ENVIRONMENTAL ASSESSMENT

FOR THE PROPOSED CONSTRUCTION AND OPERATION OF THE

NONPROLIFERATION AND INTERNATIONAL SECURITY CENTER

DOE-EA-1238

Los Alamos National Laboratory
Los Alamos, New Mexico

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Prepared by: US Department of Energy
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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

ADT	average daily trips
CFR	Code of Federal Regulations
dB	decibel
dBA	decibels, A-weighted
DOE	U.S. Department of Energy
EA	environmental assessment
EIS	environmental impact statement
ft^2	square feet
FY	fiscal year
LANL	Los Alamos National Laboratory
m^2	square meter
mrem	milliroentgen equivalent man
NA	not applicable
NEPA	*National Environmental Policy Act*
NISC	Nonproliferation and International Security Center
NN	U.S. Department of Energy Office of Nonproliferation and National Security
RCRA	*Resource Conservation and Recovery Act*
rem	roentgen equivalent man
SCC	Strategic Computing Complex
TA	Technical Area
UC	University of California

EXECUTIVE SUMMARY

The Department of Energy (DOE) is proposing to construct and operate the Nonproliferation and International Security Center (NISC) within the Los Alamos National Laboratory (LANL) Technical Area (TA)-3 located at Los Alamos, New Mexico. The purpose and need for the NISC would be to increase the efficiency and effectiveness of support to the DOE's Office of Nonproliferation and National Security through consolidation of personnel at a central location at LANL. It should be noted that there would be no differences between the Proposed Action and the No Action Alternative regarding nonproliferation and national security policy, programs and operational requirements, including the use of chemicals and equipment. Additionally, no new personnel would be required.

DOE is responsible for the development and implementation of several programs supporting its core national security mission. These programs - Nonproliferation, Foreign Energy Intelligence, Nuclear Safeguards and Security, Classification and Declassification, and Emergency Management - respond to presidential and congressionally mandated national security objectives. The Nonproliferation and International Security Division at LANL is a primary supporter of DOE's security mission. Nonproliferation and International Security Division personnel are located in about 47 facilities scattered across the LANL site. The full efficiency and effectiveness of the Nonproliferation and International Security organization has not been realized because of the physical dispersal of the personnel over such a wide area.

As proposed, the NISC would be an approximately 164,000-square-foot building designed for offices and an instrumentation and calibration laboratory. The building could house 465 people, with about 420 full time employees initially occupying it. All of the employees occupying the NISC would be relocated from other facilities at LANL.

Because the proposed location for the NISC is in a heavily developed area within TA-3, there would be minimal impact to natural resources. The proposed location is currently a parking lot and the NISC facility would not be in conflict with the land use of the surrounding area. The proposed location contains little or no suitable habitat for most plant and animal species, and there are no known cultural resources in the immediate area. In addition, the NISC would replace many outdated and inefficient structures that currently house Nonproliferation and International Security personnel and thus would cause a minimal increase to overall utility efficiency (electric, gas, and water) at LANL.

1.0 PURPOSE AND NEED FOR AGENCY ACTION

1.1 Introduction

The *National Environmental Policy Act of 1969* (NEPA) requires the U.S. Department of Energy (DOE) to consider the environmental consequences of proposed actions before decisions are made. In complying with NEPA, DOE follows the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1500-1508) and DOE's own NEPA implementing procedures (10 CFR 1021). The purpose of an Environmental Assessment (EA) is to provide DOE with sufficient evidence and analysis to determine whether to prepare an Environmental Impact Statement or issue a Finding of No Significant Impact. In this case, the DOE decision to be made is whether to construct and operate the Nonproliferation and International Security Center (NISC) at Los Alamos National Laboratory (LANL), New Mexico (Figure 1.1-1). The proposed location is within Technical Area (TA)-3 (Figure 1.1-2).

The objectives of this EA are (1) to describe the baseline environmental conditions at the proposed construction location, (2) to analyze the potential effects to the existing environment from construction and operation of NISC, and (3) to compare the construction and operation effects to the No Action Alternative. In addition, the EA provides DOE with environmental information that can be used in developing mitigation actions to minimize or avoid impacts to the integrity of the human environment and natural ecosystems should DOE decide to proceed with construction and operation of NISC. Ultimately, the goal of NEPA and this EA is to aid DOE officials to make decisions based on understanding the environmental consequences.

1.2 Background

DOE's Office of Nonproliferation[1] and National Security (NN) is responsible for the development and implementation of several programs supporting DOE's core national security mission. These programs Nonproliferation, Foreign Energy Intelligence, Nuclear Safeguards and Security, Classification and Declassification, and Emergency Management respond to presidential and congressionally mandated national security objectives. Most of these programs have elements that are time urgent and have sensitive national security implications, such as support of the reduction of nuclear materials that remain in states of the former Soviet Union, counteractions to stop nuclear smuggling, safeguard of nuclear materials and weapons, verification of compliance with weapons

[1] Nonproliferation is the term used to encompass those programs or activities intended to prevent the spread of nuclear, chemical, and biological weapons.

