DRAFT FINAL

ENVIRONMENTAL ASSESSMENT TO MODERNIZE STORAGE FACILITIES IN THE MUNITIONS COMPLEX AND THROUGHOUT EDWARDS AIR FORCE BASE, CALIFORNIA

April 2006

95th Air Base Wing
Civil Engineer Directorate
Environmental Management Division
Edwards AFB CA

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Environmental Assessment to Modernize Storage Facilities in the Munitions Complex and Throughout Edwards Air Force Base, California
AF Form 813 #92-0071

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The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Air Force, Air Force Materiel Command (AFMC), position, policy or decision, unless so designated by other documentation.

For:
95th Air Base Wing
Civil Engineer Directorate
Environmental Management Division
Edwards AFB CA

FINDING OF NO SIGNIFICANT IMPACT TO MODERNIZE STORAGE FACILITIES IN THE MUNITIONS COMPLEX AND THROUGHOUT EDWARDS AIR FORCE BASE, CALIFORNIA

1.0 INTRODUCTION

The purpose of the proposed action is to modernize munitions storage facilities in the Munitions Complex at Edwards Air Force Base (AFB). The existing storage structures were constructed in the 1940s and 1950s and are inadequate to meet the storage requirements of current and future munitions systems. Six additional storage igloos located at Main Base and in the Air Force Research Laboratory (AFRL) area would also be renovated as part of this project.

Under Alternative A, the Preferred Alternative, the 95th Air Base Wing, Civil Engineer Directorate, Transportation Management (95 ABW/CETM) proposes to modernize the Munitions Complex at Edwards AFB by constructing storage buildings and igloos, temporary staging and holding pads, and access roads; renovating existing storage structures; demolishing outmoded buildings; upgrading lighting fixtures; and installing lightning protection equipment. The modernization to the Munitions Complex would conform to current safety and security requirements in accordance with 22nd Air Force Instruction (AFI) 91-101, *Explosives, Munitions, and Ammunition*; and guidance documents Air Force Manual (AFMAN) 91-201, *Explosives Safety Standards*, and Air Force Handbook (AFH) 32-1084, *Facility Requirements, Chapter 9, Category Group 42, Explosives Facilities*. The construction and renovation of buildings and structures would comply with current earthquake codes. The cost to complete the project is estimated at over $16 million.

Under Alternative B, the No Action Alternative, storage operations in the Munitions Complex would continue using current facilities. Maintenance and repairs to facilities would continue as-needed. The no action alternative is the current condition found at the Munitions Complex and represents the baseline for alternative solutions comparison.

The Environmental Assessment (EA) documents the analysis of the activities required to modernize the Munitions Complex.

2.0 POTENTIAL ENVIRONMENTAL EFFECTS

The EA presents assessments of potential environmental effects to human health and the environment. Cumulative effects of the proposed action and the no-action alternative were also evaluated. The proposed modernization projects for the Munitions Complex and those facilities outside the Complex are not expected to significantly alter the productivity of the environment. The areas of assessment include: Land Use, Air Quality, Safety and Occupational Health, Hazardous Materials and Waste, Biological Resources, Cultural Resources, Geology and Soils, Socioeconomics, Infrastructure, and Energy Resources. No potentially significant impacts were identified in any of these areas.

3.0 FINDINGS

The proposed action was found to have no potential for significant adverse effects to all of the areas of assessment because of new construction, renovation, upgrades, and demolition projects in the Munitions Complex. The types and quantities of hazardous materials used during new construction and renovation, and the generation of hazardous waste during demolition would not be different from those already in existence. Solid waste generated during the demolition and renovation of facilities, including concrete pads and footings, cinderblock walls, corrugated metal from exterior walls and roofs, and asphalt pavement, would be recycled or disposed of at a state-licensed landfill. Minimization measures would be in place during demolition and construction activities to reduce the potential effects of soil erosion. The following areas of assessment may require additional explanation:

A short-term degradation in air quality would occur during construction and grading activities with the generation of fugitive dust. Measures would be in place to minimize dust emissions. Air emissions would occur from combustion engines. All construction and grading vehicles would be kept in working order. Significant impacts would not be anticipated.

The demolition and renovation of pre-1980 buildings could expose laborers to potential asbestos-containing materials (ACM), heavy-metal based paints such as lead-based paint (LBP), possible polychlorinated biphenyl (PCB), and particulate matter. To minimize exposure and risk to human health, state and federal regulations would be followed, as well as basewide procedures and practices regarding these materials. A significant exposure risk to workers is not anticipated.

The desert tortoise, a federally-listed threatened species found on Edwards AFB, was not observed within the project area during a biological survey conducted for this project. The amount of habitat disturbance proposed and the lack of desert tortoise densities in adjacent areas suggest a very low potential for desert tortoise movement through the area. A No Adverse Effect to the Desert Tortoise Memorandum was prepared on 3 March 2003.

Migratory birds pass through the area during seasonal migrations and often use buildings for nesting. Birds on base are protected under 16 United States Code (U.S.C.) 703–712, *Migratory Bird Treaty Act* (MBTA) of 1918, which requires a survey of buildings prior to demolition or renovation to determine the existence of nesting birds. Nesting birds would be removed through the permitting process.

A cultural resources survey was performed in the Complex and no buildings were identified for historic listing. These findings were presented in the *Integrated Cultural Resources Management Plan* (ICRMP) *for Edwards AFB, California* (AFFTC 2005). A Phase I Cultural Resource Survey (*Phase I Cultural Resource Survey Remedial Investigation/Feasibility Study For Portions of South Base Operable Unit No. 2/Environmental Restoration Program,* The Earth Technology Corporation 1994) was performed in the area of a proposed suspect-vehicle holding pad southwest of the Munitions Complex. Based on survey results, construction of the pad could be accommodated in the area without significantly impacting the archaeological sites scattered in the area.

Based on the analysis of the potential effects to the human environment, including Land Use, Air Quality, Safety and Occupational Health, Hazardous Materials and Waste, Biological Resources, Cultural Resources, Geology and Soils, Socioeconomics, Infrastructure, and Energy

Resources, the EA concludes that the proposed action would produce no significant adverse effects. In addition, cumulative effects would also produce no significant adverse effects to the human environment.

4.0 DETERMINATION

Based on the results of the analyses performed during the preparation of the EA, a Finding of No Significant Impact (FONSI) to the environment was determined and the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the context of the *National Environmental Policy Act* (NEPA), of 1969 (42 U.S.C 4321 et seq.) Therefore, an Environmental Impact Statement for the proposed action is not required.

Copies of this FONSI, the accompanying EA, and further information concerning the proposed action are available by contacting:

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_____ _____

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TABLE OF CONTENTS

Section	Title	Page No.
1.0	**INTRODUCTION**	**1**
1.1	Proposed Action	1
1.2	Purpose and Need for the Proposed Action	3
1.3	Location and Scope of the Proposed Action	3
1.4	Resource Issues and Concerns	3
1.4.1	Resource Issues and Concerns Studied in Detail	3
1.4.2	Resource Issues and Concerns Eliminated from Detailed Study	6
1.5	Regulatory Requirements, Permits, and Approvals	6
1.5.1	Regulatory Requirements	6
1.5.2	Permits and Approvals	6
1.5.3	Related Environmental Documents	7
1.6	Future Use of this Document	7
1.7	Organization of this Environmental Assessment	7
2.0	**DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**	**9**
2.1	Alternative A–Modernize Munitions Storage Facilities in the Munitions Complex and Throughout the Base (Preferred Alternative)	9
2.1.1	Site Preparation Activities	12
2.1.2	Building Construction Activities	13
2.1.3	Facility Modifications	13
2.2	Alternative B–No Action Alternative	13
2.3	Criteria for Selection of a Reasonable Range of Alternatives	16
2.4	Alternatives Considered but Dismissed from Further Consideration	17
2.4.1	Relocating the Complex	17
2.5	Comparison Summary of Alternatives and Impacts to the Environment	17
2.6	Comparison of Environmental Effects to the Alternatives	17
3.0	**AFFECTED ENVIRONMENT**	**27**
3.1	Land Use	27
3.1.1	Land Use Restrictions	27
3.1.2	Foreign Object Damage Control	27
3.2	Air Quality	27
3.2.1	Regulatory Requirements/Guidance	28
3.2.2	Environmental Setting	28
3.2.3	Local District Control	29
3.2.4	Conformity Requirements	32
3.3	Safety and Occupational Health	34
3.3.1	Regulatory Requirements/Guidance	34
3.3.2	Exposure Hazards	35
3.3.2.1	Hazardous Noise	35
3.3.2.2	Asbestos Containing Material	38
3.3.2.3	Heavy Metal Paints	38
3.3.2.4	Polychlorinated biphenyls	39

TABLE OF CONTENTS (Continued)

