Final Environmental Assessment for the Construction and Operation of an Office Building at the Stanford Linear Accelerator Center

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LIST OF ACRONYMS

ABAG	Association of Bay Area Governments
ARB	Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BTU	British Thermal Units
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHWMF	Centralized Hazardous Waste Management Facility
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
dB	Decibels
dBA	A-weighted Decibels
DOE	Department of Energy
EA	Environmental Assessment
ES&H	Environmental Safety and Health
° F	Degrees Fahrenheit
FTE	Full Time Equivalent
HAZCOM	Hazard Communication
km	Kilometers
kVa	Kilovolt Amperes
Ldn	Outdoor Day-Night Sound Level
Leq	Equivalent Noise Level
MPWD	Menlo Park Municipal Water Department
MTC	Metropolitan Transportation Commission
NEPA	National Environmental Policy Act of 1969
NRHP	National Register of Historic Places
PAFD	Palo Alto Fire Department
PG&E	Pacific Gas and Electric Company
PM_{10}	inhalable particulate matter
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RAMSY	Radioactive Material Storage Yard
SBSA	South Bayside System Authority
SFWD	City of San Francisco Water Department
SIP	State Implementation Plan
SLAC	Stanford Linear Accelerator Center
TDS	Total Dissolved Solids
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WAPA	Western Area Power Authority
WBSD	West Bay Sanitary District
WM	Waste Management

Introduction

The proposed action of this Environmental Assessment (EA) is the construction of a 4,000 square foot office building at the Stanford Linear Accelerator Center (SLAC) to make waste management (WM) operations SLAC more efficient and effective. The office building would be located on an undeveloped, grassy area of approximately one acre, 50 feet south of the existing Centralized Hazardous Waste Management Facility (CHWMF), Building 447. The proposed project includes parking facilities and a driveway for the proposed office building (see Figure I-1).

SLAC is a national facility operated by Stanford University, California, under contract with the Department of Energy (DOE). The center is dedicated to research in elementary particle physics and in those fields that make use of its synchrotron facilities.

SLAC is located in an unincorporated area in the extreme southern part of San Mateo County, approximately midway between the metropolitan centers of San Francisco and San Jose (see Figure I-2). The Stanford University campus lies to the east of SLAC in neighboring Santa Clara County. SLAC is situated on 426 acres of University land (see Figure I-3) and has been in operation since 1966.

This EA analyzes the affected environment and environmental effects of the proposed action and the no action alternative. An alternative to the proposed project, the construction of two separate office facilities, was considered but eliminated due to probable operational inefficiencies and increased cost. This EA has been prepared pursuant to the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508), and DOE's Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements, Office of NEPA Oversight, U.S. DOE, May 1993.

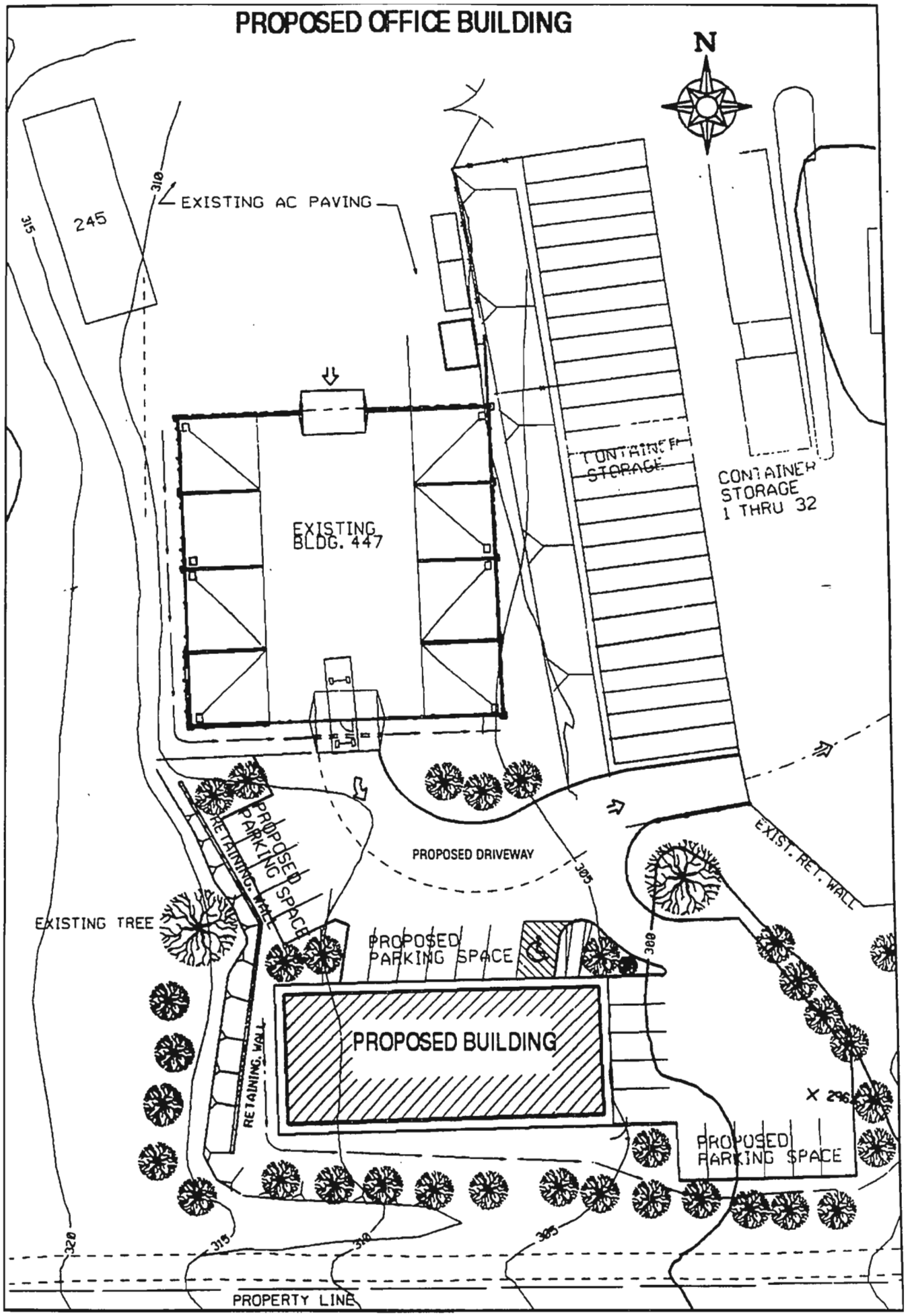

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Figure I-1: Proposed Project Site Map