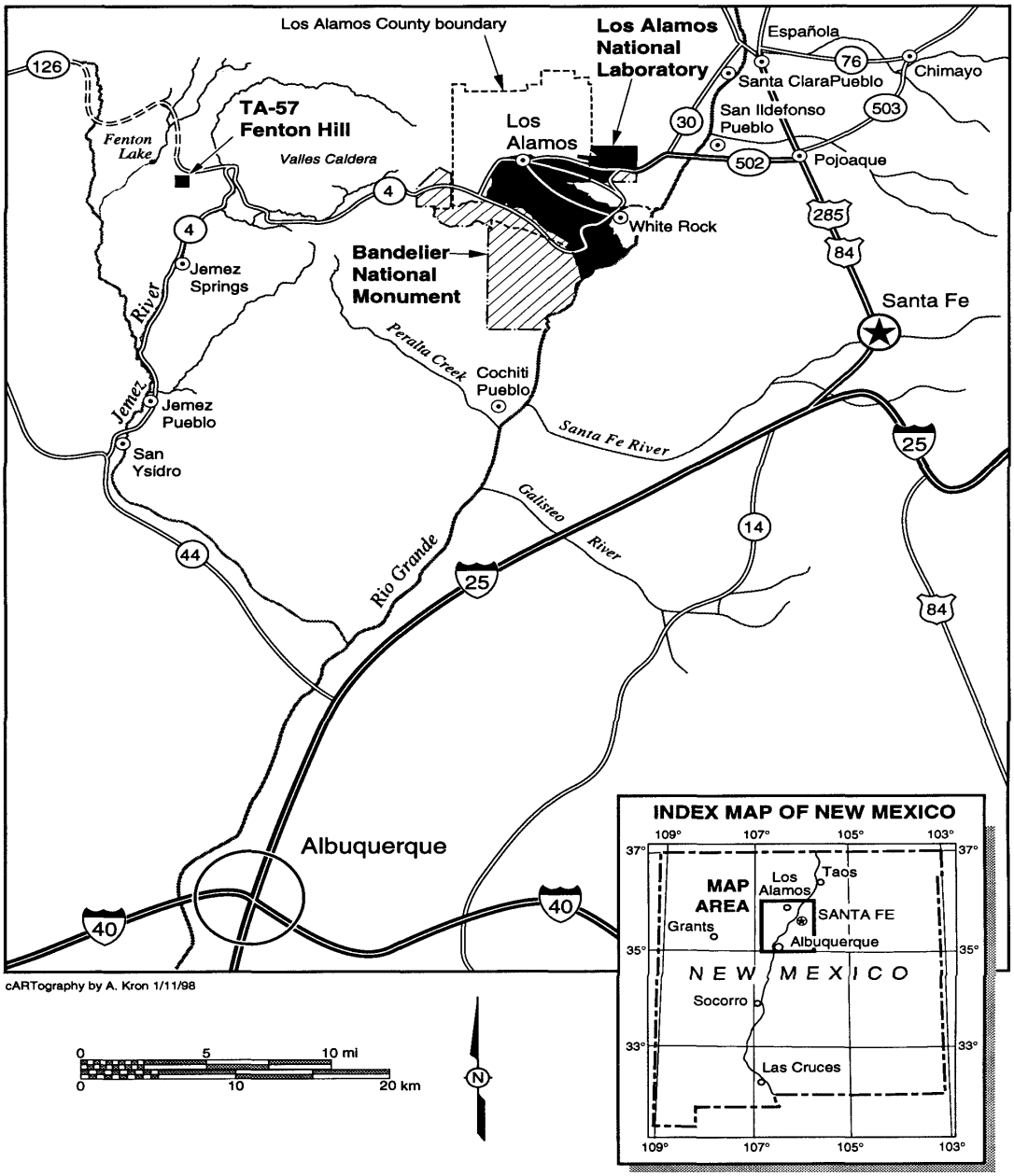

Figure 1.1-1. ***Regional Location of Los Alamos National Laboratory.***

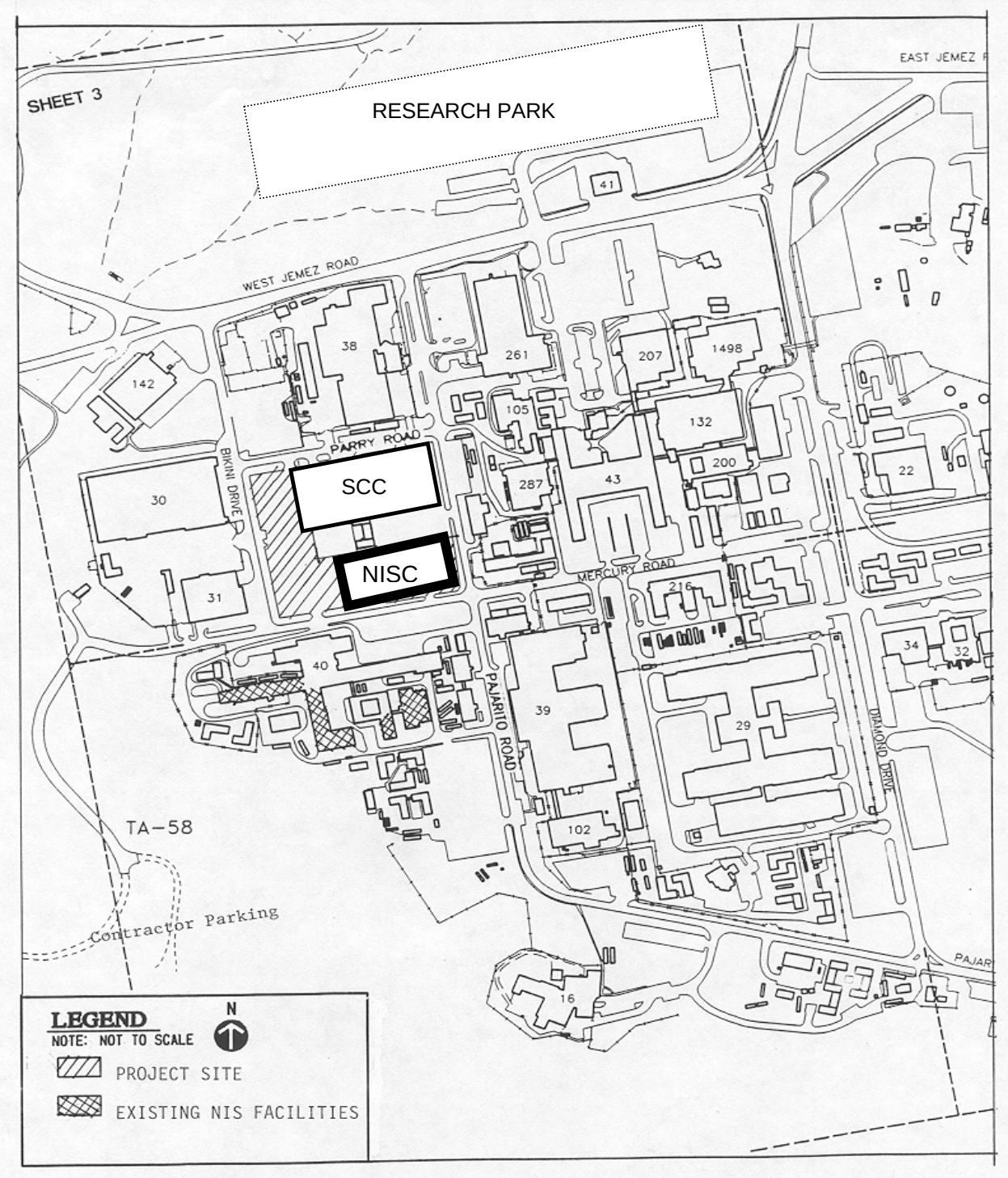

Figure 1.1-2. ***Nonproliferation and International Security Center Site Location Within TA-3.***

stockpiles agreed to under the Strategic Arms Reduction Treaty[2], control of nuclear activities related to the Comprehensive Test Ban Treaty[3], and most recently, counteractions to subversive threats involving chemical and biological agents (LANL 1996, LANL 1998a).

The NN role in reducing the danger of these threats is built on the science and technology capabilities of the national laboratories that result from 50 years spent developing and maintaining the nation's nuclear stockpile. Operations at LANL provide major support to NN's programs in the core areas of nonproliferation and nuclear safeguards and security.

Personnel assigned to NN's program at LANL carry out diverse research and development designed to develop weapons detection systems and technologies. These employees are also major contributors to assessing foreign nuclear weapon capabilities and in responding to nuclear-related emergencies. For many years, NN program personnel have developed much of the technology and expertise needed to implement various safeguards and assess compliance with the terms and conditions of treaties and agreements. Recently, major efforts have been undertaken by DOE at LANL aimed at countering the smuggling of weapons of mass destruction (nuclear, chemical, or biological) and supporting the continuation of the Strategic Arms Reduction Treaty process (LANL 1998a).

Currently, the NN program work is handicapped by having personnel located in about 47 facilities at LANL, many of which are obsolescent and do not meet functional requirements. These facilities are scattered throughout six TAs across the 43-square-mile (111-square-kilometer) LANL site. The full efficiency and effectiveness of the NN program has not been realized because of the physical dispersal of personnel over such a wide area. This dispersal of personnel hinders the communication and interaction necessary to the security mission. For example, due to the 3-mile (5-kilometer) separation, Safeguards Science and Technology scientists, engineers, and programmers working at TA-35 in sensor technology development for nuclear applications cannot conveniently collaborate with their Space and Atmospheric Sciences, Space and Remote Sensing Science, Space Data Systems, and other colleagues at TA-3 working on related sensor and instrumentation developments for space or remote sensing applications.

2 The Strategic Arms Reduction Treaty (START I) was signed on July 31, 1991, and entered into force on December 4, 1994; START II was signed on January 3, 1993, but has yet to be ratified by Russia. Further information may be found on the World Wide Web at: http://www.acda.gov/st1.htm.

3 The Comprehensive Test Ban Treaty was signed by the United States on September 24, 1996, but has not been approved by the Senate. Further information may be found on the World Wide Web at: http://www.acda.gov/treaties/ctb.htm.

Not only are NN program personnel and operations physically separated, but many are also housed in facilities not originally designed for NN program operations. The Laboratory Capital Assets Management Plan ranks all LANL space in terms of quality (e.g., the ability of the building to meet the use requirements of its occupants), using five categories: Excellent; Good; Adequate; Poor; and Fail. Only two percent of the NN program employees proposed for relocation to the new facility are housed in space classified better than Adequate at LANL. Twenty-eight percent of current activities conducted for the NN program are in space classified either as Poor or Fail. Additionally, the 47 buildings currently housing NN program personnel (34 of these buildings are proposed to be vacated) include many trailers and transportables that were either initially installed as temporary work space, or are not energy efficient or cost-effective to operate.

1.3 Purpose and Need for DOE Action

DOE needs to consolidate most of the NN program resources and personnel at a single facility near the center of the LANL site, TA-3. This consolidation would enhance the effectiveness of the support that the NN program organization at LANL must lend to DOE's Office of Nonproliferation and National Security. Implementation of NN program operations at a facility designed for that purpose would properly integrate the research and development of nonproliferation and arms control technologies personnel with intelligence analysis and nuclear weapons design staff at LANL. This would result in a more efficient organization and improve resource efficiency and conservation.

1.4 Scope of This EA

A sliding-scale approach as outlined in DOE's *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* (the Green Book), is the basis for the analysis of potential effects in this EA (DOE 1993). The key element of this approach entails focusing on environmental issues in proportion to their potential effects. That is, certain aspects of implementation of the construction and operation of NISC have a greater potential for environmental effects than others; therefore, they are discussed in greater detail in this EA. Chapters 1.0, 2.0, and 3.0 are intended to provided sufficient detail so that the reader may understand the selection of subject categories and their corresponding level of effect analysis provided in Chapter 3.0, Affected Environment and Environmental Consequences. For example, an affects analysis of ecological resources is not warranted because the NISC is proposed for construction and operation in a heavily developed area (an existing parking lot in TA-3) containing little or no suitable habitat for most plant and animal species. The analysis in this EA considers the cumulative effects resulting from implementation of the construction and operation of NISC and reasonably foreseeable future actions with potentially similar impacts. Cumulative impacts on the environment result from the incremental effects of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

1.5 Public Involvement

DOE provided written notification of its intent to conduct this NEPA review to the Sate of New Mexico, the four Accord Tribes, and to over 30 stakeholders in the County area. The Predecisional Draft EA was issued on June 18, 1999. It was provided to the State and the four Accord Pueblos[4] for review and comment at the same time that it was made available to the public for review through placement in the DOE Public Reading Rooms in Los Alamos and Albuquerque. Upon request, the Predecisional Draft EA was provided to all interested parties for their review. No comments were received on the Predecisional Draft EA.