Section	Title	Page No.
	3.3.2.5 Environmental Hazards	39
	3.3.3 Safety	39
3.4	Hazardous Materials and Waste	40
	3.4.1 Regulatory Requirements/Guidance	40
	3.4.2 Hazardous Materials	41
	3.4.3 Hazardous Waste	41
	3.4.4 Solid Waste	42
3.5	Biological Resources	43
	3.5.1 Regulatory Requirements/Guidance	43
	3.5.2 Animal Species	44
	3.5.3 Plant Species	44
3.6	Cultural Resources	45
	3.6.1 Regulatory Requirements/Guidance	45
3.7	Geology and Soils	45
	3.7.1 Regulatory Requirements/Guidance	45
	3.7.2 Material Use	46
	3.7.3 Environmental Restoration Program	46
	3.7.4 Seismicity	46
3.8	Socioeconomics	47
	3.8.1 Fiscal Growth	47
3.9	Infrastructure	47
	3.9.1 Regulatory Requirements/Guidance	47
	3.9.2 Transportation System	48
	3.9.3 Utilities	48
	3.9.4 Communication Systems	48
3.10	Energy Resources	48
	3.10.1 Regulatory Requirements/Guidance	49
	3.10.2 Energy Consumption	49
4.0	**ENVIRONMENTAL CONSEQUENCES**	**51**
4.1	Land Use	51
	4.1.1 Alternative A Effects (Preferred Alternative)	51
	4.1.1.1 On-Base Land Use	51
	4.1.1.2 Foreign Object Damage Control	51
	4.1.2 Direct/Indirect Effect	51
	4.1.3 Short-Term Use Versus Long-Term Productivity	51
	4.1.4 Alternative A Minimization Measures (Preferred Alternative)	52
	4.1.5 Alternative B Effects	52
	4.1.6 Alternative B Minimization Measures	52
4.2	Air Quality	52
	4.2.1 Alternative A Effects (Preferred Alternative)	52
	4.2.1.1 National Ambient Air Quality Standards	52
	4.2.1.2 Local District Control	52

TABLE OF CONTENTS (Continued)

Section	Title	Page No.
	4.2.1.3 Conformity Requirements	53
	4.2.2 Direct/Indirect Effects	53
	4.2.3 Short-Term Use Versus Long-Term Productivity	53
	4.2.4 Alternative A Minimization Measures (Preferred Alternative)	53
	4.2.5 Alternative B Effects	54
	4.2.6 Alternative B Minimization Measures	54
4.3	Safety and Occupational Health	54
	4.3.1 Alternative A Effects (Preferred Alternative)	54
	4.3.1.1 Exposure Hazards	54
	4.3.1.2 Safety	54
	4.3.2 Direct/Indirect Effects	55
	4.3.3 Short-Term Use Versus Long-Term Productivity	55
	4.3.4 Alternative A Minimization Measures (Preferred Alternative)	55
	4.3.5 Alternative B Effects	56
	4.3.6 Alternative B Minimization Measures	56
4.4	Hazardous Materials and Waste	57
	4.4.1 Alternative A Effects (Preferred Alternative)	57
	4.4.1.1 Hazardous Materials	57
	4.4.1.2 Hazardous Waste	57
	4.4.1.3 Solid Waste	57
	4.4.2 Direct/Indirect Effects	57
	4.4.3 Short-Term Use Versus Long-Term Productivity	58
	4.4.4 Alternative A Minimization Measures (Preferred Alternative)	58
	4.4.5 Alternative B Effects	59
	4.4.6 Alternative B Minimization Measures	59
4.5	Biological Resources	59
	4.5.1 Alternative A Effects (Preferred Alternative)	59
	4.5.2 Direct/Indirect Effects	60
	4.5.3 Short-Term Use Versus Long-Term Productivity	60
	4.5.4 Alternative A Minimization Measures (Preferred Alternative)	60
	4.5.5 Alternative B Effects	61
	4.5.6 Alternative B Minimization Measures	61
4.6	Cultural Resources	61
	4.6.1 Alternative A Effects (Preferred Alternative)	61
	4.6.2 Direct/Indirect Effects	62
	4.6.3 Short-Term Use Versus Long-Term Productivity	62
	4.6.4 Alternative A Minimization Measures (Preferred Alternative)	62
	4.6.5 Alternative B Effects	63
	4.6.6 Alternative B Minimization Measures	63
4.7	Geology and Soils	63
	4.7.1 Alternative A Effects (Preferred Alternative)	63
	4.7.1.1 Topography	63
	4.7.1.2 Material Site Use	63

TABLE OF CONTENTS (Continued)

Section	Title	Page No.
	4.7.1.3 Environmental Restoration Program Site	63
	4.7.1.4 Seismicity	67
	4.7.2 Direct/Indirect Effects	67
	4.7.3 Short-Term Use Versus Long-Term Productivity	67
	4.7.4 Alternative A Minimization Measures (Preferred Alternative)	67
	4.7.5 Alternative B Effects	69
	4.7.6 Alternative B Minimization Measures	69
4.8	Socioeconomic	70
	4.8.1 Alternative A Effects (Preferred Alternative)	70
	4.8.2 Fiscal Growth	70
	4.8.3 Direct/Indirect Effects	70
	4.8.4 Short-Term Use Versus Long-Term Productivity	70
	4.8.5 Alternative A Minimization Measures (Preferred Alternative)	70
	4.8.6 Alternative B Effects	70
	4.8.7 Alternative B Minimization Measures	70
4.9	Infrastructure	70
	4.9.1 Transportation System	71
	4.9.2 Utilities and Communication Systems	71
	4.9.3 Direct/Indirect Effects	71
	4.9.4 Short-Term Use Versus Long-Term Productivity	71
	4.9.5 Alternative A Minimization Measures (Preferred Alternative)	71
	4.9.6 Alternative B Effects	72
	4.9.7 Alternative B Minimization Measures	72
4.10	Energy Conservation	72
	4.10.1 Alternative A Impacts (Preferred Alternative)	72
	4.10.2 Direct/Indirect Effects	72
	4.10.3 Short-Term Use Verses Long-Term Productivity	72
	4.10.4 Alternative A Minimization Measures (Preferred Alternatives)	72
	4.10.5 Alternative B Effects	73
	4.10.6 Alternative B Minimization Measures	73
4.11	NEPA Mandated Analysis	73
	4.11.1 Cumulative Effects	73
	4.11.2 Unavoidable Adverse Effects	74
	4.11.3 Irreversible and Irretrievable Commitments of Resources	75
5.0	**REFERENCES**	**77**
6.0	**PREPARER/REVIEWERS**	**83**
APPENDIX A	**MEMORANDUM: *NO ADVERSE EFFECT TO DESERT TORTOISE, UPGRADE COMPLEX (CONTROL NUMBER 01-0796A)***	**A-1**

TABLE OF CONTENTS (Concluded)

Section | Title | Page No.

APPENDIX B MEMORANDUM: *CLEAN AIR ACT CONFORMITY STATEMENT FOR CONTROL NO. 01-0796A, ENVIRONMENTAL ASSESSMENT OF THE RENOVATION AND UPGRADES TO THE MUNITIONS COMPLEX, EDWARDS AIR FORCE BASE, CALIFORNIA* B-1

APPENDIX C PHOTOGRAPHS OF BUILDINGS AND EQUIPMENT AT THE COMPLEX C-1

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LIST OF FIGURES

Figure	Title	Page No.
1	Location of Modernization Projects	2
2	Location Map of Edwards Air Force Base.	4
3	Complex Construction and Renovation Map	10
4	Location of Suspect-Vehicle Holding Area	11
5	Location of Storage Igloos 1016, 1710, and 1711	14
6	Location of Storage Igloos 8455, 8456 and 8457.	15
7	Air Districts Boundaries	30
8	Attainment Status Map	31
9	Comparative Levels of Common Sound	36
10	Noise Contours Along the Main Base Runway	37
11	Locations of Borrow Sites for Fill Material and the Desert Tortoise Critical Habitat Area.	64
12	Location of Former ERP Site 427 Storage Area , and ERP Site 221-A, Former Underground Storage Tank Site	65
13	The Location of Operable Unit 4A in the AFRL Area.	66
14	Location of Surface Faults on Edwards Air Force Base.	68
A-1	Proposed Expansion Area on the West Side of the Munitions Complex	A-3

LIST OF PHOTOS

Photo	Title	Page No.
1	Building 601. Former warehouse, shop, and office, scheduled to be demolished	C-3
2	Building 602. Former administrative office scheduled to be demolished	C-3
3	Building 640. Storage facility scheduled to be demolished	C-4
4	Building 642. Storage facility scheduled to be demolished	C-4
5	Building 643. Storage facility scheduled to be demolished	C-5
6	Building 644. Storage facility scheduled to be demolished	C-5
7	Building 650. Storage facility scheduled to be demolished	C-6

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LIST OF TABLES

Table	Title	Page No.
1	Summary Comparison of Alternatives	18
2	Comparison of Environmental Effects to the Proposed Action and the No Action Alternative	19
3	Ambient Air Standards for Criteria Pollutants	29
4	New Source Review Threshold Emission Levels	32
5	1990 Baseline and 10 Percent Threshold Values	33
6	Comparison of Air Quality Emissions with Baseline	34

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LIST OF ABBREVIATIONS AND ACRONYMS

95 ABW/CETM	95th Air Base Wing, Civil Engineer Directorate, Transportation Management
95 ABW/CETS	95th Air Base Wing, Civil Engineer Directorate, Transportation Support
95 ABW/CEV	95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division
95 ABW/CEVX	95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division, Compliance Branch
ACM	asbestos-containing material
AF	Air Force
AFB	Air Force Base
AFFTC	Air Force Flight Test Center
AFFTCI	Air Force Flight Test Center Instruction
AFH	Air Force Handbook
AFI	Air Force Instruction
AFJMAN	Air Force Joint Manual
AFMAN	Air Force Manual
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFFTC/EM	Air Force Flight Test Center/Environmental Management
AFRL	Air Force Research Laboratory
AOC	area of concern
ARPA	Archaeological Resources Protection Act
AVAPCD	Antelope Valley Air Pollution Control District
BACT	Best Available Control Technology
BASH	Bird Aircraft Strike Hazard
BHP	brake horsepower
BHPO	Base Historic Preservation Officer
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
Cal/EPA	California Environmental Protection Agency
Cal-OSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

