation activities would take place.

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5.0 ACCIDENT ANALYSIS

5.1 The Proposed Action

The Proposed Action to install and operate two approximately 20-MW simple-cycle gas-fired CTGs at TA-3 consists primarily of activities that are performed on a routine basis in the utility industry. Without the presence of radiological materials or significant quantities of hazardous chemicals, the Proposed Action can be considered common practice in a standard industry. The only known exception would be site environmental restoration involving the cleanup of any contaminants from PRSs, where the potential exists for exposure to very low levels of chemicals resulting from an accident. This activity could be considered a specialized accident type that is somewhat unique to DOE nuclear facilities; however, with knowledge of PRS locations and the nature and extent of contaminants at this PRS, cleanup of the PRS, if needed, before implementation of the Proposed Action is sufficient mitigation to eliminate any credible possibility of a related accident. Section 2.1.1 discusses how known or potential PRSs located within the project area would be managed.

CTGs are self-contained and inherently safe. Gas turbines require no chemicals for water treatment, chemicals that personnel are potentially exposed to in accident conditions. No steam is used to operate the gas turbine. Exhaust gases from the gas turbine turn the turbine blades generating electrical power. Risks from containment systems are absent and preventative maintenance and repair has been very safe. Anoxic conditions that can occur in confined-space work are absent with gas turbines. Combustion blowers are not needed on gas turbines, eliminating the risk of injury in maintaining and repairing them. Gas turbines that catastrophically fail shut down with little or no external damage because of the armor surrounding the turbine blades. Lastly, replacement of gas turbine engines is a comparably simple task with little risk of potential injury. (Jordan 2002).

No safety-significant or safety class systems, structures, or components are associated with the new facilities of the Proposed Action (Merrick 2001). The existing steam turbine generator system has been operated free of serious accidents since 1977 (Gonzales 2002).

5.2 Construction (Demolition) Hazards

The most common hazards associated with the construction of utilities of this type are falls, heavy equipment hazards, being struck or caught by objects or equipment, and transportation incidents. The most serious result of an accident associated with the Proposed Action would be a fatality during construction or operation of the CTGs. “Construction” as discussed here includes demolition and removal of any existing structures; e.g., the cooling towers. Potential fatalities can be considered by comparing national statistics on construction with project worker information for the Proposed Action. Although the low worker numbers and relatively short construction duration period result in the conclusion that no fatalities are likely to result from the proposed construction, we should note that construction laborers are identified as an occupation at high risk of a fatal work injury.

The estimated number of workers was used to compare to recent risk rates of occupational fatalities for construction. Up to 20 full-time workers could be employed for as long as one year. The average fatality rate in the U.S. for industries that include causes of falls, exposure to harmful substances, fires and explosions; being struck by objects, equipment, or projectiles; and transportation (industry-related) is 3.9 per 100,000 workers per year (Saltzman 2001). Based on this statistic and the estimated worker number and duration information, no deaths (0.0008) from these causes are expected from implementing the Proposed Action.

The Proposed Action would require the installation of approximately 400 ft (20 m) of natural gas line that would be tied into an existing service line. Potential accidents that begin with the rupture of pipelines are commonly considered. With an industry pipeline rupture rate of 1.25 per 1,000 miles of pipeline per year (AICE 1994), the increment in pipeline rupture rate associated with the Proposed Action would be negligible ($\sim 8.2 \times 10^{-5}$ per year).

Under the No Action Alternative, there would be no construction (including demolition) nor installation and, therefore, there is a slightly increased accident risk associated with the Proposed Action when compared with the No Action Alternative.