4 Accord refers to the written agreements signed by DOE and the four Pueblos on December 8, 1992, stating the basic understanding and commitments of the parties and describing the general framework for their working together. Subsequently, cooperative agreements between each Pueblo and DOE and between each Pueblo and the University of California have been signed, which specify further details related to the accord agreements.

2.0 DESCRIPTION OF ALTERNATIVES

Section 2.1 describes the Proposed Action that would allow DOE to meet its purpose and need for agency action. The No Action Alternative is presented in Section 2.2 as a baseline to compare with the consequences of implementing the proposed action. It should be noted that in comparing the Proposed Action and No Action Alternative, there are no differences between the current NN policy, programs, operations and operational requirements, or chemicals and equipment proposed for use at the NISC. Additionally, no new personnel are being proposed. The construction and operation of the NISC and the consolidation of NN program personnel and operations at a single location are the primary differences between the Proposed Action and No Action Alternatives. Alternatives that were considered but were not analyzed further in this EA are discussed in Section 2.3, and related actions are identified in Section 2.4.

2.1 Proposed Action - Construction and Operation of the Nonproliferation and International Security Center

The DOE proposes to design, construct and operate the NISC within LANL at TA-3. The proposed location for the NISC is within an existing parking area that is currently bounded by four roadways: Pajarito Road along the eastern side; Mercury Road, south; Bikini Atoll Road, west; and Parry Road at the north (see Figure 1.1-2). This new facility would consolidate NN program personnel and would support a range of activities. The facility would be designed to house approximately 465 personnel which includes space for visiting personnel and new hires over the lifetime of the facility. Approximately 420 NN program personnel, currently located in 34 of the 47 NN occupied structures, would be relocated to the NISC. The majority of personnel working with the NN program that are already located in TA-3 (Space Data Systems, and Space Instrumentation and System Engineering) and at the Pajarito Site (TA-18 and TA-36) would not be relocated to the proposed NISC. The Pajarito Site contains the Los Alamos Critical Experiments Facility, which houses nuclear critical mass assembly machines (LANL 1999a). This facility is a unique nuclear structure that provides the capability for handling sensitive, classified nuclear materials and weapon components that would not be either cost effective or practical to replace (LANL 1998a). The NISC as currently planned would not require the continual presence of foreign nationals and thus avoid the escort requirements in areas where classified work is conducted.

An estimated 148,000 ft^2 (13,750 m^2) of existing NN program offices, including trailers and transportables, and instrumentation and calibration laboratory space would be vacated in whole or in part as a result of the relocation of Nonproliferation and International Security personnel. Twenty-four structures, such as trailers, transportables and other temporary structures would be salvaged. All concrete foundations and utilities serving these structures would be removed. Other LANL personnel would be assigned to the remaining vacated offices or structures, as appropriate. A separate NEPA review would be performed on the potential effects of the reassignment of personnel into the NN program vacated offices or structures when such proposals become ripe for discussion(s).

2.1.1 Facility Description and Operations

The NISC would be a structural steel framed four-story, plus basement, building (Figure 2.1.1-1), with a design life of about 30 years. The facility would have a maximum floor space of 163,375 ft^2 (15,178 m^2) and an office and laboratory capacity for 465 people. Laboratories would be located in the basement. The facility would include a machine shop for fabrication of parts for satellites and experiments and high bay area at grade level connected to the side of the four-story section. The high bay area would be used to assemble and disassemble various types of equipment, such as satellite related sensors. It would contain a 10-ton bridge crane to accommodate the loading and unloading of heavy equipment and instrumentation. This bridge crane would be able to operate on the loading dock. Two smaller 5 ton capacity bridge cranes would provide equipment hoisting capability in rooms located in the basement. The footprint of NISC, including adjacent landscaped areas, could cover approximately 78,000 ft^2 (7,246 m^2) of existing parking lot space. The building would be heated, cooled and ventilated with a central forced air system, including modular indoor air handling units on each floor. Chilled water would be provided for cooling while heating would be accomplished by hot water; both systems would be closed loop (water would be continuously recycled and would not be subject to evaporative loss). Roof drains would be connected to the site storm drain system. An automatic wet-pipe fire protection system would extend throughout the building. The roof bay at the west end and the roof of the elevator penthouse would be designed to accommodate a communications antenna array. Wind loading would be in accordance with DOE Standard 1020, Natural Phenomena Hazards Design and Evaluation Criteria for DOE Facilities with a mean recurrence level of 100 years. Seismic design would be in accordance with DOE standards and the Uniform Building Code. Seismic equipment bracing as required would be included. There would be no environmental effluent discharges to outfalls as a result of NISC facility operation.

Figure 2.1.1-1. ***Conceptual Design of the NISC***

A portion of the building would house nuclear safeguard technology activities. This location would be designed for safe handing of sealed radioactive sources[4] and would include vault storage and shielded calibration rooms. Emergency power generators would be installed adjacent to the building to provide power for communications and data processing activities in the case of a power failure (LANL 1998a).

[4] Sealed sources contain radioactive material encapsulated in plastic or metal to prevent contact with and dispersion of the radioactive material under the conditions of use and wear for which they were designed and are used to calibrate gamma and neutron detectors (Health Physics Society 1997, PC 1999a).

Operations located in the machine shop and basement would use the gases and chemicals described below. Liquid nitrogen would be used as a coolant in the basement and approximately 3,000 gallons (11,355 liters) would be stored in a receptacle located outside the facility. Small amounts of liquid nitrogen would be stored in small 10 gallon (38 liter) receptacles located within the facility. Inert industrial gases, such as helium and argon, would be used in small quantities in the basement and stored in compressed gas cylinders containing approximately 222 cubic feet of gas. Gaseous oxygen, used for purging, would be present in 3 compressed gas cylinders in the basement. Oxyacetylene would be used for welding in the machine shop and stored in 2 sets of compressed gas cylinders that would provide approximately a 2-3 month supply. Propane would be used as forklift fuel. A total of 4 ten gallon (38 liters) propane storage cylinders would be present in the machine shop and provide approximately 6 months supply (LANL 1997a). In addition, an existing NN program lead melting furnace would be relocated into the NISC machine shop. This furnace is now and would be used in the future to melt lead in order to cast shielding for gamma and neutron emitting sources. There are no air emissions associated with the furnace as it operates at temperatures only sufficient to melt the lead. Approximately 500 pounds of lead per year is used in current NN program operations at LANL and this use rate would not be expected to change at the NISC (PC 1999a).

Solvents and other chemicals would be used for cleaning and various machining purposes. Small quantities of shop type solvent (1 gallon [3.8 liter]/month use rate), machine oils (2 gallon [7.6 liter]-/month use rate), and cutting oils (2 gallon [7.6 liter]/month use rate) would be used during machining. Vacuum pump oil would be used at a rate of about 0.5 gallon (1.9 liter) per year. Approximately 1 gallon (3.8 liters) of ethyl alcohol would also be used each month. A 6-month supply of flammable materials such as paint (4 gallons [15.1 liters]) and spray paint (12 12oz cans) would be present (LANL 1997a).

Operations that would be conducted at the NISC would not introduce any new hazardous waste streams. A 90-day accumulation area would be designated and used to hold waste for pickup. Wastes would continue to be managed and disposed of either as solid waste at a permitted landfill or as Resource Conservation and Recovery Act regulated waste that would be disposed of at an approved and permitted off-site facility.

2.1.2 Site Preparation

The building site is currently paved with asphalt and bounded by existing concrete sidewalks, curbs, and gutters. The approximately 900-space parking area at the site would remain closed (the Strategic Computing Complex will have previously closed and used the parking area for construction and equipment staging – see Section 2.4.2). Upon completion of the NISC, approximately 250 of the 900 parking spaces would be restored in this area. However, prior to construction of the NISC, additional and sufficient parking to make up for the loss of 900 parking spaces will have been completed. (Tetra Tech, Inc. 1999).

Non-paved areas surrounding the proposed NISC would be landscaped. Landscaping would consist of ground cover and trees native to the Los Alamos area in keeping with the general site setting. An automatic underground irrigation system would be installed for use until the plants are well established.

2.2 No Action Alternative

The No Action alternative provides an environmental baseline to compare the potential effects of the Proposed Action. It must be considered even if the DOE is under a court order or legislative command to act [10 CFR 1021.321(c)]. Under the No Action alternative, the DOE would not consolidate most Nonproliferation and International Security programs, capabilities, or personnel at a single location. Potential effects associated with the construction and operation of the NISC would not occur. Nonproliferation and International Security operations would continue to be handicapped by being located in many different structures scattered across LANL. The No Action Alternative would not meet DOE's purpose and need for action.

2.3 Alternatives Considered and Eliminated from Further Analysis

Five alternatives were considered but have been dismissed from detailed analysis. They are discussed in Sections 2.3.1 through 2.3.5.