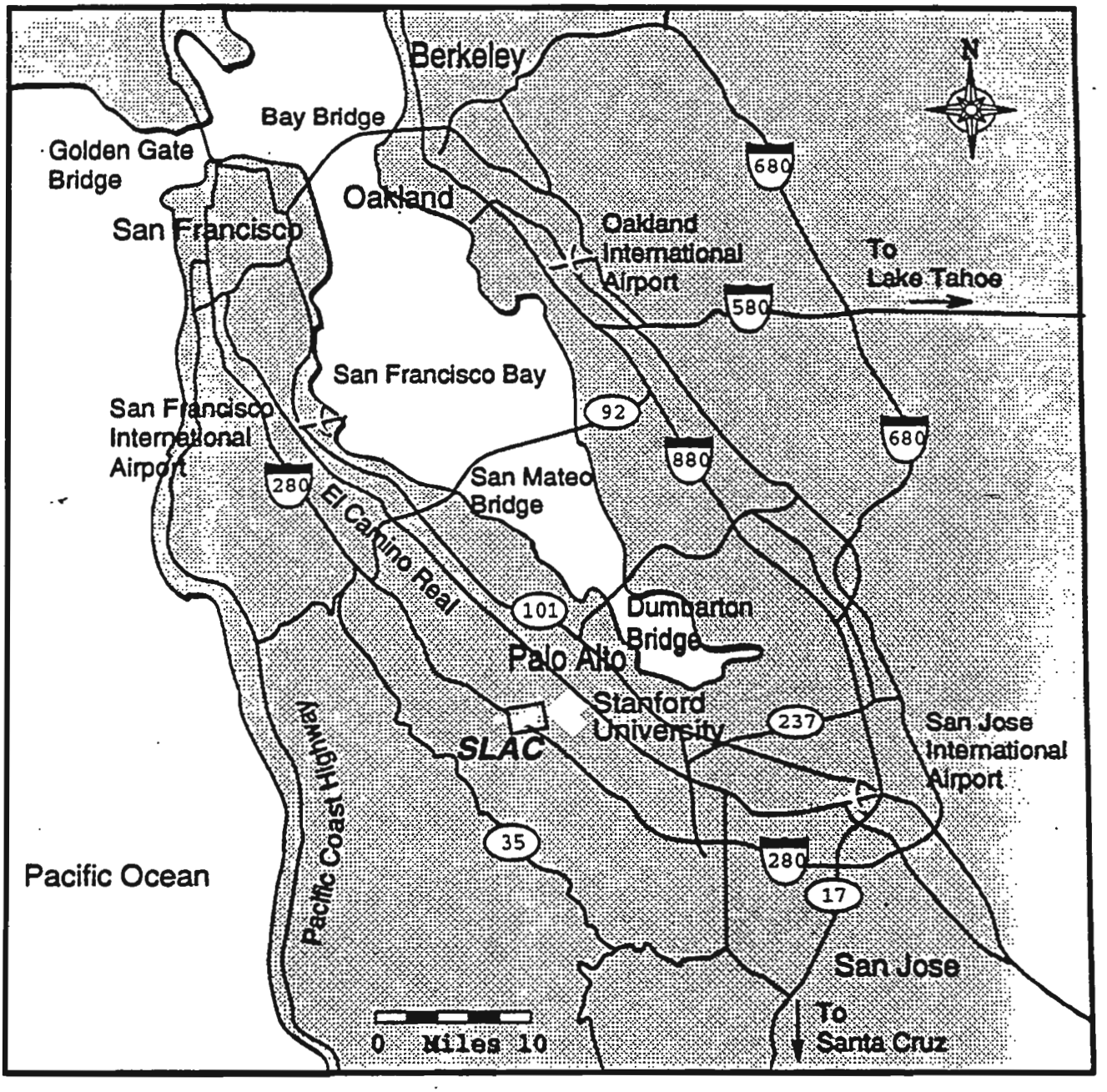

Figure I-2: Stanford Linear Accelerator Center Vicinity Map

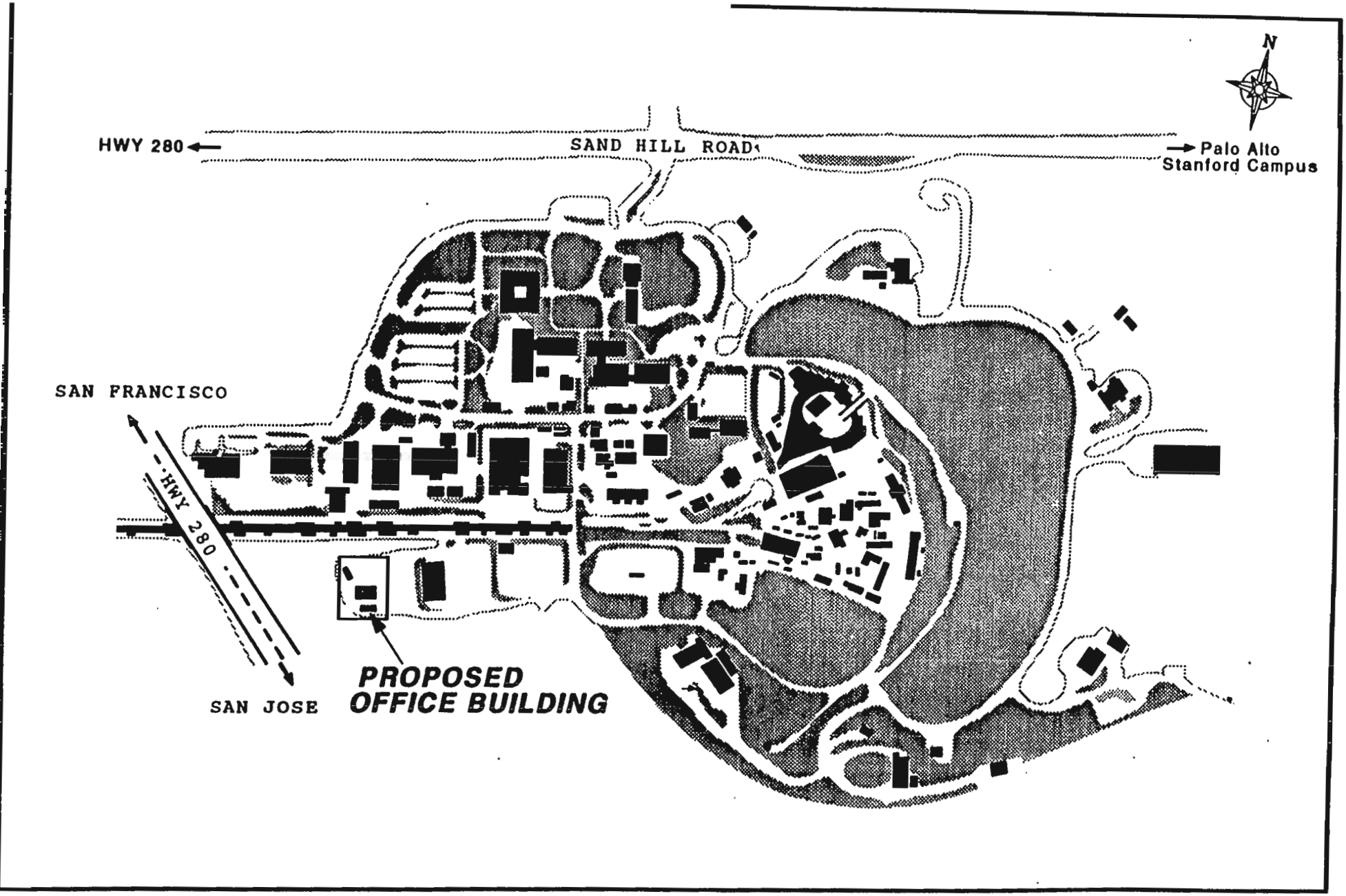

Figure I-3: Stanford Linear Accelerator Center Facility Map

1 Purpose and Need

Purpose

The purpose of the proposed project is to provide adequate office space for existing Stanford Linear Accelerator Center (SLAC) Waste Management (WM) personnel.