CATEX	categorical exclusion
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDW	construction and demolition waste
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DOD	Department of Defense
DRMO	Defense Reutilization Marketing Office
DT&E	Developmental Test and Evaluation
dB	decibel
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIR	economic impact region
EM	Environmental Management
EMXC	Environmental Management Natural Resources
EOs	Executive Orders
ERP	Environmental Restoration Program
ESA	Endangered Species Act of 1973
FOD	foreign object damage
FONSI	Finding of No Significant Impact
FY	fiscal year
HAP	hazardous air pollutant
HDDT	heavy-duty diesel truck
HDGT	heavy-duty gasoline truck
HMIPT	Hazardous Materials Integrated Process Team
HMMP	Hazardous Material Management Program
HVAC	heating, ventilation, and air-conditioning

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

HWMP	Hazardous Waste Management Plan
IAW	in accordance with
ICE	internal combustion engine
ICRMP	Integrated Cultural Resources Management Plan
IMT	Information Management Tool
INRMP	Integrated Natural Resources Management Plan
KCAPCD	Kern County Air Pollution Control District
km	kilometer
LAN	Land Area Network
LBP	lead-based paint
LDDT	light-duty diesel truck
LDGT	light-duty gasoline truck
LDGV	light-duty gasoline vehicle
LMR	Land Mobile Radio
MBTA	Migratory Bird Treaty Act
MDAQMD	Mojave Desert Air Quality Management District
MSDS	Material Safety Data Sheet
mi	mile
mph	miles per hour
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NEC	National Electrical Code
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act of 1966
NO_x	nitrogen oxides
NR	not reported
NSR	new source review
O_3	ozone
OSHA	Occupational Safety and Health Administration

LIST OF ABBREVIATIONS AND ACRONYMS (Concluded)

PCBs	polychlorinated biphenyl
PL	Public Law
PM10	particulate matter less than or equal to 10 microns
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
ROGs	reactive organic gases
Rd	Road
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_x	sulfur oxides
TLC	total lung capacity
TSCA	Toxic Substances Control Act
TSE	tactical support equipment
TTLC	total threshold limit concentration
T/yr	tons per year
tpy	tons per year
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
U.S.C.	United States Code
UBC	Uniform Building Code
UPC	Uniform Plumbing Code
USACE	United States Army corps of Engineers
USAF	United States Air Force
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey
VOC	volatile organic compound
$\mu g/m^3$	$1x10^{-6}$ grams (micrograms) per cubic meter
µm	$1x10^{-6}$ meters (micrometers)

1.0 INTRODUCTION

The existing storage structures at the Munitions Complex (Complex) were constructed in the 1940s and 1950s and are inadequate and unable to meet the storage requirements of current and future systems. To meet the need for a modern storage Complex, buildings and structures would be demolished and replaced with modern and efficient storage facilities; in addition, new staging and holding pads would also be constructed with proper lighting and security. Construction of the new facilities would be in accordance with (IAW) current operational safety and construction requirements stipulated in Air Force Handbook (AFH) 32-1084, *Facility Requirements, Chapter 9, Category Group 42, Explosive Facilities.* Additional renovation would also be performed at six storage igloos and buildings located outside the Munitions Complex. These facilities were constructed during the 1950s and 1960s.

1.1 Proposed Action

The 95th Air Base Wing, Civil Engineer Directorate, Transportation Management proposes to modernize the Complex by renovating and upgrading storage buildings and removing outmoded buildings; constructing additional modern storage structures, and holding and staging pads; and upgrading and installing utility and communication systems. The Complex is located at the southern portion of the base. Six additional storage igloos located at Main Base and the Air Force Research Laboratory (AFRL) area would also be renovated as part of this project (Figure 1). The project is proposed to begin during fiscal year (FY) 2009. Renovation and upgrades to the Complex would include the following:

a. Change the current layout of the Complex to allow for the efficient storage of equipment with the maximum net weight possible;

b. Ensure that building construction conforms to seismic building codes and current building safety requirements outlined in Air Force Manual (AFMAN) 91-201, *Explosive Safety Standards,* 1 January 1998;

c. Ensure newly constructed storage structures are able to store equipment on both standard and nonstandard sized pallets and allow maximum storage utilization;

d. Ensure the buildings have available space configurations to utilize the operation of a forklift during the movement of equipment pallets;

e. Ensure outside temporary holding and staging pads have protection against lightning strikes;

f. Install a security chain-link fence around the Complex;

g. Construct and resurface access roads within the Complex;

h. Install and upgrade area communications lines, lighting, emergency generators, and security alarms in all structures; and

i. Demolish current structures to provide new modernized facilities.

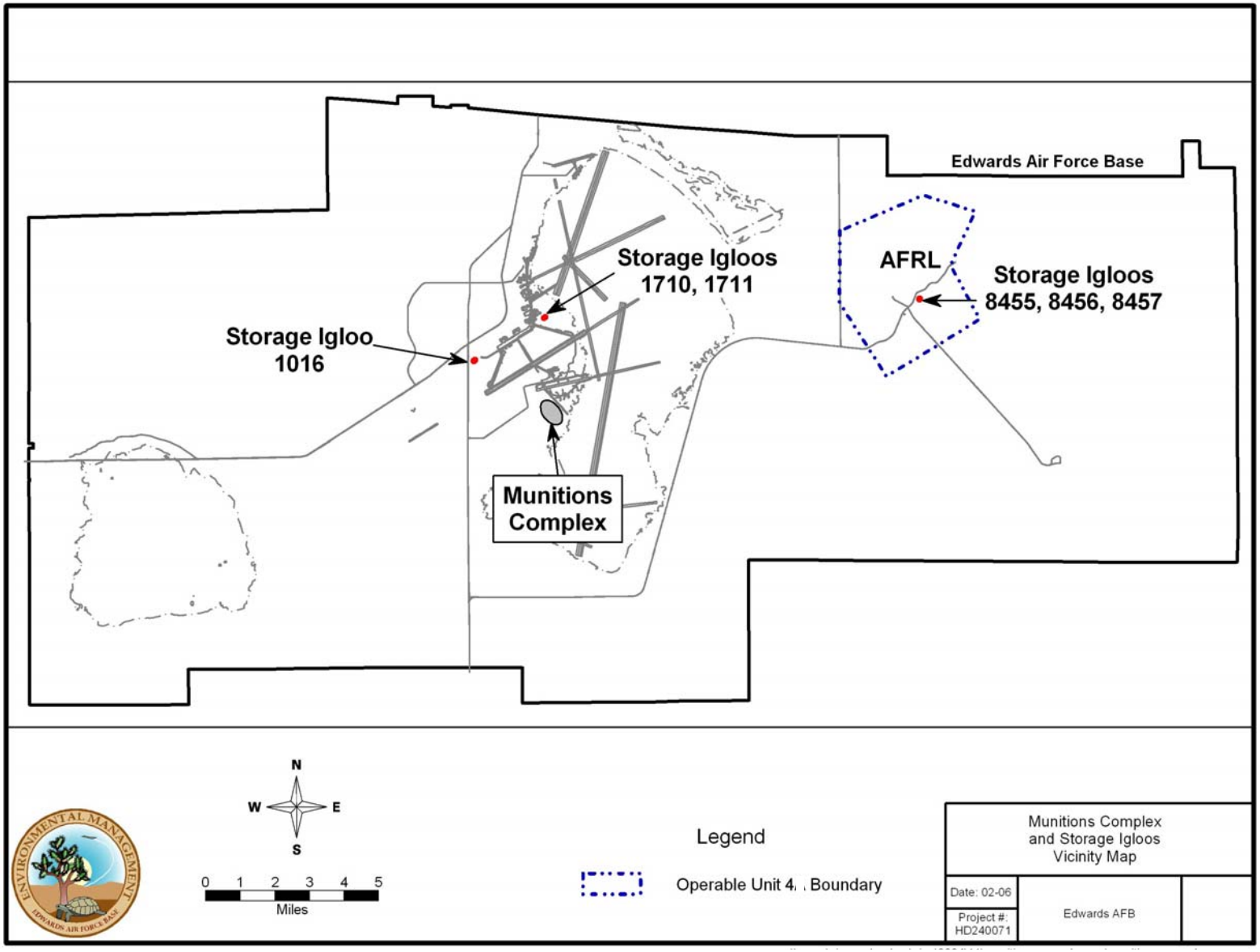

Figure 1. Location of Modernization Projects

1.2 Purpose and Need for the Proposed Action

The purpose of the proposed action is to implement projects that would modernize facilities in the Complex and storage igloos at Main Base and AFRL. The projects within the Complex would include new construction and renovation of buildings, demolition of outmoded buildings, and upgrading and installing utility and communication systems. The storage igloos at Main Base and AFRL would be renovated. Modernization of facilities in the Complex and those outside the Complex would ensure that equipment and inventory used by Security Forces and various mobility units would be stored in safe and secure structures IAW Air Force regulations.

1.3 Location and Scope of the Proposed Action

Edwards Air Force Base (AFB) is located in the Antelope Valley region of the western Mojave Desert in Southern California. It is about 60 miles northeast of Los Angeles, California. The base occupies an area of approximately 301,000 acres or 470 square miles. Portions of the base lie within Kern, Los Angeles, and San Bernardino counties (Figure 2).