2.3.1 NISC Construction and Operation at a LANL Technical Area other than TA-3

TA-3 serves as the core area of LANL and has the necessary infrastructure (roadways, water, power, communication lines, etc.) already in place to support the NISC. A large number of Nonproliferation and International Security Division employees not scheduled for relocation are already located at neighboring buildings within TA-3 and in close proximity to the proposed NISC (see Figure 1.1-2). In addition, many of the professionals from other divisions that Nonproliferation and International Security Division personnel have to communicate and collaborate with are located at TA-3. To locate the NISC at another TA would require a much greater infrastructure cost and in most instances uncommitted space is not available. For instance, the open space at TA-18 is not available because it lies within safety exclusion zones. Due to these considerations, this alternative was dismissed from further consideration.

2.3.2 NISC Construction and Operation at the Proposed Research Park

The Research Park is to be located within TA-3 on an approximate 43-acre (17 hectare) tract of land that DOE has leased to Los Alamos County Economic Development Corporation. This action was the subject of an EA and Finding of No Significant Impact (DOE/EA 1212) (DOE 1997b). The leased land will be used to establish a research and development park with facilities for a wide-range of companies to work in the same geographic location with LANL personnel. The intent of the

lease is to assist Los Alamos County toward self-sufficiency by providing other options to offset the elimination of the DOE annual assistance payment.

This alternative is not considered viable for the following reasons: The Research Park is intended for research and development for private sector use in order to foster economic development activities within Los Alamos County with regional employment opportunities created by offering Federal land for private sector use (DOE 1997b); construction and operation of NISC in this private sector research park would raise national defense considerations regarding national security; and based on safety and security considerations, and radiological activities that are proposed for the basement of NISC, the basic lease requirements could not be met. Therefore, this alternative was dismissed from further consideration.

2.3.3 Use an Existing Facility on LANL

In order to support the NN requirements, an approximately 164,000-ft^2 (15,236-m^2) building would be required. There are no facilities within LANL large enough to accommodate the NISC specifications. Renovation of any existing facility would require costly, extensive, and major demolition and reconstruction. Additionally, a new facility (ies) would be required to accommodate occupants of the facility undergoing modification. Consequently, this alternative is not given further consideration.

2.3.4 Construct and Operate a Single Facility for All Nonproliferation and International Security Personnel

In order to accommodate Nonproliferation and International Security Program personnel and operations, a facility with a minimum of 335,000-ft^2 (31,121-m^2) would be necessary. Facilities designed or appropriate for specific Nonproliferation and International Security programs (i.e., Pajarito Site and structures within TA-3) would be needlessly vacated and in the case of the Pajarito Site would certainly add substantially to the cost of a single facility. Similarly, implementation of added safety and security design considerations would notably increase the cost. Additionally, the building would require classification as a nuclear facility, which would not be compatible with the proposed TA-3 siting area. Therefore, this alternative was not given further consideration.

2.3.5 Renovate Nonproliferation and International Security Occupied Facilities

This alternative does not meet the DOE purpose and need to maximize the efficiency and effectiveness of support to NN by the LANL Nonproliferation and International Security Program Office and Division, nor does it provide for resource (power and water) efficient operation. Therefore, this alternative was dismissed from further consideration.

2.4 Related Actions

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

The final *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory* (Site-Wide EIS) was issued in early1999. The Site-Wide EIS describes the framework for continuing operations at LANL and provides a detailed description of environmental conditions and current and future operations and their associated environmental consequences (DOE 1999a). At the time the Site-Wide EIS was under preparation, the NISC proposal was still somewhat speculative and not at a sufficient stage of definition to allow for detailed NEPA analysis and was, therefore, not analyzed in the Site-Wide EIS. The implementation of the NISC Proposed Action or the No Action Alternative would not affect the EIS decision to be made regarding the DOE's Site-Wide EIS Alternatives for levels of facility operations.

2.4.2 Strategic Computing Complex

The EA and associated Finding of No Significant Impact were issued on December 23, 1998, for the Strategic Computing Complex (SCC) project (DOE 1998a). As proposed, the SCC would be a 267,000 square-foot building designed as a state-of-the-art facility for housing advanced computer processors. The proposed location is at the north end of the parking lot where construction of the NISC is proposed. See Figure 1.1-2 on Page 3. The two projects have different purposes and needs and are only related because of their proximity to one another and the closeness of their schedules of construction and start of operations. The SCC is scheduled for completion by January 2002 and thus will be substantially built by the time construction would be scheduled to start for the NISC.

2.4.3 Conveyance and Transfer of Certain Land Tracts Environmental Impact Statement

This Environmental Impact Statement (EIS) assesses the potential environmental impacts of conveying and transferring certain DOE land tracts located within the Incorporated County of Los Alamos and Santa Fe County at LANL to Los Alamos County or The Secretary of the Interior in trust for San Ildefonso Pueblo. Congress, in Public Law 105-119, has mandated this conveyance and transfer action and the EIS will analyze the following potential future uses: (1) historic, cultural, or environmental preservation, (2) economic diversification, or (3) community self-sufficiency (DOE 1998b). The Draft EIS was released to the public and area stakeholders on February 26, 1999. The NISC is an independent action and is not reliant on the EIS for its purpose and need. A decision to convey or transfer the land tracts under consideration would not affect the DOE's consideration of constructing and operating the NISC, nor would a decision to go forward with the construction and operation of the NISC affect DOE's decision(s) regarding the land conveyance and transfer action(s).

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3.0 describes the natural and human environment that could be affected by the Proposed Action and the No Action Alternative, and the anticipated environmental effects from both alternatives. Based on the proposed project description, potential environmental resources that may be affected as a result of implementing the Proposed Action have been considered using the sliding scale approach. Environmental issues were identified and either addressed in this section or not analyzed as shown in Table 3.0-1. Detailed descriptions of the natural resources environment, cultural resources, socioeconomics, waste management, regulatory compliance record, and general operations at LANL are presented in the 1999 *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory* and the *Environmental Surveillance at Los Alamos during 1997* report (LANL 1998c). These documents may be found in the DOE Reading Rooms in Albuquerque (at the Government Information Department, Zimmerman Library, University of New Mexico) and in Los Alamos (at the Community Relations Office located at 1619 Central Avenue). They are also available on the World Wide Web at http://nepa.eh.doe.gov/eis/eis0238/eis0238.html and http://lib-www.lanl.gov/pubs/la-13487.htm.

Table 3.0-1. *Environmental Issues Considered*

Environmental Category	Applicability	NISC EA Section
Traffic and Parking Capacity	Yes	3.1
Waste management	Yes	3.2
Utilities	Yes	3.3
Human Health	Yes	3.4
Socioeconomic	Yes	3.5
Noise	Yes	3.6
Accidents	Yes	3.7
Cumulative Impacts	Yes	3.8

Table 3.0-1. *Environmental Issues Considered*

Environmental Category	Applicability	NISC EA Section
Aesthetics	NISC design and operation would be compatible with surrounding facilities and would not introduce new incompatible visual elements or affect current aesthetics.	NA
Air Quality	Construction and earth-moving activities would temporarily increase localized particulate and volatile organic compounds emissions. Based on air emission analyses conducted for other similar projects, no exceedences of air quality standards would be expected. NISC operations would use only sealed radioactive sources; there would be no radioactive emissions during normal operations. Only minor amounts of chemicals (solvents) would be used. No adverse effects within LANL TA-3 would occur as a result of NISC operations.	NA
Cultural Resources	On May 7, 1999, the State Historic Preservation Officer concurred with DOE that the project would have no effect on registered or eligible prehistoric or historic properties.	NA
Ecological Resources, Wetlands, and Floodplains	The proposed NISC site is within a heavily developed area, characterized by buildings, roadways, and parking lots and is not in close proximity to nor does it contain suitable habitat for any of the Federal-or state-listed species. The Proposed Action would not affect wetlands and is not in an area designated as floodplain.	NA
Environmental Justice	There is no disproportionately high and adverse human heath or environmental effects on minority or low-income populations.	NA
Land use	The area surrounding that proposed for the NISC is characterized by office buildings, storage and warehouse facilities, and parking lots, and is illuminated at night. The proposed construction and operation of the NISC would not alter the character of the site or introduce new land use elements.	NA

Table 3.0-1. *Environmental Issues Considered*		
Environmental Category	**Applicability**	**NISC EA Section**
Seismology and Geology	Data from geological studies in the vicinity of the NISC site indicate a possibility that TA-3 is located in a fault zone. However, field observations revealed no indication of near-surface faulting at the proposed site. The NISC would be designed and constructed to current DOE seismic standards in conjunction with the Uniform Building Code.	NA
Water Resources	There would no effect on water quality and no increase in water use. An erosion control plan would be in force during construction to prevent sediment runoff into local streams.	NA

NA = Not Applicable

Regional Setting and Climate

LANL is a Federal Government owned and contractor operated facility. It is located on a 43-square-mile (111-square-kilometer) area in Los Alamos County, in north-central New Mexico, approximately 60 miles (97 kilometers) north-northeast of Albuquerque, 25 miles (40 kilometers) northwest of Santa Fe, and 20 miles (32 kilometers) southwest of Española in Los Alamos and Santa Fe Counties (See Figure 1.1-1). The area is dominated by the Jemez Mountains to the west and the Sangre de Cristo Mountains to the east. The Rio Grande River divides these two mountain ranges and the State of New Mexico north to south. LANL is situated on the Pajarito Plateau, a volcanic shelf on the eastern slope of the Jemez Mountains at an approximate elevation of 7,200 feet (2,200 meters) (DOE 1997a). The Pajarito Plateau is dissected by 13 steeply sloped and deeply eroded east-to-west oriented canyons containing intermittent streams. Los Alamos has a temperate, semiarid mountain climate. However, its climate is strongly influenced by elevation, and large temperature and precipitation differences are observed in the area due to a 1,080-foot (329-meter) change in elevation across the site. The average annual precipitation is approximately 19 inches (48 centimeters) with approximately 37 percent of the rainfall occurring in the summer rainy season. Winds in the local area are affected by the complex topography and are generally upslope in the daytime, causing a southeasterly component to the winds on the Pajarito Plateau. Nighttime winds are primarily downslope with light westerly and northwesterly flow (LANL 1997b).