Need

The proposed project is needed to centralize WM personnel and to make WM operations more efficient and effective. Over time SLAC has increased its WM personnel to approximately 25 Full Time Equivalent's (FTE's). This personnel increase has resulted in crowded working conditions. In addition, WM personnel have offices at three different locations, all of which require travel by car or truck to get to other offices, and which in some cases require travel through a security gate to go between offices. Finally, supervisors have lost efficient utilization of staff as they locate in the three different locations.

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2 Project Alternatives

Proposed Action

The proposed action is to construct a 40 feet x 100 feet office building on an undeveloped, grassy area approximately 50 feet south of the Centralized Hazardous Waste Management Facility (CHWMF). The proposed design of the building is a single story, rigid frame type metal building with a concrete slab foundation, eight foot interior ceilings, and a sloping metal roof. The proposed building would provide office space for approximately 20 Waste Management (WM) personnel. The proposed project includes parking spaces for 23 vehicles, and a 25 foot long driveway with a width that exceeds the requirements for a fire lane.

No Action Alternative

Under the No Action alternative, WM personnel would continue to occupy office space in three different locations at SLAC.

Alternative Considered but Eliminated from Further Study

An alternative considered but eliminated was to construct two separate office facilities. One facility would be located near the Radioactive Material Storage Yard (RAMSY) and would house approximately five personnel. The second facility would be constructed near the CHWMF and would house approximately ten personnel. This alternative was eliminated from further study for the following reasons:

- Personnel located in the office building near the RAMSY would be located too far away from their work area and supervisors because waste operations are being consolidated at the CHWMF.
- Space would be provided for a total only fifteen WM personnel, rather than 20 personnel.
- The cost of constructing two office buildings would be more than the cost of constructing one office building.

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3 Affected Environment

This chapter describes the existing environment on the site of the proposed project at the Stanford Linear Accelerator Center (SLAC). Cross reference this chapter with chapter 4, which presents the environmental effects of the proposed action.

Biological Resources

Biological resources discussed in this analysis include vegetation, wildlife, sensitive species and habitats located on the project site and in the immediately surrounding area. Information regarding species in the area was obtained from the California Natural Diversity Database (CNDDB 1994) and local experts (Stoddard; Laabs; and, Arnold).

Two biological surveys were conducted, one in December 1994 and the other in January 1995, to determine the potential for sensitive species on the project site. No sensitive species were encountered during the surveys, and none are known to be present on the project site.

Vegetation Communities

The project site is within a coast live oak woodland area. Coast live oak (*Quercus agrifolia*) woodland is characterized by the presence of coast live oak, a poorly defined shrub layer, and continuous grassy ground cover, comprised mainly of introduced species, such as ripgut grass (*Bromus rigidus*) and yellow star thistle (*Centaurea solstitialis*). This community is generally found under 4,000 feet in elevation on the outer coastal and peninsular ranges of California (Holland, 1986). Vegetation on the project site includes three mature oak trees (two live and one dead) and ground cover comprised of a few shrubby species and dense herbaceous (grassy) cover. Other species that may be found on the project site include sumac (*Toxicodendron diversiloba*), spreading rush (*Juncus patens*), ryegrass (*Elymus triticoides*), and umbrella-sedges (*Cyperus* spp.).

General Wildlife

During the biological surveys two adult mule deer were observed on the proposed building site: one living female deer and a dead deer that appeared to have died from natural causes. Evidence of two additional mammal species, the black-tailed hare (*Lepus californicus*) and coyote (*Canis latrans*) was also detected onsite.

Sensitive Species

Sensitive species include those that are listed by United States Fish and Wildlife Service (USFWS) and by the California Department of Fish and Game (CDFG) as endangered, threatened, proposed for endangered or threatened status, or candidate species for status. Also included as sensitive species are those plants listed by the California Native Plant Society (CNPS) and species of special concern to the CDFG.

The above mentioned surveys were conducted to determine the potential for the California tiger salamander and the California red-legged frog to inhabit the proposed project site. No sensitive species were encountered during the surveys, and none are known to be present on the project site.

There are sensitive species present within approximately five miles (eight kilometers) of the project site (CNDDB 1994). These species are listed in Table 3-1, on page 3-3. All of the species listed in Table 3-1 are unlikely to reside at the project site but some may occasionally inhabit the site.

Sensitive species most likely to inhabit the project site are the California tiger salamander (*Ambystoma tigrinum californiense)*, California red-legged frog *(Rana aurora draytonii)*, and San Francisco garter snake *(Thamnophis sirtalis tetrataenia)*. Habitat for these species is available on or near the site. Although surveys were not required for these species, a nocturnal survey was conducted for the California tiger salamander and California red-legged frog to determine their presence on the project site. A second survey for potential species habitat was conducted during the day.

None of the bird species identified in Table 3-1 have federal or state status above that of species of special concern, or category 2 candidate listing in the case of the loggerhead shrike (*Lanius ludovicianus*).

Sensitive Habitats

Other biological surveys on SLAC property near the project site have not found evidence of sensitive habitats. A study conducted in 1994 evaluated the potential for wetlands along SLAC's southern boundary. This study found that while the drainage system showed characteristics of wetlands, a definitive determination was not possible due to persistent drought conditions and the timing of the study (Converse Environmental West, 1994). A subsequent environmental analysis found that the potential wetlands on and around the SLAC facility were limited to one-tenth of an acre.

Though coast live oak woodland is not listed as a sensitive habitat by the CDFG, it is a community of concern to local scientists due to its regional reduction from development in the past 100 years.