The scope of the proposed action covers the Munitions Complex, an area of over 442 acres located at the southern portion of the base. A small suspect-vehicle holding pad (20,000 square feet) would also be constructed about 4 miles southwest of the Complex as part of the proposed action. Within the Complex are various storage buildings and igloos, and open storage areas, all with access roads and driveways to the facilities. The six storage igloos outside the Complex are located at Main Base and the AFRL area.

1.4 Resource Issues and Concerns

Implementation of the proposed action would potentially affect the following environmental resources: land use, air quality, safety and occupational health, hazardous materials and waste, biological resources, cultural resources, geology and soils, socioeconomics, infrastructure, and energy resources. The remaining resources that would not be affected are presented in Section 1.4.2.

1.4.1 Resource Issues and Concerns Studied in Detail

During the scoping process, the proposed action and alternatives were evaluated to determine their potential impact to the environment. The environmental resources that are affected include the following:

a. Land Use: The entire Complex is a restricted area. Construction in the Complex may create foreign object damage (FOD) material, which would be of concern to aircraft operations in the vicinity of the runway. In addition, a new restricted area would be designated around the holding pad 4 miles southwest of the existing Munitions Complex.

b. Air Quality: Air emissions from construction and renovation equipment would be generated. In addition, particulate matter less than or equal to 10 microns (PM10) would be generated during construction, demolition, and laying of building pads.

c. Safety and Occupational Health: Some of the inventory stored may pose a safety risk that would be subject to strict management practices. The demolition of buildings constructed

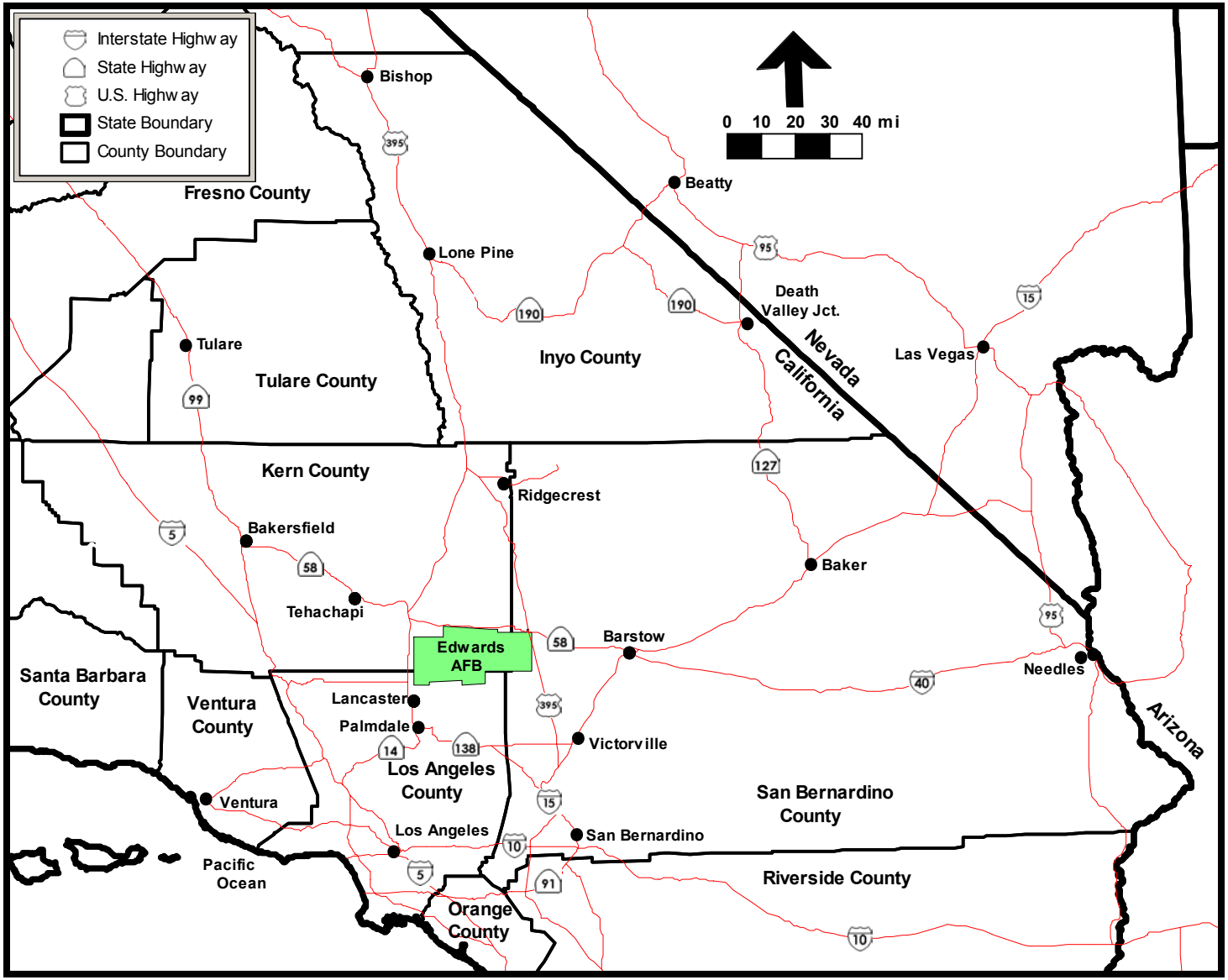

Figure 2. Location Map of Edwards Air Force Base.

during the 1940s poses health and safety concerns regarding personnel exposure to asbestos-containing material (ACM), lead-based paint (LBP), lighting fixtures containing polychlorinated biphenyls (PCBs), and excess particulate matter. Noise levels from adjacent flightline activities may exceed the 85-decibel (dB) level, which would be above personal noise standards set by regulatory agencies. Safety hazards associated with indoor and outdoor projects would include possible venomous snakes, and potential exposure to hantavirus and valley fever under certain environmental conditions.

d. Hazardous Materials and Waste: The use of hazardous materials during construction and the disposal of wastestreams containing ACMs, LBP, and PCBs may pose an exposure health risk to workers. Solid waste would be generated during demolition and construction. Disposal of waste debris would be coordinated with the Edwards AFB solid waste project manager. Disposition of the wastestream would be accomplished through recycling, reuse, or transfer to an approved state-licensed solid waste landfill.

e. Biological Resources: The desert tortoise, a federally-listed threatened species, is present on base; and nesting birds and roosting bats may be present in structures. Construction activities may disturb these species.

f. Cultural Resources: A historic building survey was conducted in the Complex, but none were identified for historic listing. Results of the survey were presented in the *Integrated Cultural Resources Management Plan* (ICRMP) *for Edwards AFB, California (*AFFTC 2005) with concurrence from State Historic Preservation Office (SHPO). A Phase I Cultural Resources Survey (The Earth Technology Corporation 1994) was conducted in the area of the proposed suspect-vehicle holding pad located southwest of the Complex. Survey results indicate the holding pad could be constructed without disturbing the scattered archaeological sites in the area.

g. Geology and Soils: The northwest-southeast trending Mirage Valley fault extends into the Complex. Excavation of surface soils may result in surface erosion during the construction of roads and building pads. Fill material may be imported from other areas of the base to cover storage igloos and bring structures and road bases to grade. Fill material would be acquired from licensed borrow pits. Three of the storage igloos in the AFRL area are located within Operable Unit 4 of the Environmental Restoration Program.

h. Socioeconomics: Construction of storage buildings and structures, concrete storage pads, and access roads would be completed over a 12-month period. During construction and demolition activities, base infrastructure may be affected.

i. Infrastructure: During project activities, construction equipment and materials to and from the project site would have the potential to affect existing traffic patterns. Utility and communication lines could be accidentally severed and service interrupted during construction and installation activities.

j. Energy Conservation: Newly constructed storage structures and access roads, as well as installation of new utilities and communication systems, may impact mobility and energy efficiency resulting in energy savings.

1.4.2 Resource Issues and Concerns Eliminated from Detailed Study

The following environmental resources have been eliminated from further review during the scoping process. These resources have been determined not to be impacted significantly from the proposed action and have been eliminated from further evaluation in this Environmental Assessment (EA).

a. Water Resources: Renovation and upgrades to structures in the Complex would not significantly affect potable water, wastewater, or storm-water.

b. Flood Plain: The 2,275-foot contour has been determined to be the boundary of the 100-year floodplain area. The boundary is located on the eastern side of the Complex (French, Miller, and Dettling 2003). The Complex has been determined to be above the 2,275-foot contour and would not be subject to a flood event.

c. Environmental Justice: The Executive Orders (EOs) on Environmental Justice and the Protection of Children require federal agencies to identify and address disproportionately high adverse effects of its activities on minority and low-income populations and children. This action has been reviewed IAW EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and EO 13045, *Protection of Children from Environmental Health and Safety Risks*. Given that the construction activities would occur entirely in an isolated area of the base and away from populated areas, the Air Force has determined that this action has no substantial, disproportionate impact to minority, low-income populations, and/or children.

1.5 Regulatory Requirements, Permits, and Approvals

1.5.1 Regulatory Requirements

This document has been prepared in order to comply with the *National Environmental Policy Act (NEPA)* of 1969, as amended (42 United States Code [U.S.C] 4321 et seq.); the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508); and 32 CFR 989.27, *Environmental Impact Analysis Process (EIAP)–Airspace Proposals*.