Sections 3.1 through 3.7 describe the potential environmental effects from implementing the Proposed Action and the No Action Alternative. Section 3.8 addresses potential cumulative impacts.

3.1 Traffic and Parking Capacity

Existing Environment

Motor vehicles are the primary method of transportation and highways are the primary access to LANL and the rest of Los Alamos County. LANL has a number of roads, including major thoroughfares, which allow public access. However, since DOE controls the entire area within the LANL boundaries, DOE has the option to restrict traffic on LANL roadways (DOE 1997a). There are four main access points to LANL that convey about 43,000 average daily trips (ADTs). These roads and their ADTs are shown in Table 3.1.1-1. The State of New Mexico reports that Los Alamos County has an annual average of 118 accidents per 100 million vehicle miles (161 million kilometers) driven (NMTSB1998a). For New Mexico as a whole there are 43 accidents per 100 million vehicle miles driven (NMTSB 1998d). However, it should be noted that the state statistics reflect basically a rural accident rate, which is expected to be much lower than accident rates in an urban area such as Los Alamos County. The urban counties of Bernalillo and Santa Fe have 368 and 245 accidents per 100 million miles driven, respectively (NMTSB 1998b, NMTSB 1998c). Los Alamos County's accident rate is really quite low in comparison to other urban counties (PC 1999b). The proposed NISC site is accessed most easily from Pajarito Road or West Jemez Road. Traffic on these roadways can be heavy, particularly during peak commuting hours. At present, the nearby Diamond Drive and West Jemez Road intersection has considerable congestion during peak traffic periods (DOE 1997b).

Table 3.1.1-1. *LANL Main Access Points*

Location	Average Daily Vehicle Trips
Diamond Drive across the Los Alamos Canyon Bridge	28,000
Pajarito Road	8,000
East Jemez Road	6,000
State Road 4/West Jemez Road from the west	1,000
Total	43,000

Source: DOE 1997b

3.1.1 Proposed Action

Construction Effects

It is estimated that 150 construction personnel may be on-site at any one time (PC 1999e). Using a factor of 0.45 vehicles per person, approximately 68 cars may be added to local roadways during construction. Construction personnel would use a parking area designated for their use throughout the construction duration. The designated parking site would have already been prepared as part of a different LANL project.

Operations Effects

NISC would be relocating about 160 personnel from TAs other than TA-3. Using a ratio of 0.45 vehicles per employee, approximately 75 more vehicles may be added to these roadways and parking areas as a result of Nonproliferation and International Security personnel relocation (LANL 1998a).

Prior to NISC construction and as part of the SCC project, several TA-3 parking lots will have been expanded to accommodate an additional 780 to 930 cars. The expansion of existing parking lots is necessary to make up for the loss of the 900-space parking lot which is where the SCC will be constructed and is also the proposed location for the NISC. Approximately 750 replacement-parking spaces would be required to replace the loss of utilized parking spaces and to accommodate relocated Nonproliferation and International Security personnel. Thus, adequate parking capacity will be available within the TA-3 area (Tetra Tech, Inc. 1999). After construction the NISC equipment storage and assembly area would be converted to parking resulting in an additional 250 parking spaces directly adjacent to NISC.

3.1.2 No Action Alternative

Additional vehicles associated with NISC construction and relocated, from areas other than TA-3, Nonproliferation and International Security personnel would not be added to local roadways. Approximately 75 parking spaces would not be occupied within the TA-3 area thus adding to the possibility of TA-3 personnel locating more convenient parking.

3.2 Waste Management

Existing Environment

The University of California (UC), the management and operations contractor at LANL, has established procedures to be in compliance with applicable laws and regulations for collecting, storing, processing, and disposing of industrial, municipal solid waste and Resource Conservation and Recovery Act (RCRA) regulated hazardous waste. Solid waste generated at LANL is disposed of at the Los Alamos County Landfill, which is operated by the County within LANL boundaries. An average of about 31,279 cubic yards (23,916 cubic meters) of solid waste is disposed of by UC

annually at the County landfill. The county maintains a separate location at the landfill for construction debris that is available for salvage and reuse by individuals or companies. In 1996, an estimated 11.8 million pounds (5.35 million kilograms) of construction debris were disposed of at the county landfill (DOE 1997b). However, Los Alamos County has opted to go through the closure process for the landfill rather than the permit process, which would be very costly, as ultimately the landfill would have to be lined. Los Alamos County expects to submit a Closure Plan to the State of New Mexico (which is the regulatory entity) by June 1999. Dependent upon development of a replacement landfill, the County expects to close the landfill in 3-5 years. There is currently sufficient disposal capacity at this landfill for the next 10 years. The new regional landfill would take the same sort of waste the County currently accepts, including construction and demolition waste. The decision to accept "special wastes" such as asbestos and contaminated soil has not been made; it will be based upon the need and desire of the governments interested in developing the regional landfill. The currently proposed regional landfill location would be approximately 7 miles south of Ojo Caliente which is an estimated 35 miles from the Los Alamos Landfill (PC 1999c).

Hazardous waste regulated under RCRA is stored at 90-day satellite storage areas at LANL. It is transported to TA-54 for proper management which is carried out in accordance with applicable laws.

The sewage from different parts of TA-3 is collected and merged before it goes to the LANL Sanitary Waste Systems Consolidation Plant at TA-46. The Sanitary Waste Systems Consolidation Plant has surplus capacity as it is capable of processing approximately 0.6 million gallons (2.3 million liters) per day; its current use is an estimated 0.4 million gallons (1.5 million liters) per day (DOE 1997b). There is an existing 8-inch (20-centimeter) sanitary sewer in place along Pajarito Road about 100 feet (30 meters) south of Mercury Road that the NISC would use. The capacity of this line is approximately 0.442 million gallons (1.673 million liters) per day and its present peak flow is 0.084 million gallons (0.318 million liters) per day (LANL 1998a, 1998b).

3.2.1 Proposed Action

Construction Effects

Construction debris primarily comprised of wood, metal, and asphalt is the typical waste expected to be generated during construction of the NISC facility. This debris would be disposed of at either the Los Alamos County Landfill or a new regional landfill. It is estimated that approximately 2,500 cubic yards of debris could be generated during construction of the NISC. This anticipated amount of construction debris could be accepted at the Los Alamos County Landfill in of itself without creating a need for a new landfill facility. Small amounts of hazardous waste could be generated. These wastes would be managed in accordance with the requirements of RCRA by the UC waste

management personnel. Additionally, the project would generate excess uncontaminated soil from excavation activities. The soil would be stockpiled at the TA-3 barrow and spoils site for future use.

Operations Effects

Solid waste that would be generated at the NISC would be typical of office operations and would be disposed of at the Los Alamos County Landfill or a new regional landfill. Since the Proposed Action involves transfer of personnel from within LANL, no net increase in solid waste generation is expected for LANL overall.

The current Nonproliferation and International Security operations use small quantities of hazardous materials including solvents and other flammable materials which may generated wastes that are regulated under the Resource Conservation and Recovery Act. Operations proposed for the NISC would be to replace activities currently carried out at other locations at LANL; there would be no net increase in waste generation and no new types of waste streams would likely be produced. The wastes generated would be temporarily stored for up to 90 days in a Resource Conservation and Recovery Act compliant storage area pending offsite disposal.

A strategic plan for waste reduction through the incorporation of pollution prevention and waste minimization practices is under development for the NISC. This plan would address the approval, including management commitment goals and schedule, of activities for pollution prevention and waste minimization. The objective of this plan would be to minimize raw material consumption, waste generation, and pollutant emissions throughout the construction, operation, and decommissioning of the NISC. Because of the consolidation of Nonproliferation and International Security operations at the NISC, waste generation may be reduced due to increased efficiencies of operations.