Table 3-1 Sensitive Species Within Five Miles of SLAC

Scientific Name	Common Name	USFWS Status	CDFG Status	CNPS Status	Species Presence at Proposed Site
Plants					
Acanthomintha obovata ssp. *duttonii*	San Mateo thorn mint	E	E	1B	unlikely
Hesperolinon congestum	Marin dwarf flax	PE	T	1B	unlikely
Invertebrates					
Ischnura gemine	San Francisco forktail damselfly	C3	none	none	unlikely
Euphydryas editha bayensis	bay checkerspot butterfly	C2	none	none	unlikely
Herpetofauna					
Ambystoma tigrinum californiense	California tiger salamander	C1	CSC	none	unlikely
Rana aurora draytonii	California red-legged frog	PE	CSC	none	unlikely
Thamnophis sirtalis tetrataenia	San Francisco garter snake	E	E	none	unlikely
Birds					
Circus cyaneus	northern harrier	none	CSC	none	unlikely
Accipiter cooperii	Cooper's hawk	none	CSC	none	unlikely
Asio flammeus	short-eared owl	none	CSC	none	unlikely
Asio otus	long-eared owl	none	CSC	none	unlikely
Lanius ludovicianus	loggerhead shrike	C2	CSC	none	unlikely

Notes:

USFWS Status
E = Endangered
PE = Proposed endangered
C1 = Category 1 candidate
C2 = Category 2 candidate
C3 = Category 3 candidate

CDFG Status
E = Endangered
T = Threatened
CSC = California Species of Special Concern

CNPS Status
1B = Plants rare and endangered in California and elsewhere

Source: CNDDB 1994

Cultural Resources

Properties that qualify for the National Register of Historic Places (NRHP) are afforded protection by Federal legislation. The NRHP includes properties of national, state, and local significance. Properties must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the National Register Criteria (36 Code of Federal Regulations [CFR] 60.4). Generally, properties are associated with American history, architecture,

engineering, or archeology (prehistoric and historic), but properties of traditional cultural significance may also qualify for inclusion in the NRHP.

Prehistoric and Historic Archeology

A records and literature search for the project area and a one mile (1.6 kilometers [km]) vicinity was conducted in November 1994. No cultural resources were located during the records search or cultural resource survey. This records search included a search of the National Register of Historic Places and existing site records, cultural resource survey reports, and environmental documentation housed at Stanford University. This material mirrors material archived at the Information Center at Sonoma State University, Sonoma, California. There are no previously recorded prehistoric or historic archeological sites located within the proposed project area or a one mile (1.6 km) vicinity .

Air Quality and Meteorology

The proposed project site is located within the Bay Area Air Quality Management District (BAAQMD). The following is a description of air quality in the BAAQMD, as it relates to the proposed project. Currently, there are no emissions sources located on the proposed project site.

Air Quality Planning in the Bay Area

The federal Clean Air Act requires each state to develop, adopt, and implement a state implementation plan (SIP) to achieve, maintain, and enforce federal air quality standards throughout the state. These plans must be submitted to and approved by the U.S. Environmental Protection Agency (EPA). In the San Francisco Bay region, SIP document preparation has been a coordinated effort involving three regional agencies: BAAQMD, the Association of Bay Area Governments (ABAG), and the Metropolitan Transportation Commission (MTC).

The federal Clean Air Act imposes deadlines for achieving the federal ambient air quality standards. These deadlines vary according to the severity of existing air quality problems. The entire San Francisco Bay Area is categorized as a moderate ozone nonattainment area. In addition, the urbanized portions of the San Francisco Bay Area are categorized as moderate carbon monoxide nonattainment areas. The Bay Area has not received a nonattainment designation for PM_{10} (PM_{10} is defined as those particles small enough to reach the lower respiratory tract, tracheo-bronchial passages and alveoli in the lungs, when inhaled. Relatively few particles with aerodynamic diameter larger then 15 microns reach the lungs. Consequently, both the federal and state air

quality standards for particulate matter have been revised to apply only to these small "inhalable" particles designated PM_{10}). The current nonattainment designations require attainment of the carbon monoxide standards by the end of 1995 and attainment of the ozone standard by the end of 1996.

The BAAQMD believes that the federal ozone and carbon monoxide standards have been achieved in the Bay Area. The BAAQMD has requested federal redesignation as attainment for both ozone and carbon monoxide, but final action on this request is not expected yet complete.

The California Clean Air Act of 1988 requires air pollution control districts and air quality management districts to develop air quality management plans for meeting state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide. The state Air Resources Board (ARB) is responsible for developing a plan for meeting state PM_{10} standards.

The California Clean Air Act does not set specific deadlines for achieving state air quality standards. Instead, attainment is required "as expeditiously as practicable", with various mandated emission control program requirements based on the nonattainment classification for ozone and carbon monoxide. The entire San Francisco Bay Area is classified as a moderate nonattainment area for the state ozone standard. Urbanized portions of the Bay Area are classified as moderate nonattainment areas for the state carbon monoxide standard. The Bay Area is also classified as a nonattainment area for the state PM_{10} standard.

Federal Clean Air Act Conformity Process

Section 176(c) of the Clean Air Act requires federal agencies to ensure that their actions are consistent with the Clean Air Act and with federally enforceable air quality management plans. The EPA has promulgated separate rules that establish conformity analysis procedures for transportation- related actions and for other (general) federal agency actions. The federal nonattainment pollutants subject to conformity analyses in the San Francisco Bay area include ozone precursors (reactive organic compounds and nitrogen oxides) and carbon monoxide. Applicable de minimis levels for federal actions in the San Francisco Bay Area are 100 tons per year of reactive organic compounds, 100 tons per year of nitrogen oxides, and 100 tons per year of carbon monoxide.

The emissions accounting and other aspects of the conformity analysis are limited to those emissions which are reasonably foreseeable and which the federal agency might influence or control through some form of continuing program responsibility.

Ambient Air Quality Data

Air pollutant concentrations are monitored at a number of locations in the San Francisco Bay area, including Redwood City in San Mateo County and Mountain View in Santa Clara County. Carbon monoxide and PM_{10} are not monitored in Mountain View. The federal ozone standards have not been exceeded at Redwood City or Mountain View in recent years, although the more stringent state standards typically are exceeded a few times each year. Federal and state carbon monoxide standards have not been exceeded in Redwood City during the past six years. No exceedances of the federal PM_{10} standard have been recorded in Redwood City during the 1988-1993 period, but the more stringent state 24-hour standard is exceeded 10-20 percent of the time.

Meteorology

Temperatures in the study area typically range from about 40° F to 65° F during the winter, and from about 50° F to 78° F during the summer. Precipitation averages about 15 inches per year, with most occurring from October through May.

Hazardous Materials

For SLAC, in general, potential hazards to workers from hazardous materials are addressed by the SLAC Industrial Hygiene Program, which is detailed in the Environment, Safety, and Health Manual (ES&H Manual), dated 1991. This program identifies all occupational health hazards, quantifies and documents the extent of employee exposure, and implements administrative, engineering, work practice, and personal protective equipment control methods to eliminate or minimize health hazards in the work place. Facility-wide procedures for storing, transporting, handling, inspecting, and disposing of hazardous materials and wastes are contained in the SLAC Hazardous Materials Management Handbook dated 1992, and the SLAC Hazardous Waste Operations Manual dated 1994. All personnel who handle specified amounts of hazardous materials or wastes are required to complete Hazard Communication (HAZCOM) training and Hazardous Materials and Waste Management training. SLAC also issues ES&H Bulletins, which are distributed to all involved employees to identify site requirements for specific safety practices.