1.5.2 Permits and Approvals

The contractor/proponent performing the work is responsible for obtaining the relevant permits and accomplishing any required notification. Environmental permitting requirements for all work on base are coordinated through the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division. The following permits would be required; however, as permitting requirements change, others may also be required.

a. Air quality operational permits for stationary construction equipment (e.g., generators, air compressors, or welders) exceeding 50-brake horsepower (BHP) that remains on base for more than 45 days. Operational air permits are obtained prior to bringing equipment on base.

b. An Air Force Flight Test Center (AFFTC) Information Management Tool (IMT) 5926, *Edwards AFB Civil Engineering Work Clearance Request* (Digging Permit), is required for any trenching or digging operations that extend 12 or more inches below the ground's surface.

c. An AFFTC Form 5852, *Industrial Wastewater Discharge Permit*, may be required during additions to or disconnection of wastewater lines during the project activities.

d. Project activities involving welding, torching, cutting and brazing require an AF Form 592, *Welding, Cutting and Brazing Permit* (Hot Work Permit) from the Base Fire Department.

1.5.3 Related Environmental Documents

A number of environmental documents have been prepared and approved that address activities related to project activities as discussed in this EA. These documents contain information used in the preparation of this EA and are as follows:

a. *Edwards Air Force Base General Plan* (the Base General Plan) (AFFTC 2001).

b. *Programmatic Environmental Assessment for Small Building Construction, Relocation, and Modification at Edwards Air Force Base, California* (AFFTC 1998b).

c. *Best Management Practices for Road Surface Activities, Edwards Air Force Base, California* (AFFTC 2003).

d. *Integrated Natural Resources Management Plan for Edwards Air Force Base, California* (AFFTC 2004).

e. *Integrated Cultural Resources Management Plan for Edwards Air Force Base, California* (AFFTC 2005).

1.6 Future Use of this Document

Future projects proposed for the Complex would be documented on an AF Form 813, *Request for Environmental Impact Analysis*, and reviewed and evaluated to determine if the project falls within the scope of this EA. If the proposed project falls within the scope of this EA, and no new environmental impacts would result, a categorical exclusion (CATEX) could be prepared upon submittal of the AF Form 813. In some cases, a supplement to this EA may be required. In that case, a new Finding of No Significant Impact (FONSI) would be required. For those projects that result in significant impacts to the environment, such that the impacts cannot be minimized to a level of insignificance, a separate Environmental Impact Statement would need to be prepared.

1.7 Organization of this Environmental Assessment

The organization of this EA is as follows:

a. Section 1.0–Introduction: a description of the proposed action; the purpose and need; location and scope of proposed action; resource issues and concerns; regulatory requirements, permits, and approvals; and the future use of this document.

b. Section 2.0–Description of the Proposed Action and Alternatives: a discussion of Alternative A (the preferred alternative); Alternative B (the no action alternative); criteria for selection of a reasonable range of alternatives; alternatives considered but dismissed from further consideration; and a comparison summary of alternatives.

c. Section 3.0–Affected Environment: a discussion of resource issues and concerns that are impacted when the proposed action is implemented.

d. Section 4.0–Environmental Consequences: a discussion of the environmental effects and minimization measures that would be taken when implementing the proposed action or the no action alternative. The impact of direct and indirect effects, the relationship of short-term use versus long-term productivity, and the possibility of cumulative impacts are discussed. Also discussed are the disclosure of unavoidable adverse effects and the irretrievable and irreversible commitment of resources.

e. Section 5.0–References: a description of references cited throughout the document.

f. Section 6.0–List of Preparers and Reviewers: lists the persons who were primarily responsible for preparing this EA.

g. Appendix A–Memorandum: *No Adverse Effect to Desert Tortoise, Upgrade Munitions Complex (Control Number 01-0796a)*.

h. Appendix B–Memorandum: Clean Air Act Conformity Statement for Control No. 01-0796a, *Environmental Assessment of the Renovation and Upgrades to the Munitions Complex, Edwards, Air Force Base, California.*

i. Appendix C–Photographs of buildings to be demolished at the Complex.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action, Alternative A–Modernize Munitions Storage Facilities in the Munitions Complex and Throughout the Base; and Alternative B–No Action Alternative. Other alternatives were considered, but eliminated from further study and are briefly discussed later in this section. These alternatives include: revitalization of buildings on an as-needed basis or relocation and construction of a new Complex.

2.1 Alternative A–Modernize Munitions Storage Facilities in the Munitions Complex and Throughout the Base (Preferred Alternative)

The 95th Air Base Wing, Civil Engineer Directorate, Transportation Management proposes to modernize the Complex at Edwards AFB by constructing new storage buildings and igloos, temporary staging and holding pads, and access roads; installing new lighting and lightning protection equipment; demolishing outmoded buildings; and renovating existing storage buildings. The modernization of the Complex would conform to current safety and security requirements in accordance with 22nd Air Force Instruction (AFI) 91-101, *Explosives, Munitions, and Ammunition*; and guidance documents Air Force Manual (AFMAN) 91-201, *Explosives Safety Standards*, and Air Force Handbook (AFH) 32-1084, *Facility Requirements, Chapter 9, Category Group 42 Explosives Facilities*. Additional storage igloos and buildings located on Main Base and at AFRL would also be renovated as part of this project. The construction and renovation of buildings and structures would comply with current earthquake codes. The cost to complete the project is estimated at over $16 million.

The locations of the proposed renovation, construction, and demolition projects are presented in Figures 3 and 4. The projects would include:

a. Demolition: Buildings 601, 602, 639, 640, 642, 643, 644, 649, 650, 651, and 652 (over 14,000 square feet) would be demolished;

b. Renovation of Storage Structures and Igloos: Fifteen structures (29,000 square feet) located in the Complex, and six structures (4,000 square feet) located at Main Base and AFRL would be renovated to meet current Air Force storage, safety, and security standards;

c. Construct Storage Igloos: Construct three new storage igloos to satisfy storage requirements (over 7,200 square feet). The new concrete igloos would be constructed in the southeastern corner of the Complex and would be 80 feet long and covered with earthen material. The igloos would be constructed to meet current earthquake building codes, have permanent interior and exterior lighting, and a driveway. A lightning protection system would also be installed;

d. Construct Three Storage Buildings: Construct three storage buildings that would replace Buildings 644, 647, 650, and 652. The three Butler-type buildings, 50 feet wide by 100 feet long, would be constructed with four garage doors per building (15,000 square feet). The buildings would be constructed to meet current earthquake building codes. Access to the buildings would be from existing roads;

e. Construct Multicube Storage Structure: Construct an aboveground storage structure to replace Buildings 649 and 651. The new storage structure would have a 16-bay multicube storage area and would use an existing driveway that would be expanded for drive-up access into the bay area. Existing electrical utilities would be used for exterior lighting and security. Also, a weather-protected telephone and lightning protection system would be installed;