All of the employees that would be relocated to the NISC are currently in buildings that discharge sanitary waste to the TA-46 plant, so no incremental increase in flow to that facility would be expected from the Proposed Action. The estimated flow into the existing sewage lines in the immediate area of the proposed NISC facility (based on a usage rate of 20 gallons/day/person at a capacity of 465 people) would be approximately 0.009 million gallons (0.034 million liters) per day. This would increase the total expected flow to 0.099 million gallons (0.375 million liters) per day, or 22 percent of capacity; however, a corresponding reduction from existing NN program operations would be realized.

3.2.2 No Action Alternative

Under the No Action alternative there would be no construction waste generated. Potential reductions in operational waste due to increased efficiencies would not be realized.

3.3 Utilities

Existing Environment

All necessary utilities are available within close proximity to the proposed location. The general TA-3 area is supplied by water service for both potable and fire protection by a network of 10-inch (25-centimeter) lines or larger. There is an existing 10-inch (25-centimeter) water main located along Pajarito Road. Fire hydrants are in place at the corner of Mercury and Pajarito Roads (LANL 1998a).

The TA-3 Steam Plant has a capacity of 0.2 million pounds (0.09 million kilograms) per hour with two boilers in operation and one on standby. The peak winter demand on the plant is 0.125 million pounds (0.057 million kilograms) per hour. An 8-inch (20-centimeter) steam line is in place along the south side of Mercury Road (LANL 1998a). Existing circuits will serve the proposed NISC. There is capacity in the electrical circuits to feed a new 2,500 kilovolt-amps transformer that will add about 110 amps to the actual load (LANL 1998a, LANL 1998b). A communications ductbank runs along Pajarito Road with manholes. There is existing capacity to service future facilities such as NISC (LANL 1998a, LANL 1998b).

3.3.1 Proposed Action

Construction Effects

Construction impacts would be minor and limited to tying into existing utility infrastructure.

Operations Effects

The NISC facility would be heated and cooled using closed loop water-based systems. Water in both systems would be continuously recirculated. There would be no evaporative loss. Due to the salvage of numerous temporary and resource-inefficient structures there would be an expected decrease in water consumption compared to current conditions. In fact, because NISC would replace numerous old, inefficient structures and is designed for energy efficiency, overall energy use by Nonproliferation and International Security activities should decrease slightly. There would be no outfall discharges to the environment as a result of NISC operations.

3.3.2 No Action Alternative

Potential savings in water and energy consumption would not occur.

3.4 Human Health

Existing Environment

TA-3 is the core area of LANL containing approximately 50 percent of all LANL floor space. TA-3 serves as the central technical, administrative, and physical support area for LANL (LANL 1997b). The proposed NISC location area is characterized by office buildings, storage and warehouse facilities, and parking lots, and is illuminated at night.

3.4.1 Proposed Action

Construction Effects

No potential off-site human health effects would be expected from construction hazards. The construction workers would have the potential of encountering physical hazards during erection of the NISC. Construction activities can expose workers to a variety of risks such as crush hazards, back injuries, electrical injuries, and confined space hazards that are regulated by the U.S. Occupational Safety and Health Administration and various DOE orders. Standard mitigation measures would be in effect during all construction activities. These measures would include the development and implementation of worker health and safety procedures, sampling of potentially contaminated construction debris, dust and erosion control, and the presence of a Health and Safety Officer. Construction safety documentation would include a contractor prepared safety plan, preliminary hazard assessment and an activity hazards analysis. Construction safety oversight would be provided by DOE, UC, and construction contractor personnel (LANL 1998a).

Operations Effects

Operations at the NISC are divided into three categories for ease of discussion: They are day to day office and administrative activities that constitute most of the operations in the NISC; laboratory work that primarily consists of light hazard computer and electronics laboratory activities; and radiological activity that includes the training and calibration operations that would occur in the basement area. The latter operation involves the movement and handling of a variety of sealed radioactive sources, most of which require no special handling due to their low intrinsic hazard, and the use of instruments to detect and monitor the radiation given off by the various sources. It is possible that some instrumentation development would take place in this laboratory area but there are no additional hazards posed by this type of operation other than the use of small quantities of solvents, paints, and industrial gases. Maintenance activities would be required and include the filling and maintenance of liquid nitrogen distribution systems that are used to keep certain radiation sensing equipment operational as well as normal care of utility and general support systems (elevators for example) (LANL 1998b).

The operations proposed that involve the use of radionuclide sealed sources are calibration operations that NN program personnel are currently performing at TA-35 in Buildings 2 and 27. The radionuclide sealed sources used in these facilities are generally not certified and therefore are not exempt from inventory considerations when making the hazard classification determination as allowed by DOE-STD-1027-92. Calibration operations at the proposed NISC would use both certified and uncertified sealed sources (LANL 1998b). The cumulative inventory of uncertified sealed sources would remain below the Nuclear Hazard Class 3 threshold. Certified sealed sources could present various radiation hazards. However, the likelihood of a release under the conditions the sources are certified to (drop height and thermal stress) is considered negligible. Hazards posed by uncertified sources are typically not an issue because of their low radiation fields.

Exposure to external or penetrating radiation, routinely measured by personal dosimetry badges, is reported as the effective dose equivalent in units or rems for the period during which the dosimeter was worn. Exposure to radiation may increase an individual's chance of developing fatal cancer. DOE has adopted the United States Nuclear Regulatory Commission recommended risk conversion factors that express radiation doses in terms of risk of excess cancer fatalities. These risk factors are 400 excess cancer fatalities per million person-roentgen equivalent man (person-rem) for workers and 500 excess cancer fatalities per million person-rem for the general population (NRC 1991).

Worker exposure to radiation from operations conducted by NN program personnel amounted to 1.86 person rem in 1998, with 55 individuals having measurable doses. The doses ranged from 3 mrem to 191mrem (1000 mrem equals 1 rem), with an average dose of 34 mrem (PC 1999d). Therefore, using the worker dose-to-risk conversion factor, the calculated risk of excess cancer fatalities for this NISC population of workers would be 0.00074 deaths per year. Therefore, there would be no expected excess cancer fatalities from NISC operation. No routine operations would result in internal exposure, inhalation or ingestion of radioactive materials, to NISC personnel. Personnel would wear dosimetry badges and appropriate anti-contamination clothing, including smocks, booties and rubber gloves as needed when working with radioactive material. NISC personnel working with radioactive material would be notified of any occupational doses they receive. There would be no exposure to the general public as a result of NISC operations.

It is important to note that the proposed hazardous operations are identical to those performed by the same operators at existing LANL facilities. Therefore, the hazards are well understood and the methods used to manage those hazards are well developed and proven. The hazards identification is broad and includes hazards normally considered as common industrial hazards (LANL 1998b). It is expected that because the NISC will be specifically designed for NN operations, the risks of personnel exposure to radiation and industrial safety hazards may be reduced from the levels in existing NN program facilities (LANL 1999a).

Because of the use of certified sealed source radionuclides and limited inventory of uncertified sealed sources, this facility would be classified as radiological with a low hazard level. Designs would include those features necessary to ensure that workers remain within the radiological exposure limits as required by 10 CFR 835 and implemented by the Laboratory. Some sources have

associated hazardous radiation fields when not in their shielded storage containers. Because of the presence of engineered design features and administrative controls being observed to minimize the potential for workers to receive significant radiation doses, the hazard classification is low (LANL 1998b).

3.4.2 No Action Alternative

There would be no potential construction hazard exposures under the No Action Alternative. The potential reductions in risk to personnel in both radiation exposure and to standard industrial safety hazards would not occur.

3.5 Socioeconomics

Existing Environment

The University of California is the largest employer in the tri-county region (Los Alamos, Santa Fe, and Rio Arriba counties), directly employing approximately 12,750 workers, including Johnson Controls Northern New Mexico, Protection Technology Los Alamos, and contract labor personnel. Salaries and benefits are approximately $590.7 million dollars and DOE's operating budget for LANL is an estimated $1.11 billion dollars. Over half (57 percent) of the employees at LANL and approximately 19 percent of the subcontractor employees (Johnson Controls Northern New Mexico and Protection Technology Los Alamos) reside in Los Alamos County (LANL 1997c). The overall economic impact from operations at LANL in fiscal year (FY) 1996 is indicated by the following multipliers: for every dollar spent by DOE or its contractors on materials, labor, benefits, equipment, services, etc., another $2.39 is generated in the State; for every $1 of income, another $1.39 is generated in the State; and for each person employed by DOE, another 2.62 jobs are supported in the State (DOE 1997c). In FY 1996, DOE expended approximately $149 million dollars in the construction sector (DOE 1997c).

3.5.1 Proposed Action

Construction Effects

Currently, there is a surplus of construction laborers in the LANL region (PC 1998). Construction of the NISC would generate revenue into the local economy. During peak construction approximately 150 construction personnel may be working on the NISC (PC 1999e). Construction personnel (carpenters, electricians, equipment operators, ironworkers, laborers etc.) would be paid at an average journeymen base rate of $16.41 per hour. Construction is scheduled to take approximately 18 months (LANL 1998b).