Public Health and Safety

Fire

Fire safety at SLAC is addressed by the SLAC ES&H Manual. The Palo Alto Fire Department (PAFD) operates an on-site fire station (Station 7) to provide immediate fire-fighting and emergency response support to SLAC. PAFD personnel conduct fire safety inspections, maintain citation programs (citing noted fire code violations which are not corrected, such citations could result in a fine or a jail sentence), and provide training in the use of fire extinguishers to SLAC personnel.

Police

SLAC has one full-time security staff person, the Chief of Laboratory Protection Services. Additional security staff at SLAC are provided under contract by Burn's International, based in San Jose, California. The San Mateo Sheriffs Department provides law enforcement services to SLAC. The response time is five minutes or less.

Geology and Soils

The SLAC site is underlain by marine sandstone with some minor basalt occurring at the far eastern end. The bedrock at the accelerator and at the proposed construction site is sedimentary Miocene to Eocene (13 to 58 million years old). At various places at SLAC, alluvial deposits of sand and gravel are found on top of the bedrock. These deposits are generally of Pleistocene age (one million years old). At the surface is a soil overburden of unconsolidated earth materials averaging from .3 to 5 feet (0.1 to 1.5 meters) in depth. Earth materials at the proposed project site are characterized as claystone, sandy claystone, and sandstone. One mile (1.6 km) to the west of SLAC lies the San Andreas Fault Zone. The last major earthquake along this zone, the Loma Prieta earthquake, occurred in October of 1989, and had a magnitude of 7.2 on the Richter scale. It was centered in the Santa Cruz Mountains about 30 miles (48 km) to the southeast of SLAC. The proposed project site was unaffected.

SLAC is in a belt of low rolling foothills, which lies between the alluvial plain bordering San Francisco Bay to the east and the Santa Cruz Mountains to the west. The topography of the proposed construction site is characteristic of these foothills, with an increase of approximately 15 feet (4.5 meters) in elevation over the length of the site. There is a 5 foot (1.5 meter) change in elevation along the length of the proposed building, which would measure approximately 100 feet (30.5 meters).

Land Use

The land sited for the proposed project is part of Stanford's "academic reserve," located west of the University and the City of Palo Alto in an unincorporated portion of San Mateo County. Since the proposed project is located within a federal activity it requires no compliance with state or local land use policies or building permit requirements. San Mateo County, however, is the governing body with ultimate planning authority with respect to University lands, and the Board of Trustees of Stanford University have established policies which require all activities on Stanford lands to be consistent with the institutional characteristics and purposes of the University. Additionally the SLAC Architectural Committee requires that all proposed building projects follow specific criteria, for example, for visual impacts and siting.

Socioeconomics

The 20 staff persons who would be housed in the proposed office building currently work at SLAC. There are approximately 1,650 staff and contract personnel employed at SLAC. Approximately 25 percent of the staff is professional, composed of physicists, engineers, programmers, and other scientific-related personnel. The remaining staff is composed of support personnel including technicians, crafts personnel, laboratory assistants, clerical, and administrative employees. The surrounding populated area is a mix of office, school, university, condominiums, apartments, single family housing, and pasture. There are five surrounding communities: Atherton, West Menlo Park, Woodside, Portola Valley, and Stanford. Population and housing data from the recent 1990 census report of these five communities is shown in Table 3-2. Radial Population data within 3.8 miles (6 km) of SLAC is reflected in Table 3-3.

Table 3-2 Demographic Data

Geographic Area	Population (persons)	Pop. Density (per sq. mile)	Housing (unit)	Land Use (sq. mile)
Atherton	7,163	1,463.32	2,518	4.895
West Menlo Park	3,959	7,086.19	1,701	0.559
Portola Valley	4,194	458.02	1,675	9.157
Woodside	5,035	428.88	1,892	11.740
Stanford	18,097	6,569.14	4,770	2.755
Total	**38,448**	**NA**	**12,556**	**29.105**

Source: 1993 Site Environmental Report, Environment, Safety, and Health Division Stanford Linear Accelerator Center, Stanford University, Stanford CA. September 1994.

Table 3-3 Radial Population Data

0.1 km	0.3 km	0.5 km	1.0 km	2.0 km	4.0 km	6.0 km	TOTAL
0	0	1,217	2,825	14,108	31,678	42,834	92,663

Source: 1993 Site Environmental Report, Environment, Safety, and Health Division Stanford Linear Accelerator Center, Stanford University, Stanford CA. September 1994.

Visual/Aesthetics

The proposed project is sited on a parcel of land that is 100 percent visible from Highway 280 North for approximately 1/4 mile (2/5 km). Portola Valley hillside residents located west of Highway 280 are within the proposed project site location viewscape. At present both hillside residents and northbound Highway 280 travelers view the hilly grasslands which lie in the foreground of the CHWMF.

Noise

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different noise level ranges.

In response to the requirements of the federal Noise Control Act, the U.S. EPA has identified indoor and outdoor noise limits to protect public health and welfare (hearing damage, sleep disturbance, and communication disruption). Outdoor Day-Night Sound Level (L_{dn}) values of 55 decibels (dB) and indoor L_{dn} values of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and health care areas. Noise level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour Equivalent Noise Levels (L_{eq}) values of 70 dB (both outdoors and indoors).

The California Department of Health Services has published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor Community Noise Equivalent Level (CNEL) ranges into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), according to land use.

No noise monitoring has been conducted at the proposed project site. At present, dominant noise sources near the proposed project site are from Highway 280 traffic approximately one mile (1.6 km) distant, and bi-monthly truck activity associated with waste management operations at the CHWMF, approximately 50 feet (15.5 meters) from the proposed project site.

Public Services and Utilities

Water Resources

Water Supply

Domestic water is furnished to SLAC via the Menlo Park Municipal Water Department (MPWD) whose source is the City of San Francisco Water Department (SFWD). SLAC and the neighboring Sharon Heights development, receive water service from a separate independent system within the MPWD, called Zone 3. The Zone 3 system taps the SFWD Hetch Hetchy aqueduct and pumps water up to a 7,600 cubic meter reservoir west of Sand Hill Road. Drinking water and process water are distributed throughout the facility via a system protected by backflow prevention devices. There are no drinking water wells at SLAC.

Use of water by SLAC is approximately 85 percent for accelerator and equipment cooling and 15 percent domestic uses. Domestic uses include landscape irrigation, sanitary sewers, and drinking water. The average water consumption by SLAC is about 270,000 gallons per day.

During current operations, roughly 68 percent of the water consumed by the laboratory is evaporated from the six cooling towers. The remaining 32 percent is disposed of as follows: Eight percent is cooling tower blowdown water to the sanitary sewer; 16 percent is waste domestic and process water that is discharged via the sanitary sewers; and eight percent is absorbed into the ground from irrigation.