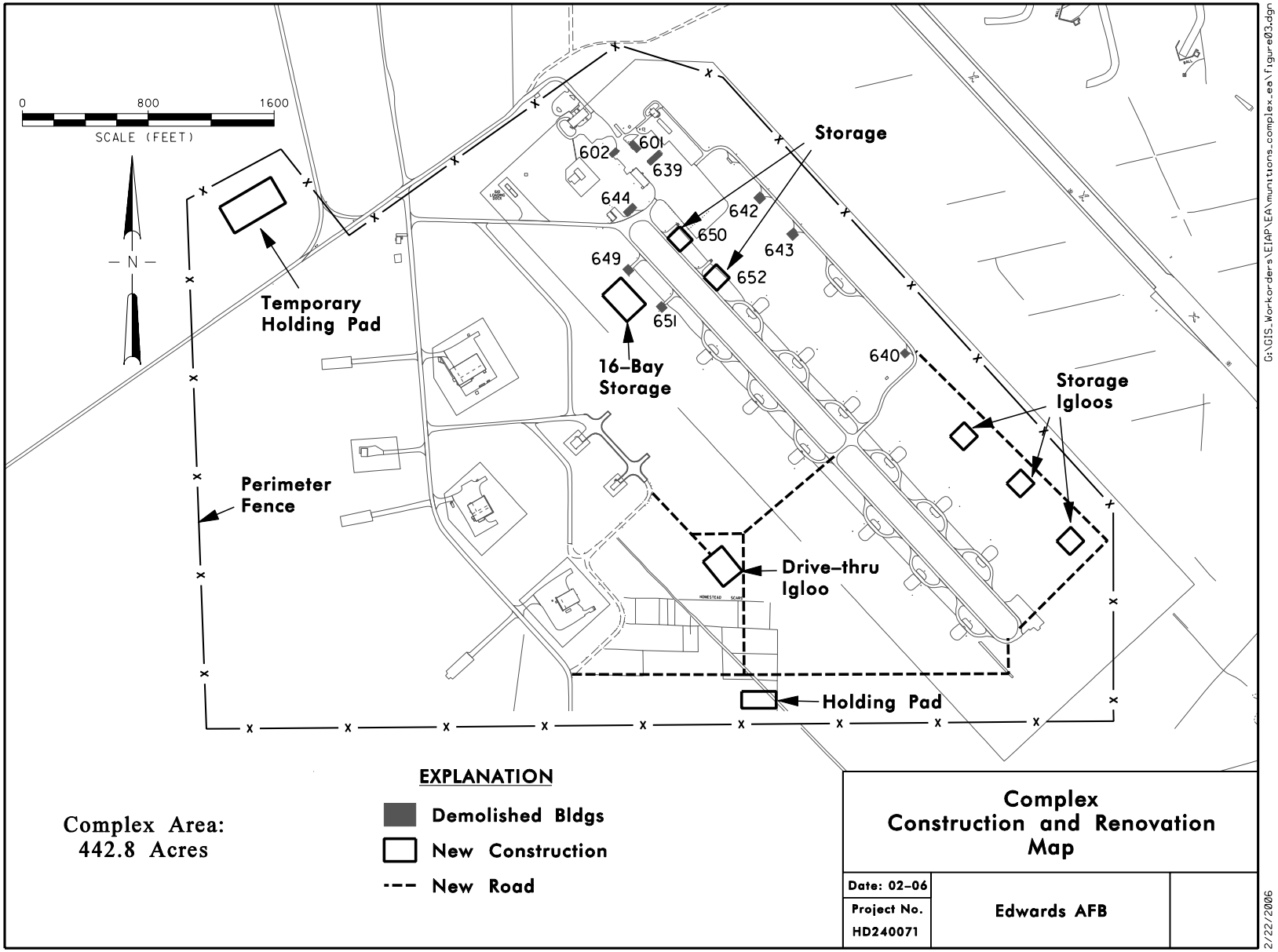

Figure 3. Complex Construction and Renovation Map

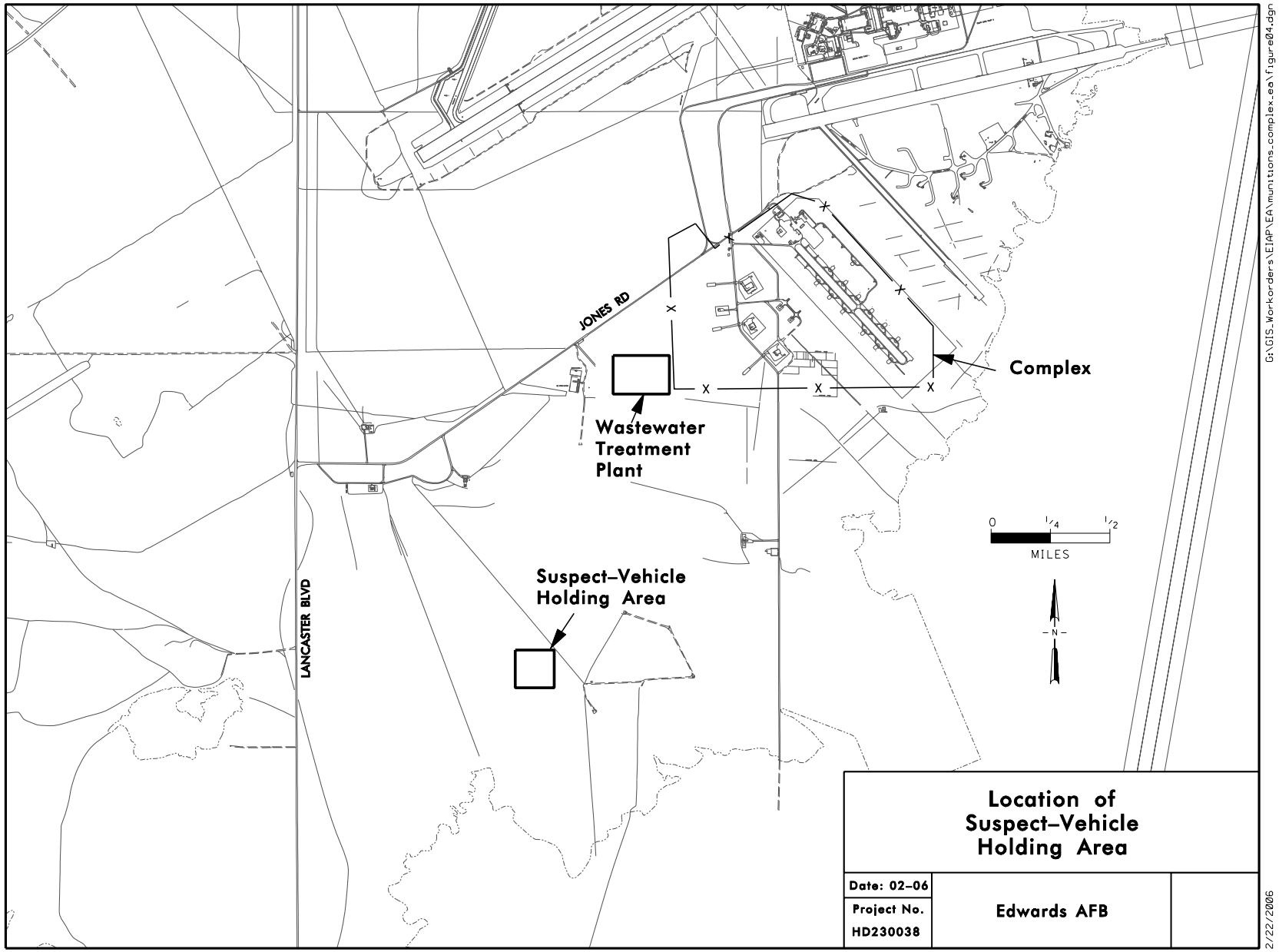

Figure 4. Location of Suspect-Vehicle Holding Area

f. Construct Temporary Holding Pad: Construct a temporary holding pad to check the identification of transport carriers and their inventory. The pad would include permanent lights and a perimeter fence with gate. A 12- by 12-foot building (144 square feet) would be situated on the pad and would require electricity, potable water, sanitary sewer facilities, and communication lines;

g. Construct Drive-Through Igloo: Construct a drive-through storage igloo to allow the loading and off-loading of equipment. The igloo would be 30 feet wide by 80 feet long (2,400 square feet) with sliding doors and an entrance that would be 11 feet high by 15 feet wide. A weather-protected communication and lightning protection system would also be installed;

h. Construct Holding and Staging Pad: Construct a holding and staging pad for temporary storage located in the southern portion of the Complex. The concrete pad would be 200 feet wide by 300 feet long (60,000 square feet) with permanent overhead lighting and a lightning protection system. Running water for firefighting capability would be installed in addition to a 25- by 12-foot building (300 square feet) at the southwest corner of the pad. The building would require electricity and potable waterlines;

i. Construct Suspect-Vehicle Holding Pad: Construct a suspect-vehicle holding pad 100 by 200 feet (20,000 square feet) in a remote location about 4 miles southwest of the Complex. Vehicles suspected of transporting hazardous materials would be directed to this location for further inspection;

j. Install Security Fence: Secure portions of the Complex with a chain-link fence, 10 foot high and 16,000 linear feet;

k. Resurface and Construct Access Roads: Resurface all of the access roads in the Complex. Over 7 miles of access roads would be resurfaced with 3-inch thick asphalt over a 6-inch subbase. Over 1 mile of new road would be constructed;

l. Upgrade Utility Systems: Install or replace the following systems on an as-needed basis: plumbing; fire protection; electrical and lightning protective systems; and heating, ventilation, and air-conditioning (HVAC); and

m. Upgrade Communication Systems: Upgrade communication lines to the new storage buildings and structures, holding and staging pads, and renovated buildings. Over 15,000 feet of new copper cable would be installed.

2.1.1 Site Preparation Activities

Site preparation activities in the Complex would include:

a. Demolition of the following 11 buildings: 601, 602, 639, 640, 642, 643, 644, 649, 650, 651, and 652;

b. Construct holding and staging pads, grade access routes, and/or install temporary construction field offices in the main Complex;

c. Excavate and prepare foundation for building pads and security fencing; and

d. Trench for required underground utility systems (e.g., communication links, water systems, storm and sanitary sewer lines, and natural-gas lines).

2.1.2 Building Construction Activities

Construction activities for storage structures and staging pads include:

a. Prepare building sites and staging pads for concrete foundations;

b. Lay foundations for asphalt vehicle parking and access roads;

c. Construct buildings in conformity with current earthquake building codes;

d. Install insulation and wallboards in buildings and refinish existing walls on an as-needed basis;

e. Install plumbing, fire sprinklers, electrical and lightning protective systems, HVAC, and communication cable that meet project specifications;

f. Install project-specific equipment and structures as needed;

g. Install security fencing around the Complex;

h. Install required Bird Aircraft Strike Hazard (BASH)-friendly landscaping;

i. Retrofit storage structures to meet current earthquake building codes; and

j. Paint traffic striping on roadways, parking areas, and walkways.

2.1.3 Facility Modifications

Modifications to facilities would include:

a. Renovations would include Buildings 641, 647, 648, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664 located in the Complex; and storage igloos 1016, 1710, 1711, 8455, 8456, and 8457 located at Main Base and AFRL. Locations of storage igloos outside the Complex are shown in Figures 5 and 6.

b. Construct new access roads and driveways to the new storage buildings with road ballast and/or fill material, and pave with concrete or asphalt. Existing access roads would be resurfaced and modifications to drainage would be made to prevent future washouts.

2.2 Alternative B–No Action Alternative

The no action alternative is the current condition found at the Complex and represents the baseline from which alternative solutions are compared. Improvements to facilities would be conducted incrementally as-needed. Conditions within the Complex are as follows:

a. Storage Structures: Storage structures that were constructed in the 1940s and 1950s are outmoded and do not comply with current building codes and Air Force requirements for the storage of equipment or modern munitions systems.