Operations Effects

Minor indirect positive impacts could occur in the future because the NISC facility would include space for expansion (less than 50 additional personnel). Thus, some new employees may come to the area in the future, but impacts to socioeconomics would be minimal.

Productivity for existing personnel in the Nonproliferation and International Security Division would be substantially increased by consolidation of workers in the NISC. A study conducted specifically for the NISC indicates that there are four major areas that would result in monetary and time savings: Efficiencies in office management and support personnel would be realized by collocating groups; intra-division travel time would be reduced by an estimated 96 man-hours per day; there would be an increase in the number of scientific collaborations; and the frequency of technical communications would be increased (LANL 1997d). As a result, personnel would be able to increase their effectiveness and time spent in the performance of actual technical work.

3.5.2 No Action Alternative

There would be no socioeconomic benefits as a result of the construction or operation of the NISC. Construction of the NISC would not occur and therefore no construction revenue would be generated. Many Nonproliferation and International Security personnel would continue to be housed in inefficient structures and would not benefit from the increased technical efficiencies that result from collocation with their peers. The Nonproliferation and International Security Program would not realize the time and cost savings associated with the collocation of a majority of personnel.

3.6 Noise

Existing Environment

Ambient noise levels at the proposed NISC location are generated primarily by vehicle traffic and facility heating and air conditioning systems. The standard unit used to report sound pressure levels is the decibel (dB); the A-weighted frequency scale (dBA) is an expression of adjusted pressure levels by frequency that accounts for human perception of loudness. Noise measurements taken at the proposed NISC location averaged 52 dBA during morning and evening rush hours; 51 dBA during non-rush hours; and during nighttime the average was 47dBA (LANL 1999b). These measurements are typical of a lightly industrialized area, such as TA-3, and are comparable to outside noise levels generated at urban centers during daytime hours and common indoor sounds such as the background noise in a large occupied conference room.

3.6.1 Proposed Action

Construction Effects

Noise levels during construction would be typical of this activity and can reach elevated levels adjacent to heavy equipment such as bulldozers. Regulations enforced by the U.S. Occupational Safety and Health Administration are designed to protect the health and well being of workers exposed to elevated noise levels. In addition, state and local regulations limit noise levels in areas outside the construction work area. Workers would be required to have hearing protection if site-specific work produced noise levels above the LANL action level of 80 dBA for steady state noise (noise which is characterized as long duration and low intensity such as a running motor). An example of a common outdoor sound at 80 dBA is the noise associated with a major urban center during daytime or the sound impacting an individual standing approximately 3 feet (0.9 meter) from someone shouting. Although noise levels will be greater than ambient conditions during construction of the NISC, no long or short-term adverse effects are expected.

Operations Effects

Ambient noise during NISC operation would be generated primarily by vehicle traffic and facility heating and cooling systems. This noise would be typical for a lightly industrialized area such as TA-3 and is not expected to noticeably increase overall background noise levels.

3.6.2 No Action Alternative

Construction noise would not be generated under the No Action Alternative. There would be no incremental increase in noise in the general area proposed for the NISC.

3.7 Accidents

Existing Environment

In order to consider potential effects of accidents in the DOE decision making process, accidents resulting from NISC construction and operation and accidents occurring at facilities within close proximity to the NISC were analyzed. These accident scenarios were developed to evaluate credible accident scenarios that could affect the public, construction workers, and NISC personnel in and around the proposed NISC location. The local existing environment is created by the act of construction itself and after the NISC is built it would be defined by the operations conducted within the NISC facility.

3.7.1 Proposed Action

3.7.1.1 NISC Construction and Operation Accident Scenarios

Construction Effects

Accidents associated with NISC construction would be primarily limited to the potential risk posed to construction workers from crush hazards, back injuries, and electrical injuries. Compliance with health and safety regulations would ensure that no serious injuries or deaths would occur from construction actions. The public would not be allowed to access the NISC location during construction. Potential impacts to construction workers from postulated accidents at LANL facilities in close proximity to the NISC are addressed in Section 3.7.1.2.

Operations Effects

Several accident scenarios (fire, building collapse, and chemical exposure), including the potential for nuclear criticality event, were analyzed for their potential impact to workers and the public. The NISC facility would be designed with a fire suppression system and would operate with restrictions regarding the combustion load and inventory of flammable items. The occurrence of a major fire would require a failure of administrative controls, fire suppression system, and lack of a timely response from fire fighting personnel located approximately 0.5 miles (0.8 kilometers) from the NISC. Therefore, a major fire is a very low probability event. It should be noted that certified sealed sources are designed to remain in tact when exposed to high temperatures for a period of time sufficient for a response by fire fighting personnel and equipment. When not in use, sealed sources would be stored in a fire resistant vault. In the event of a partial or total building collapse, for example from a seismic event, radioactive sources would be protected as the storage vault is designed not to collapse under these accident conditions. In addition, certified sealed sources are designed to resist impact pressure. Should collapse occur when a non-certified source is not in the vault the source release to the public would be less than 1 rem. There are no creditable chemical accidents that would result in severe health effects or death due to the low chemical inventory and implementation of both administrative and engineering controls. A nuclear criticality is not a credible event as the certified sealed sources are designed in such a way that regardless of the configuration in which they are stored a critically event could not occur. Uncertified sealed sources are not made with material that could undergo a fissionable reaction (PC 1999f).

3.7.1.2 External Accident Scenarios

Existing Environment

There are primarily two facilities that are within close proximity to the proposed NISC location that have operations or inventories that, should an accident occur, could potentially affect construction and NISC personnel. These facilities are the Chemistry and Metallurgy Research Building (See

Figure 1.1-2, Building 29) and the Chemical Receiving and Distribution Facility (See Figure 1.1-2, Building 31).

Construction Effects

External accident scenarios with the potential to affect the construction work force would be similar to the analysis presented in the following NISC *Operations Effects* section.

Operations Effects

The Chemistry and Metallurgy Research Building is located in close proximity to the proposed NISC. A major release of radioactive material could adversely affect personnel in the NISC. Three accident scenarios involving a radiological release of plutonium at the Chemistry and Metallurgy Research Building were analyzed in the 1999 *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory*. The three accidents scenarios were: 1) a plutonium release due to a major aircraft crash at the building, with a probability of occurrence of 0.0000033 per year, or once every 300,000 years; 2) a release due to a LANL fire with a probability of occurrence of 0.000036 per year or once in 27,777 years; and 3) a fire in a building wing with a probability of occurrence of 0.000032 per year or once in 31,250 years (the probabilities remain the same under the No Action Alternative and the DOE preferred alternative of Increased Operations) (DOE 1999a).

The NISC would be located near LANL's Central Chemical Receiving and Distribution Facility. A fire in that facility could result in the exposure of NISC personnel to toxic chemical fumes. An assessment of the receiving and distribution facility indicates that due to the small chemical inventory and a fire station located within 0.5 mile (0.8 kilometer) of the proposed NISC, the probability of a major chemical release is low.

3.7.2 No Action Alternative

There would be no change to the existing potential accident scenarios. While the current accident potential is low, it would not be further reduced by moving most NIS operations into a facility designed specifically for its operations.

3.8 Cumulative Impacts

3.8.1 Proposed Action

Construction Effects

At peak construction an estimated 150 construction personnel may be on-site at any one time (PC 1999e). Using a factor of 0.45 vehicles per person, approximately 68 cars may be added to local roadways during construction. Construction is scheduled to last approximately 18 months. Generally, construction personnel arrive at work earlier than LANL personnel. Therefore, traffic in the local area is not expected to be noticeably impacted during the construction duration. Specific parking areas, previously constructed for SCC construction personnel, would be designated for NISC construction personnel thus preventing competition for parking spaces between NISC construction personnel and LANL employees or visitors.

Operations Effects

Because no new personnel or operations would be introduced as a result of occupying the proposed NISC facility, cumulative impacts are minimal. Local traffic congestion centered around the West Jemez Road, Diamond Drive, East Jemez Road, West Road and Pajarito Road would be affected by the addition of approximately 75 vehicle trips per day during each morning and evening rush hour. The addition of NISC, SCC, and Research Park associated vehicles, estimated at between 2,300 and 3,000 vehicle trips per day, would contribute to already overcrowded roadways during rush hours. However, most of this traffic would result from the Research Park that has yet to be constructed but will probably be gradually phased in over ten years. Personnel occupying the NISC would potentially comprise approximately 2 - 3% of the total traffic increase. Los Alamos County Economic Development Corporation will prepare a commercial development plan for the Research Park according to the lease agreement that will include a traffic impact study specifying the details of necessary traffic improvements to be implemented. Additionally, a TA-3 master planning effort is currently underway and is anticipated to specify traffic improvements in the TA-3 roadway network (DOE 1997b).