Surface Water

SLAC has two unlined surface c ..es at the south end of the facility which drain offsite and to the south and southeast. The two drainage ditches are referred to as the Interaction Region 6 drainage ditch and the Interaction Region 8 drainage ditch. The drainages receive the majority of all surficial runoff from the SLAC facility. These converge and flow through an underground culvert beneath the Portola Valley Thoroughbred Training Center exercise track and eventually into the San Francisquito Creek. The creek flows roughly parallel to the linear accelerator, and ultimately flows into San Francisco Bay.

SLAC implemented its Stormwater Monitoring Program in January 1993 to comply with its California Industrial Storm Water Permit. The monitoring data collected under this program indicate that SLAC does not contribute significant contamination to storm water.

Groundwater

Groundwater beneath SLAC appears to flow to the south and southeast toward San Francisquito Creek. There are no drinking-water wells at or

near SLAC, mainly because the groundwater is naturally high in total dissolved solids (TDS) and has very low flow rates. A report prepared for SLAC (King, 1989) to identify and evaluate potential underground water supplies concluded that the Tertiary bedrock beneath the facility did not constitute a viable water source for SLAC.

The possibility of radioactivity and hazardous chemicals in surface water and ground water, along with potential activation in soils and sediments, has been addressed at SLAC. Tritium is the primary radionuclide of concern in water, while soil work focuses on gamma-emitting species. Surface water and ground water are routinely monitored and no off-site releases of radioactive substances have occurred (SLAC, 1992c).

Waste Systems

Wastewater

The sanitary sewer system discharges to a Publicly Owned Treatment Works (POTW) operated by the South Bayside System Authority (SBSA). The West Bay Sanitary District (WBSD) operates and maintains the collection system to the POTW, and is part-owner of SBSA. The two agencies maintain a close working relationship and issue permits jointly, although SBSA can overrule WBSD to reject any flow to the POTW.

In addition to the onsite pre-treatment facility permit, the SBSA has issued a Wastewater Discharge Permit for SLAC's total discharge to the POTW via the sanitary sewer. This permit applies to the combined flow from the pre-treatment facility and all other industrial and domestic wastewater discharges at SLAC. SLAC did not exceed permit limits for discharge of industrial wastewater in 1994.

Hazardous Waste

There is no hazardous waste on the proposed building site, nor would hazardous waste be generated by the operation of the proposed office building. The CHWMF, approximately 50 feet north of the proposed project, houses hazardous waste.

Waste Minimization and Recycling

The SLAC waste minimization policy is detailed in the Waste Minimization Program Plan to Comply with California's Hazardous Waste Source Reduction and Management Review Act of 1989 for the Stanford Linear Accelerator Center and the Waste Minimization Program Plan to Comply with Department of Energy Order 5400.1 for the SLAC.

In addition to the Waste Minimization Program, SLAC has a recycling program that is operated by Peninsula Sanitary Services. Peninsula Sanitary Services collects paper, cardboard, redeemable glass, plastic,

and aluminum cans. Recyclable paper includes white paper, colored paper, mixed paper, newsprint, and computer paper. However, most of the computer paper used at SLAC is actually recycled by SLAC separately from the Peninsula Sanitary Services contract.

Electrical and Gas Utilities

Electrical power is supplied to SLAC under contracts with Western Area Power Authority (WAPA) and Pacific Gas & Electric (PG&E). SLAC uses approximately 50 megawatts of electricity per month. Natural gas is purchased from PG&E and the Defense Fuel Supply Center and delivered to SLAC via a PG&E pipeline. SLAC uses approximately 603,000 therms (one therm equals 100,000 British Thermal Units [BTUs]) per year.

Communications

Telephone service at SLAC is provided by Pacific Bell. SLAC has its own telephone switch, which is similar to the switch that would be used by a small city.

Transportation/Traffic

The main entrance to SLAC is located on Sand Hill Road, approximately one mile (1.6 km) east of Highway 280. A gate on Alpine Road also provides access to the facility during certain hours. Highway 101 is located approximately five miles (8 km) east of the facility. Staff arrive at the facility by private automobile or government-sponsored car pools. In addition, SLAC operates a bus to and from the Palo Alto CalTrain station a couple of times a day to facilitate employees' commutes; this train station is also served by local bus routes. Supplies are delivered to SLAC by truck. The proposed driveway would provide access from the existing CHWMF utility road to the proposed office building parking spaces, as well as improved bi-monthly truck traffic flow.

4 Environmental Consequences

This chapter presents the environmental effects associated with the proposed action and the no-action alternative. Under the National Environmental Policy Act of 1969 (NEPA), a determination of environmental effects of a proposed action requires an analyses of both the context of an action and its intensity (40 CFR 1508.27). Cross reference this Chapter with Chapter 3, which describes the existing environment of the proposed action.

Proposed Action

Biological Resources

The following criteria were used to evaluate the potential for the project to have an adverse effect on biological resources:

- Potential for the project to disrupt or destroy endangered or threatened species, their habitat, migration corridors, or breeding areas.
- Potential for the project to result in the loss of a substantial number of individuals of any plant or animal species (sensitive or non-sensitive species) that could affect abundance or diversity of that species beyond normal variability.

Sensitive Species:

Listed, endangered, and threatened species, species proposed for listing, or species that are federal candidates receive protection both federally (U.S. Fish and Wildlife Service - USFWS) and from the state (California Department of Fish and Game - CDFG).

Since no sensitive species or habitat are known to be present on the proposed project site, a Section 7 Endangered Species Act Consultation was not required for this proposed action. The USFWS and the CDFG were contacted and their species lists reviewed in order to determine potential at the proposed site for the presence of listed species. Surveys were conducted to confirm the lists.

The results of the biological surveys conducted in December 1994 and January 1995, indicate that no sensitive species were encountered during the surveys, and none are known to be present on the project site. As a precaution, however, the site would be inspected visually to determine if any species were present.

Sensitive Habitat

Though coast live oak trees are not listed as sensitive habitat, the SLAC Architecture Committee requires their protection. Of the three coast live oak trees on the proposed project site, the dead oak will be removed, the two live oaks will be preserved as an integral part of the approved landscape design for the proposed action.

Cultural Resources

No cultural resources were located during the records search or cultural resource survey. Based on this finding, the Department Of Energy (DOE) has determined that the proposed undertaking will not affect cultural resources eligible or listed within the National Register for Historic Places.

Air Quality

The proposed project is providing office space for existing SLAC waste management staff, and this will not affect air quality. Construction activities represent a source of emissions associated with the project. Potential air quality construction effects are short-term, however, and minimal, and will not require a Clean Air Act conformity determination.

Construction Activities

Site preparation and building construction would generate small quantities of pollutant emissions from vehicle engines plus fugitive dust from site disturbance. The overall project site is about one acre in size. Typical construction period emissions have been estimated by assuming a 12 week construction period and 3,120 hours of heavy construction equipment use. The resulting estimate of construction-related emissions is 0.3 tons of reactive organic compounds, 4.7 tons of nitrogen oxides, 2.2 tons of carbon monoxide, 0.5 tons of sulfur oxides, and 0.8 tons of PM_{10}.