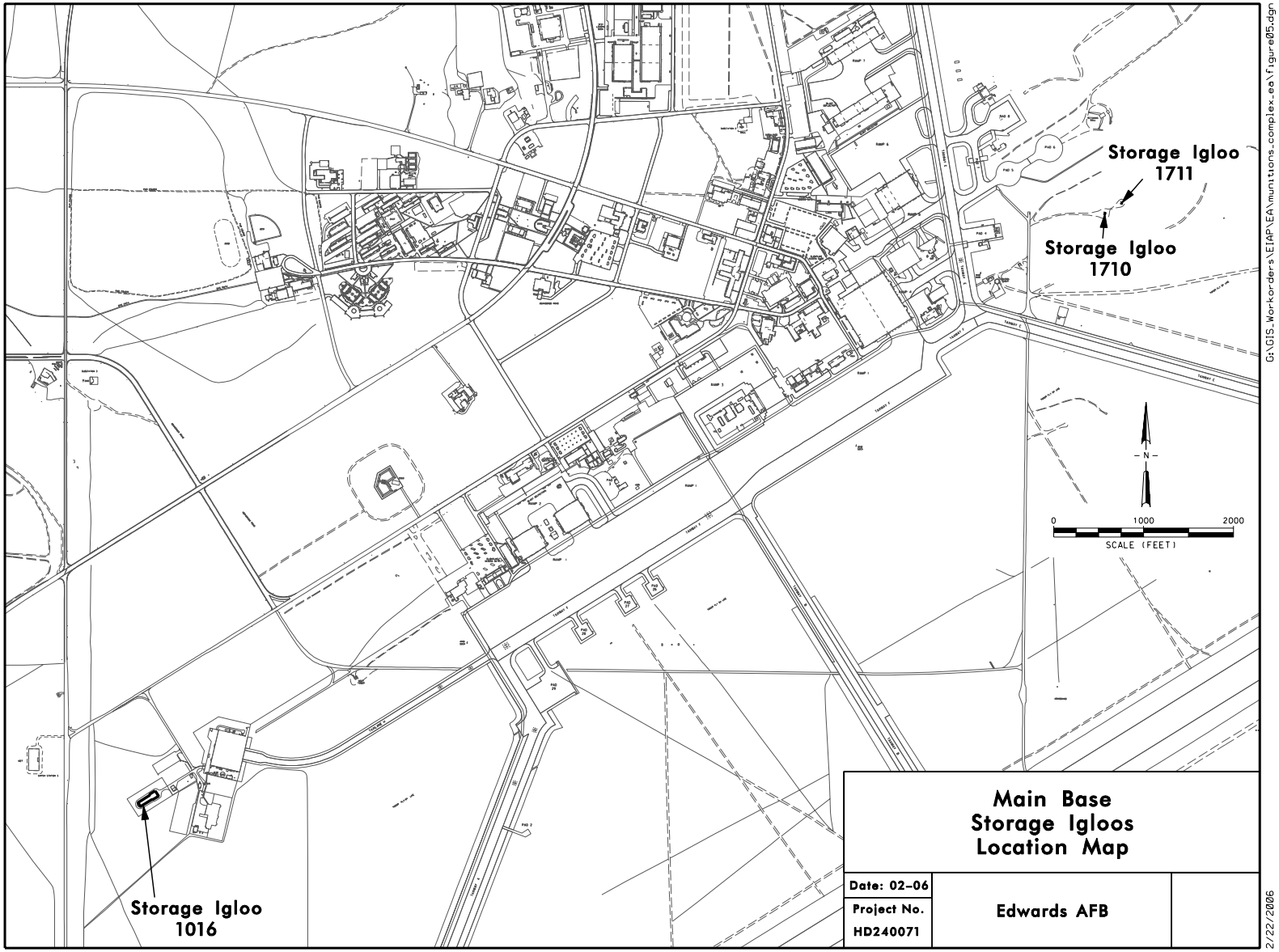

Figure 5. Location of Storage Igloos 1016, 1710, and 1711

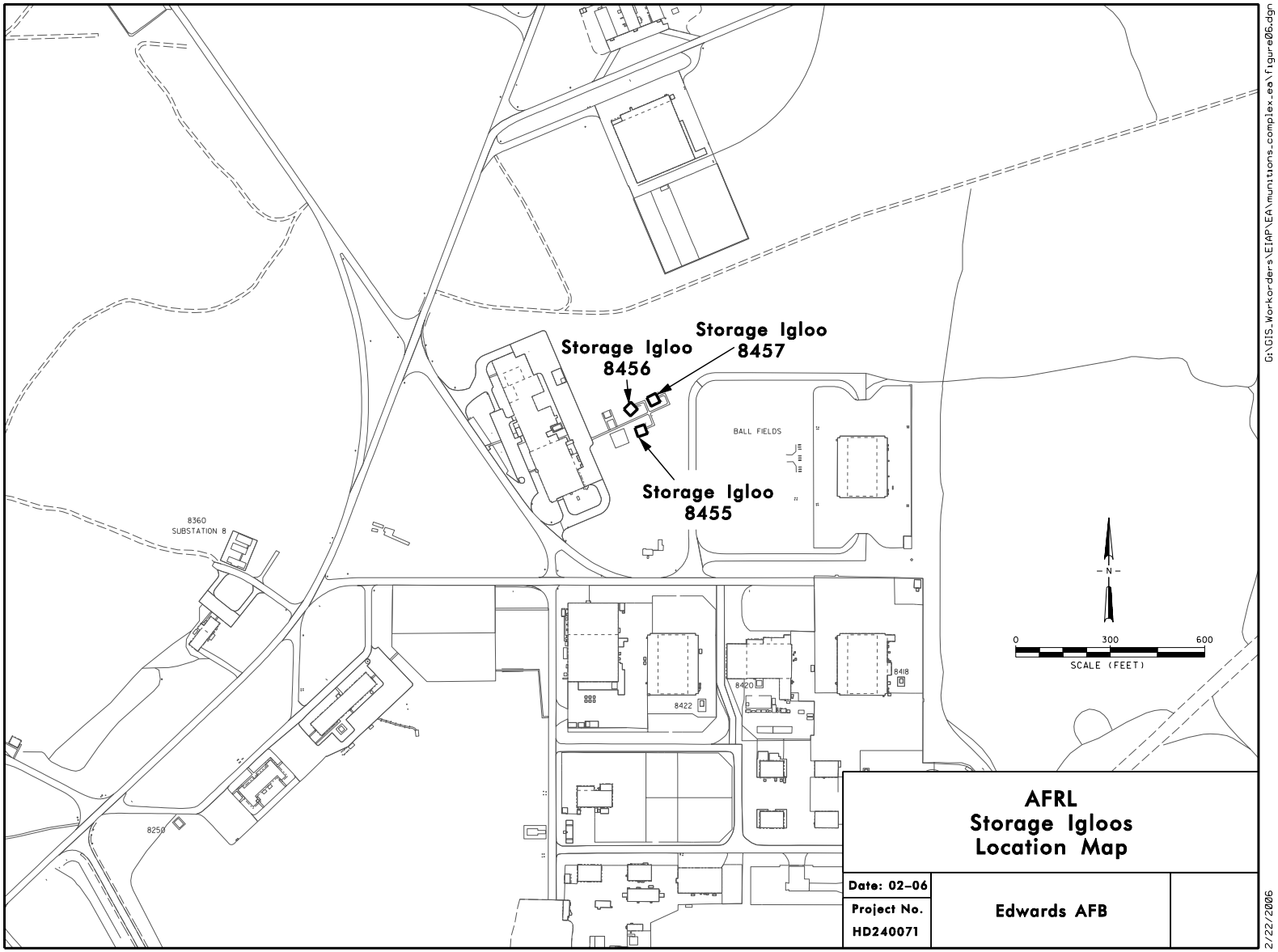

Figure 6. Location of Storage Igloos 8455, 8456 and 8457.

b. Outdoor Storage: Equipment is stored outdoors on pallets due to the lack of adequate storage space. Equipment code tags and other valuable information attached to pallets become difficult to maintain in viable condition due to changing weather conditions. In addition, some holding pads are unpaved and become inaccessible during the wet season.

c. Temporary Storage: The loading dock has a storage capacity of 10,000 pounds. Occasionally, equipment is stored on the dock as a temporary holding area because the area is lightning protected. Security, personal safety, and exposure to the weather are additional concerns regarding storage on the dock.

d. Access Roads: Existing asphalt roads in the southern part of the Complex are in stages of disrepair and inaccessible during the rainy season. The area is prone to sheet-flow runoff during heavy rains.

e. Perimeter Fencing: Fencing separates the Complex into controlled areas that affect mobility and security concerns.

f. Utilities and Communications: Plumbing, lighting fixtures, and communication systems have generally remained unchanged and require periodic maintenance.

2.3 Criteria for Selection of a Reasonable Range of Alternatives

The criteria identified in this section establish a minimum set of requirements that must be met in order for an alternative to be considered viable. Those not meeting one or more of the selection criteria are eliminated from further discussion. The reasons for elimination are documented in Section 2.4. Alternatives meeting all selection criteria are retained and each is fully analyzed in Section 4.0 (Environmental Consequences) of this EA.

The criteria used to select the alternatives discussed in this document are as follows:

a. Technical

(1) Provide upgraded buildings and structures that conform to current safety and security standards as presented in AFMAN 91-201, *Explosives Safety Standards*; and construction standards as presented in AFH 32-1084;

(2) Comply with Military Handbook 1190, Part II, *Facility Planning and Design Guide*;

(3) Comply with the *Design Standards of the Edwards Air Force Base Comprehensive Plan* and the Base General Plan (AFFTC 1997, 2001);

(4) Comply with the *Edwards Air Force Base Energy Plan* (AFFTC 1995);

(5) Comply with *Occupational Safety and Health Standards* (29 CFR 1910); and

(6) Establish a facility within a reasonable distance of the flightline, without other traffic interference.

b. Environmental

(1) Minimize habitat disturbance;

(2) Retain maximum amount of undisturbed area;

(3) Reuse construction demolition debris whenever practicable in road ballast, foundation fill, and construction of concrete pads; and

(4) Eliminate potential hazards (e.g., ACM, PCB, and LBP) during the demolition and disposal of outdated storage buildings.

c. Economic

(1) Reduce repair and maintenance costs; and

(2) Achieve a 10-year or less payback for energy conservation measures at constructed buildings. Installing energy efficient measures is expected to increase the value of the Complex.