Parking availability in the TA-3 area would change from the current configuration due to the combined effects of the SCC and the NISC. As part of the SCC project, three parking lots near the proposed NISC location will be expanded to accommodate an additional 780 to 930 vehicles. Based on the number of new personnel in the TA-3 area expected from both the NISC and SCC projects, an additional 750 parking spaces should be required. Thus, it appears that current plans for parking lot expansion would be sufficient.

Should one of the postulated accidents addressed in the *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory* occur at the Chemistry and

Metallurgy Research Building, the population dose would probably increase as a result of the presence of relocated NN personnel.

3.8.2 No Action Alternative

Implementation of the No Action Alternative would not support DOE's purpose and need to consolidate most NN resources and personnel at a single facility near the center of the LANL site, TA-3, in order to enhance the effectiveness of LANL support to DOE's Office of Nonproliferation and National Security. Nor would any benefits result in the areas of resource efficiency and conservation from NN program personnel vacating currently occupied energy inefficient structures. Working conditions would continue to be a negative factor in the operation of NN program facilities. Potential environmental effects associated with the construction and operation of the NISC would not occur. In addition, potential effects to the environment, as described and analyzed in Section 3.0, should the Proposed Action be implemented, would not occur.

4.0 AGENCIES AND PERSONS CONSULTED

DOE submitted a No Effect Report (April 22, 1999), in compliance with Section 106 of the National Historic Preservation Act, to the New Mexico State Historic Preservation Officer describing the Proposed Action and DOE's finding of no effect to cultural resources. On May 7, 1999, the New Mexico State Historic Preservation Officer concurred with DOE's determination of no effect on registered or eligible properties, completing the formal consultation process (DOE 1999b).

5.0 REFERENCES

10 CFR 835 U.S. Department of Energy, Occupational Radiation Protection, *Code of Federal Regulations*, 10 CFR 835.

10 CFR 1021 U.S. Department of Energy, National Environmental Policy Act Implementing Procedures, *Code of Federal Regulations*, 10 CFR 1021.

40 CFR 1500 - 1508 U.S. Council on Environmental Quality, Executive Office of the President, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, *Code of Federal Regulations*, 40 CFR 1500-1508.

DOE 1999a U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico. *Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory*, Volume I – Main Report. DOE/EIS – 0238, January 1999.

DOE 1999b U.S. Department of Energy, Los Alamos Area Office. Correspondence from David A. Gurule, Office Manager, to Dr. Lynne Sebastian, State Historic Preservation Officer, requesting a concurrence with a finding of no effect, April 22, 1999; also concurrence by the State Historic Preservation Officer that the undertaking will have no effect on registered on eligible properties, May 7, 1999.

DOE 1998a U.S. Department of Energy, Los Alamos Area Office. *Environmental Assessment for the Proposed Strategic Computing Complex at the Los Alamos National Laboratory, Los Alamos, New Mexico*, Final EA and FONSI, DOE/EA-1250, December 21, 1998.

DOE 1998b U.S. Department of Energy. Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Conveyance and Transfer of Certain Land Tracts Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, NM, Federal Register/Vol. 63, No. 87/Wednesday, May 6, 1998/Notices.

DOE 1997a U.S. Department of Energy, Los Alamos Area Office. *Environmental Assessment for the Proposed CMR Building Upgrades at the Los Alamos National Laboratory, Los Alamos, New Mexico*, Final Document, DOE/EA-1101, February 4, 1997.

DOE 1997b U.S. Department of Energy, Los Alamos Area Office, *Environmental Assessment for Lease of Land for the Development of a Research Park at Los Alamos National Laboratory, Los Alamos, New Mexico*, Final EA and FONSI, DOE-EA-1212, October 8, 1997.

DOE 1997c U.S. Department of Energy, Technology and Site Programs, Albuquerque Operations Office and New Mexico State University, College of Agriculture and Home Economics, *The Economic Impact of Los Alamos National Laboratory on North-Central New Mexico and the State of New Mexico, Fiscal Year 1996*, June 1997.

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

Health Physics Society 1997 Health Physics Society, an American National Standard, Sealed Radioactive Sources – Classification, ANSI/HPS N43.6-1997, 1997.

LANL 1999a Los Alamos National Laboratory. Correspondence from Jenny Bueck, LANL ESH-3, to Cliff Giles and Roger Stutz, LANL, regarding decreased worker risk, April 8, 1999.

LANL 1999b Los Alamos National Laboratory. NISC sound measurements. Information provided from Steve Vrooman, ESH-20, to Chuck Pergler, Tetra Tech Inc. April 20, 1999.

LANL 1998a Los Alamos National Laboratory. *Conceptual Design Report for Line Item Project, Nonproliferation and International Security Center at the Los Alamos National Laboratory*, Part 1 - Design Concept, Project Identification Number 17716, Technical Area 3, Building 2322, July 21, 1998.

LANL 1998b Los Alamos National Laboratory. *Conceptual Design Report for Line Item Project, Nonproliferation and International Security Center at the Los Alamos National Laboratory*, Part 2 - Supplemental Information and Calculations, July 21, 1998.

LANL 1998c Los Alamos National Laboratory. *Environmental Surveillance at Los Alamos during 1997*, LA 13487-ENV, UC-902, September 1998.

LANL 1997a Los Alamos National Laboratory. *Conceptual Design Report, Los Alamos Nonproliferation and International Security Center*, Part 1 - Design Concept, 100% Resubmittal, Project Authorization No. LA47, 1997.

LANL 1997b Los Alamos National Laboratory. *Environmental Surveillance and Compliance at Los Alamos during 1996*, LA 13343-ENV, UC-902, September 1997.

LANL 1997c Los Alamos National Laboratory. "Fact Sheet" provided by the LANL Community Involvement and Outreach Office. Data profile, January 1997.

LANL 1997d Los Alamos National Laboratory. NIS Personnel Productivity and LANISC Space Consolidation authored by Bob Drake, TSA-4, November 25, 1997. Included as Section T of the *Conceptual Design Report, Los Alamos Nonproliferation and International Security Center*, Part 2 - Supplemental Information and Calculations, July 21, 1998.

LANL 1996 Los Alamos National Laboratory. "Nonproliferation and International Security 1996", LALP-96-20, NIS Division Brochure Team, April 1996.

NMTSB 1998a New Mexico Traffic Safety Bureau, Los Alamos County Crash History for 1997. May 12, 1998.
http://www.unm.edu/~dgrint/CountyCrashHistory/Los Alamos.html.

NMTSB 1998b New Mexico Traffic Safety Bureau, Bernalillo County Crash History for 1997. May 12, 1998.
http://www.unm.edu/~dgrint/CountyCrashHistory/Bernalillo.html.

NMTSB 1998c New Mexico Traffic Safety Bureau, Santa Fe County Crash History for 1997. May 12, 1998. http://www.unm.edu/~dgrint/CountyCrashHistory/SantaFe.html.

NMTSB 1998d New Mexico Traffic Safety Bureau, New Mexico Crash History for 1997. September 3, 1998. http://www.unm.edu/~dgrint/City Profiles/State.html.

NRC 1991 United States Nuclear Regulatory Commission, Preamble to Standards for Protection Against Radiation, 56 Federal Register 23360, May 21, 1991.

PC 1999a Personal communication between Tom Van Lyssel, Los Alamos National Laboratory, Safeguards, Science & Technology Division, and Chuck Pergler, Tetra Tech Inc., regarding lead use information, March 17, 1999, and sealed source information, March 18, 1999.

PC 1999b Personal communication between James W. Davis, Director of Division of Government Research at the University of New Mexico and Chuck Pergler, Tetra Tech Inc., regarding vehicle accidents rates, March 23, 1999.

PC 1999c Personal communication between Raymond Sisneros, Sold Waste Division Manager for Los Alamos County, and Chuck Pergler, Tetra Tech Inc., regarding the Los Alamos County Municipal Solid Waste Landfill, March 23, 1999.

PC 1999d Personal communication between Bob Bates, Los Alamos National Laboratory ESH-12 ALARA Coordinator, and Chuck Pergler, Tetra Tech Inc., regarding external dose to Nonproliferation and International Security personnel, February 11, 1999.

PC 1999e Personal communication between Miles Brittelle, Los Alamos National Laboratory, NISC Support, and Chuck Pergler, Tetra Tech, Inc., regarding the NISC construction work force, March 26, 1999.

PC 1999f Personal communication between Jerry C. Bueck, LANL, ESH-3 Integrated Risk Analysis, and Chuck Pergler, Tetra Tech, Inc., regarding potential NISC accidents, April 19, 1999.

PC 1998 — Personal Communication between Karen Martinez, Assistant Area Director, New Mexico Department of Labor Santa Fe Work force Development Center, and Cathy Coghill, Tetra Tech Inc., regarding the supply of construction workers in the Santa Fe region, September 24, 1998.

Tetra Tech, Inc., 1999 — Memorandum from Chuck Pergler, Tetra Tech, Inc., to Elizabeth Withers, DOE Los Alamos Area Office NEPA Compliance Officer, Subject: Evaluation of Approved Siting Notification for NEPA Ramifications, March 12, 1999.