Appropriate dust control measures will be followed during demolition and construction activities. The following dust control measures will reduce construction-related dust generation to acceptable levels.

- All areas to be excavated or graded would be sufficiently watered to prevent excessive dust generation.
- All active portions of the construction site would be watered or treated with dust control solutions as necessary to minimize windblown dust.

- All areas subject to vehicle traffic would be watered or treated with dust control solutions as necessary to minimize windblown dust.
- Streets adjacent to the construction site would be swept as necessary to remove accumulated dust and soil.

Federal Agency Clean Air Act Conformity Issues

The proposed project is providing office space for existing SLAC waste management staff. Consequently, construction activities represent the only new source of emissions associated with the project. As noted above, all construction-related emissions will be well below the applicable de minimis threshold of 100 tons per year. Minimal additional indirect emissions will result from this project. Accordingly, no Clean Air Act conformity determination is required for this project.

Hazardous Materials

No PCBs, asbestos-containing, or other hazardous materials or articles will be used in the proposed office building, parking lot, or driveway. Although this is undisturbed land, and no hazardous materials are anticipated, an assessment should be made to assure that soils at this site do not contain hazardous materials. If hazardous materials are found, further assessment may be needed to determine what appropriate measures should be taken for remediation. Operations at the proposed building would not affect the use of hazardous materials at SLAC.

Public Health and Safety

Fire

The possibility of fire in the proposed building is anticipated to be similar to that for existing office buildings at SLAC. The SLAC Environment, Safety and Health (ES&H) Program minimizes the hazards from fire to workers and the public for all areas and activities at SLAC. The proposed office building would be constructed of essentially inflammable components, and the largest quantity of flammable materials will be the nylon carpets and office furnishings. The proposed office building would be constructed in compliance with applicable codes to minimize the spread and effects of any fires, and would have one-hour fire corridors, sheet rock walls, and glass fiber ceiling tiles. Should a fire occur in the office building, no effects on the public or the environment are expected, beyond those resulting from any other small structure fire.

Police

The proposed project would not affect police services.

Geology

The most likely geologic occurrence that would affect the proposed structure is an earthquake. The proposed office building design specifications will include earthquake safety standards. Additionally, no radioactive or hazardous materials (except for normal office and janitorial supplies) would be stored in the building, resulting in no additional risks from spilled materials related to earthquakes.

The proposed building site would be leveled for the proposed construction. As stated in the affected environment section, there is a rise of approximately 5 feet (1.5 meters) over a length of 100 feet (30.5 meters), which would be about equal to the length of the proposed building. Soil would be removed or relocated as needed, with retaining walls installed if necessary, to maintain the natural topography of the undisturbed areas of the site, and to hold the soil needed to support the existing vegetation. Standard operating procedures would be implemented to control soil erosion from construction activities, including covering stockpiled materials and, if necessary, screening stormdrains. Minimal effects are expected from the leveling of this area.

Land Use

Construction and operation of the proposed project is consistent with the Stanford Board of Trustees policies designed to encourage land use consistency with the institutional characteristics and purposes of the University. Construction and operation of the proposed project would not result in adverse effects to land use.

The proposed site is located within a federally autonomous jurisdiction, and therefore construction of the proposed project would not require compliance with state or local building permit or land use regulations.

Socioeconomics and Environmental Justice

Construction of the proposed project would employ a small business general contractor for a limited time period. The effects, therefore, on the local economy would be short term and minimal. Operation of the proposed project would not result in the addition or reduction of employees at SLAC, and therefore, would have no effect on socioeconomics.

Executive Order 12898 requires that all federal agencies evaluate whether proposed actions would cause disproportionate impacts on minority or

low income communities. In this case, neither construction nor operation of the proposed action would affect any low income or minority community or place it at a disproportionate risk, nor would it use criteria, methods, or practices that would discriminate on the basis of race, color, or national origin.

Visual/Aesthetics

The location of the proposed project is not sited within a listed state, federal, or local scenic corridor. The SLAC Architectural Committee enforces building design specifications to ensure a minimal effect from proposed construction projects on landscapes. Design specifications for the proposed project include:

- Painting the building an earth tone to blend into the existing natural environment.
- Grading the construction site to lower the land surface thereby lowering the roofline six feet below the roofline of the existing Centralized Hazardous Waste Management Facility (CHWMF) as it is visible on the horizon.
- Planting box specimens of either Japanese Black Pine or Cork Bark Oak trees along the west, south and north sides of the building and parking lot.

Employing these design specifications will result in a minimal effect on landscape and thereby be consistent with the design requirements of the architectural committee. The SLAC Architectural Committee reviews all proposed construction projects at SLAC for conformance with the general plan criteria, with particular attention to project siting, architecture and landscape. The criteria require that a visual screen be incorporated for some proposed building construction projects.

Noise

The proposed project will provide office space for existing SLAC waste management employees. Consequently, there will be no change in post-construction traffic or traffic-related noise conditions. CHWMF waste trucks would continue the current schedule of bi-monthly activities. Noise effects associated with the project therefore will be minimal and will occur only during construction.

Typical construction site noise levels have been estimated assuming a bulldozer, front end loader, and a heavy truck are operating concurrently in the same area. Resulting noise levels would be less than 65 A-Weighted Sound Level (dBA) at a distance of 700 feet. Assuming one

daytime work shift per day, construction- related Community Noise Equivalent Level (CNEL) increments would be about 65 decibels (dB) at 400 feet, 59 dB at 800 feet, and 52 dB at 1,500 feet. The relatively small size of the project site, approximately one acre, reduces the amount of equipment operating simultaneously. No noise-sensitive land uses or receptors are within 1,500 feet of the site. Consequently, the effects of construction noise effects would be minimal and temporary.

Public Services and Utilities

Water Resources

Water Supply

The proposed project would have a minimal effect on the average daily water consumption of 270,000 gallons at SLAC. Because the proposed office building will house current employees no new demand will be placed on the sanitary sewers or drinking water systems. Water would be required for landscape irrigation.

Ground and Surface Water Quality

Construction of the proposed project would add 10,000 to 12,000 square feet of paved area, or approximately 0.28 acre. A minimal quantity of stormwater runoff would be added to that from the existing 66 acres of paved surfaces at SLAC. Runoff from the proposed parking lot and driveway would either drain to the existing storm sewer system or be recycled for grounds irrigation. Measures would be taken to minimize stormwater runoff from the proposed project. SLAC would attempt to collect and store rainwater for irrigation and in doing so eliminate surface runoff. Since less than five acres would be disturbed during construction, a formal stormwater pollution prevention plan is not required.

The construction activities associated with the proposed project would not cause adverse effects on the groundwater at SLAC. In addition, during construction, the project should abide by the County Storm Water Management Program (Best Management Construction Practices).