5.3 Operations Hazards

Hazards often associated with the operation of utilities of this type are electrocution, fires, and pressure-related incidents, including explosions. In the year 2000, the electric services industry experienced 28 fatalities out of a total of 5,915 in the U.S. (DOL 2002), which did not result in classification of occupations in this industry as high risk. Statistics are not available on the specific occupation of operating CTGs, therefore, the proportion of the fatality rate cited above that is associated with operating CTGs is not known. As discussed above, CTGs are inherently safe. Regarding nonfatal injuries and illnesses, in the year 2000, the electric services industry experienced a total of 2.3 injuries involving days away from work and days of restricted work activity per 100 full-time workers; however, the proportion of the rate associated specifically with accidents as opposed to occupational health factors was not specified (DOL 2002). With two full-time employees required to maintain the CTGs (or three employees for the combined-cycle cogeneration CTGs), no fatalities and minimal illness and injury as associated with potential accidents are expected from the operation and maintenance of the CTGs.

6.0 CUMULATIVE EFFECTS

The effects of the Proposed Action when combined with the effects of other actions discussed in this section do not result in cumulatively significant impacts. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future 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). The cumulative effect analysis in the LANL SWEIS already documents the regional effect of the expanded operations alternative and provides context for this EA. This section considers the Proposed Action and its possible effects on resources as relates to any ongoing or reasonably foreseeable future actions.

Several resources were dismissed from cumulative effects consideration because they would not be affected by the Proposed Action and could not contribute collectively to ongoing or reasonably foreseeable actions (see Table 1). These resources were land use, floodplains and wetlands, cultural, socioeconomic, environmental justice, water resources (ground and surface), visual, biological, and traffic and transportation. Five other resources analyzed in this EA would not contribute significantly to cumulative effects, because the Proposed Action would not have major long-term or irreversible effects on water quality, geology (and soils), noise, and human health.

Air quality, waste management, and environmental restoration are discussed further in this section. This analysis concludes that there would not be cumulatively significant effects on these resources. Moreover, some positive effects to resources, including utilities and infrastructure, and environmental restoration would occur as a consequence of the Proposed Action to install and operate CTGs in the TA-3 Co-generation Complex.

Air Quality The Proposed Action would not result in cumulatively significant impacts to air quality at LANL. There are no future actions likely to occur at LANL that might cause cumulative effects in the area of the Proposed Action. LANL is proposing to install an eastern bypass road in the vicinity of the Proposed Action; however, effects to air quality from construction and excavation activities would be temporary and localized.

Under both Option A and Option B of the Proposed Action, controls would be implemented to maintain NOx emissions below the PSD permitting thresholds and ensure that the NOx emission limit in the NSPS for gas turbines would be achieved. Therefore, the Proposed Action is not expected to result in a cumulative adverse effect on air quality at LANL.

Environmental Restoration There is one SWMU within the Proposed Action area. This PRS would be sampled, characterized, and remediated before installation of the CTGs. Wastes generated by this remediation effort would be handled in accordance with applicable RCRA procedures and regulations and transferred to appropriate waste management facilities. When added to the much larger volume of ER-generated waste at LANL, the Proposed Action would not contribute to significant adverse cumulative effects.

Waste Management The Los Alamos County Landfill is located adjacent to the eastern bypass road component of the Proposed Action, and there are plans for its closure in the next five years.

Part of the site could continue being used as a transfer station and recycling facility. LANL and the county are studying new landfill sites or alternate means of sanitary waste disposal at this time, and NNSA will develop an appropriate NEPA strategy. Waste generation is expected to be minimal for the Proposed Action; overall waste generation at LANL and Los Alamos County, both from decontamination and demolition of buildings and through environmental restoration efforts could be large during the next 10 years. Construction and demolition wastes would be recycled and reused to the extent practicable. Existing waste treatment and disposal facilities would be used according to specific waste types. Solid wastes would be disposed of at the Los Alamos County Landfill or other appropriate permitted solid waste landfills. Demolition wastes would be disposed of similarly at appropriate permitted facilities.

7.0 AGENCIES CONSULTED

NNSA has determined that no consultation with the U.S. Fish and Wildlife Service is necessary regarding the potential effect of the Proposed Action on federally protected threatened or endangered species or their critical habitat, as there would be no effect to these sensitive species or their critical habitat from the Proposed Action. In addition, no consultation with the State Historic Preservation Office is required. If any new cultural resource sites are identified during excavation or demolition activities, they would be evaluated and consultation would be undertaken as required.

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