Waste Systems/Waste Minimization

No hazardous or radioactive wastes would be generated by the operation of the proposed building, other than waste classified as "household hazardous waste" from cleaning and/or pest control activities. Non-hazardous wastes (i.e., office-type paper wastes and refuse) and "household hazardous waste" would be generated in quantities similar to the quantities currently generated by the staff persons who would be

transferred to the new building. The effect of the proposed project on the solid waste stream at SLAC would be minimal.

Due to the small number of occupants (which represents no SLAC population increase), the proposed building is not expected to have much effect on waste water discharges to the sanitary sewer.

Electrical and Gas Utilities

An electrical substation located near the site of the proposed office building will supply electrical power to a new 75 kVa (kilovolt amperes) transformer to be located adjacent to the proposed building. The maximum electrical power requirement for the proposed building is estimated to be 0.075 megawatts per month, or 0.15 percent of the electrical power currently used at SLAC. The proposed building would be heated with either electricity or natural gas, depending on a SLAC review of the environmental effects of the two options. If gas heat is selected, the total gas demand would be increased by approximately 0.07 percent.

Communications

The proposed office building would have approximately 20 offices and require 30 new phone lines. A building adjacent to the proposed office building has a phone switch that can accommodate the new lines, therefore the proposed project would not affect communications systems.

Transportation/Traffic

A slight short-term increase in local traffic would occur due to the transport of construction materials and office furnishings to the site and the removal of waste construction materials offsite. However, the total volume of commuter and truck traffic to and from SLAC is not expected to be greater than the current situation. Therefore, effects on transportation and traffic resulting from the proposed action would be minimal.

Cumulative Effects

Since no other actions in the foreseeable future have been planned in the same geographic area of the proposed project, no adverse cumulative effects would occur.

Direct and Indirect Effects

The only adverse direct effects of the proposed project are short term and minimal including air quality and noise from construction. The closest building in the immediate area is the CHWMF. The proposed project would have a beneficial direct effect on the CHWMF because the driveway would provide an increased turn ratio for waste trucks which move approximately twice monthly through this area.

Indirect effects from the proposed project include the following:

- Less crowding in existing office buildings at SLAC.
- Less crowding in existing parking areas at SLAC.

No Action Alternative

The maintenance of the status quo would continue inefficient operations at SLAC, and projected improvements to the efficiency of the Waste Management (WM) Program would not occur if the no-action alternative were implemented. WM personnel would continue to use crowded office spaces in buildings at three different locations and distances from the CHWMF, locations which in some cases require driving and passing through a security gate to get from one office to another, and resulting in continued and unnecessary fuel consumption. In addition, the fact that supervisors would not have their staff co-located, makes staff utilization cumbersome and inefficient.

9/8/95
Date

for Martin J. Donegan
James M. Turner, Ph.D.
Acting Manager

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U.S. Department of Energy

Finding of No Significant Impact

Construction and Operation of an Office Building

at the

Stanford Linear Accelerator Center, CA

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-1107, analyzing the environmental effects relating to the construction and operation of an office building at the Stanford Linear Accelerator Center (SLAC). SLAC is a national facility operated by Stanford University, California, under contract with DOE. The center is dedicated to research in elementary particle physics and in those fields that make use of its synchrotron facilities. The objective for the construction and operation of an office building is to provide adequate office space for existing SLAC Waste Management (WM) personnel, so as to centralize WM personnel and to make WM operations more efficient and effective.

Based on the analyses in the EA, the DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA). Therefore, the preparation of an Environmental Impact Statement is not required.

DESCRIPTION OF THE PROPOSED ACTION:

The proposed action is to construct a 40 feet x 100 feet office building on an undeveloped, grassy area approximately 50 feet south of the Centralized Hazardous Waste Management

Facility (CHWMF). The proposed design of the building is a single story, rigid frame type metal building with a concrete slab foundation, eight foot interior ceilings, and a sloping metal roof. The proposed building would provide office space for approximately 20 Waste Management personnel. The proposed project includes parking spaces for 23 vehicles, and a 25 foot long driveway with a width that exceeds the requirements for a fire lane.

ALTERNATIVES:

Two alternatives were considered: (1) constructing two separate office facilities, and (2) no action. The scenario with two separate office facilities would have constructed one facility near the Radioactive Material Storage Yard (RAMSY) housing about five people, with the second facility near the CHWMF, which would house 10 people. This alternative was eliminated for the following reasons:

- Personnel located in the office building near the RAMSY would be too far away from their supervisors and work area because WM operations are being consolidated at the CHWMF.
- There would only be enough space for fifteen personnel, rather than twenty WM personnel.
- It would be cost prohibitive to construct two office buildings rather than one.

Under the no action alternative, WM personnel would continue to occupy office space in three different locations at SLAC.

ENVIRONMENTAL IMPACTS:

Air Quality: Construction activities would be a temporary source of emissions. However, potential air quality effects are short-term and will not require a Clean Air Act conformity determination.

Hazardous Materials: No PCBs, asbestos-containing, or other hazardous materials will be used in the construction of the proposed office building, parking lot, or driveway.

Public Health and Safety: The proposed office building would be constructed of essentially inflammable components. Moreover, the proposed office building would be constructed in compliance with applicable codes to minimize the spread and effects of any fires. Should a fire occur in the proposed office building, no effects on the public or the environment are expected, beyond those resulting form any other small structure fire. The proposed project would not affect police services at SLAC.

Noise: The net effect of noise from the project will be minimal and will occur only during construction. Typical construction noise would consist of bulldozers, front end loaders, and heavy trucks operating in the same area. However, the relatively small size of the project site, which is approximately one acre, reduces the amount of equipment operating simultaneously. Additionally, no noise-sensitive land uses or receptors are within 1,500 feet of the site.

Public Services and Utilites: There would be a very slight increase in water consumption at SLAC, due to water required for landscape irrigation. Measures would be taken to minimize stormwater runoff and additionally, runoff would either drain to the existing storm sewer system or be recycled for grounds irrigation. Electrical and gas usage would have a net increase of less than two-tenths percent (< 0.2%) of the current total SLAC demand. Short-term increase in local traffic would occur due to the transportation of construction materials and office furnishings. Long-term effects on transportation and traffic from the proposed action would be minimal.

Areas Not Affected: The proposed action do not affect biological or cultural resources, land use, communications, or aesthetics.

Cumulative Effects: No other actions in the foreseeable future have been planned in the same geographic area, therefore, no adverse cumulative effects would occur.

DETERMINATION:

Based on the analyses in the EA, DOE has determined that the proposed construction and operation of an office building at the Stanford Linear Accelerator Center do not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Envionmental Policy Act of 1969. Therefore, an Environmental Impact Statement on the proposed action is not required.

PUBLIC AVAILABILITY: Copies of this EA (DOE/EA-1107) are available from:

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For further information regarding the DOE NEPA process, contact:

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Issued in Oakland, CA this 8th day of Sept., 1995.

for James M. Turner, Ph.D.
Manager
Oakland Operations Office