2.4 Alternatives Considered but Dismissed from Further Consideration

Alternatives to the no action alternative were considered, but were subsequently dismissed since they did not meet the technical, environmental, and economic criteria. The alternatives were: continue utilizing the facilities in their current conditions and relocate the Complex to another site on base. A discussion of these alternatives is presented.

2.4.1 Relocating the Complex

Relocation of the Complex to another site on base was subjected to an economic analysis. The net value benefit was calculated based on projected funds ($16 million) and the results did not support moving to another location.

A new location would require an area similar to the present Complex (442 acres) and large enough to support storage buildings, and igloos, and staging pads. Paved access roads would be constructed throughout the area and new utility and communication systems would be installed. In addition, the area would need to be located in a remote area away from operational centers. The new location would also need to be within easy access to the transportation grid including a runway. Based on these criteria, the economic analysis, and the geography of the base, the relocation alternative was not pursued.

2.5 Comparison Summary of Alternatives and Impacts to the Environment

Comparison of the Proposed Action Alternative and the No Action Alternative, as well as any potential effects to the environment, are summarized and presented in Table 1.

2.6 Comparison of Environmental Effects to the Alternatives

Comparison of the Proposed Action Alternative and the No Action Alternative and their effect to the environment are summarized in Table 2.

TABLE 1
SUMMARY COMPARISON OF ALTERNATIVES

	ALTERNATIVE A (PREFERRED ALTERNATIVE)	ALTERNATIVE B (NO ACTION ALERNATIVE)
Project Description	Modernize munitions storage facilities, and utility and communication systems in the Munitions Complex and six storage facilities throughout the base.	Maintenance and repairs to storage facilities and utility and communications systems would be performed incrementally as needed.
Location	The Munitions Complex is located at South Base. The six storage facilities are located outside the Complex at Main Base and the Air Force Research Laboratory (AFRL) area.	The munitions storage facilities are located in the Munitions Complex at South Base and outside the Complex at Main Base and AFRL.
Project Implementation	Modernization of facilities in the Munitions Complex would occur within the area of the Complex, an area of 442 acres. The six munitions storage igloos located outside the Complex are at Main Base and AFRL and range in area from 86 square feet to 3,443 square feet.	The storage buildings, structures, and utility and communication systems would remain unchanged except for general maintenance on an as-needed basis.

TABLE 2
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
LAND USE		
Compatibility with the Base General Plan and the Edwards AFB Design Standards	The upgrades to the Complex would be compatible with the Base General Plan, the Edwards AFB Design Standards, and all Air Force instructions and regulations. Project would include renovations to six storage igloos. Minimizations: Compliance with the Base General Plan, the *Edwards AFB Design Standards*, and all Air Force instructions and regulations. The proposed project should obtain final siting approval from the Base Planning and Zoning Committee.	The current storage buildings would remain unchanged and would not conform to current Department of Defense (DOD) or Air Force regulations. Minimizations: There would be no minimizations required.
Foreign Object Damage (FOD) generation	The potential for FOD generation exists during the demolition and construction phase. Minimizations: Project personnel should use standard operating procedures for the prevention of FOD. Contact Airfield Management for FOD reduction guidelines.	Potential for FOD would be minimized. Minimizations: Same as Alternative A.
AIR QUALITY		
Generation of air particulate matter	Particulate matter less than or equal to 10 microns (PM10) would be generated during grading operations and demolition of buildings. Minimizations: Earthwork activities should be delayed during periods of high winds (in excess of 25 miles per hour [mph]). The exposed surfaces should be sprayed with water to reduce dust.	Construction projects would not occur, or would occur on an as-needed basis. The PM10 generation would be limited. Minimizations: Measures in Alternative A would be followed as-needed.
Air permit requirements for equipment greater than 50 brake horsepower (bhp)	Use of construction-related equipment with internal combustion engines (ICEs) over 50-bhp rating (e.g., welders, generators, and compressors) would require a permit from the local air agency. If such equipment is to remain on base less than 45 calendar days, a written exemption must be obtained from the local air agency. Minimizations: Compliance with local air permit regulations prior to the start of the project is required.	Construction projects would not occur; or would occur on an as-needed basis. Air permitting issues for new equipment may or may not occur. Minimizations: Same as Alternative A.

TABLE 2 (Continued)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
SAFETY AND OCCUPATIONAL HEALTH		
Inventory storage and handling	Inventory would be stored in secure buildings that are safe for personnel and are in compliance with Air Force regulations. Minimizations: Safety requirements established in Air Force Manual (AFMAN) 91-201 and 22nd Air Force Instruction (AFI) 91-101 shall be implemented to ensure personal safety.	Inventory would continue to be stored in buildings that are outmoded. Inventory storage pallets would continue to be stored in outdoor holding and staging areas and be exposed to the weather. Identification tags become erased or lost due to weather, leading to potential safety concerns. Minimizations: Ensure identification tags are secured and remain legible. Store equipment in secure locations with minimum exposure to weather.
Potential exposure to friable asbestos-containing material (ACM) and heavy-metal based paint particulate matter, and polychlorinated biphenyl (PCB)	Heavy-metal based paint (e.g., lead-based paint [LBP], mercury, and chromate), friable ACM, and PCBs may be encountered during the demolition of storage buildings. Minimizations: Project activity should comply with the standards, instruction, and regulations discussed in Section 3.3, Safety and Occupational Health. Any potential LBP and/or friable ACM should be surveyed by a trained and qualified professional. This material may be left in place, or if damaged or in poor condition, should be abated or encapsulated. Contractors must be registered with the California Occupational Safety and Health Administration (Cal-OSHA) prior to implementing abatement activities. Prior to abatement activities, the contractor shall submit an Abatement and Disposal Plan to Civil Engineering and Environmental Management for coordination.	The storage buildings could contain heavy-metal based paint, friable ACMs, and PCBs based on the age of construction (1940s, and 1950s). Personnel working in the building would continue to be exposed to friable ACM and PCBs. Minimizations: Same as Alternative A.

TABLE 2 (Continued)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
SAFETY AND OCCUPATIONAL HEALTH (Concluded)		
Potential exposure to aircraft noise	Personnel working in the Complex may be exposed to increased noise levels generated by aircraft operations along the flightline. Noise that exceeds the 85 decibel (dB) level would be above acceptable levels established by Air Force Occupational Safety and Health (AFOSH) and federal and state OSHA regulations. Minimizations: Contractors in the Complex are responsible for implementing OSHA hearing protection measures for their employees.	Workers maintaining facilities on an incremental basis may be exposed to occasional flightline noise exceeding 85 dB. Minimizations: Same as Alternative A.
Potential environmental hazards	Personnel working outdoors would be exposed to possible heat stress conditions, venomous snakes, potential hantavirus conditions from infected rodents, and potential exposure to valley fever from spore containing soils. Minimizations: During the heat of the day, personnel shall be made aware of heat stress conditions and reduce workload accordingly. Drinking water would be important. Being aware of possible snakes in the area during the removal of debris or field surveys would remove chance encounters. Pest management programs would control rodent populations and reduce the potential for infection to spread. The opportunity for hantavirus conditions would be reduced. Dust control measures implemented during construction, renovation, and demolition projects including the wearing of face protection for personnel would reduce the potential for exposure to the valley fever soil spore.	Workers maintaining facilities may be exposed to possible heat stress conditions, venomous snakes, potential hantavirus conditions, and valley fever. Minimizations: Measures would be similar to Alternative A, but occurring on an as-needed basis.
HAZARDOUS MATERIALS AND WASTE		
Disposal of friable ACMs and LBP waste during demolition and renovation projects	Exposure to friable ACMs and LBP may occur during the renovation and demolition of buildings. Minimizations: To reduce risk of exposure during disposal, ensure proper handling, storage, and disposal of friable ACM and LBP wastes following standard operating procedures identified in the Hazardous Waste Management Plan (HWMP). All state, federal, and local rules and regulations shall be followed.	Renovation or demolition of buildings would occur on an as-needed basis. Exposure to ACM and LBP may be possible during these activities. Minimizations: Actions similar to Alternative A, but occurring incrementally.

TABLE 2 (Continued)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
HAZARDOUS MATERIALS AND WASTE (Concluded)		
Disposal of light fixtures	Light bulbs and fixtures may contain mercury and/or PCB materials. Therefore, all light bulbs and fixtures are subject to hazardous waste disposal requirements. Lighting fixtures should be disposed of as hazardous waste. Minimizations: To reduce risk of exposure during disposal, ensure proper handling, storage, and disposal of the PCB wastestream following standard operating procedures identified in the HWMP.	Light fixtures would remain and would be replaced during routine maintenance of the building or facility. Disposal would be in accordance with base policy. Minimizations: To reduce risk of exposure during disposal, ensure proper handling, storage, and disposal of the PCB wastestream following standard operating procedures identified in the HWMP.
SOLID WASTE		
Generation of construction and demolition waste (CDW)	The demolition of Buildings 639, 640, 642, 643, 644, 647, 649, 650, 651, and 652 would generate solid waste. Minimizations: The contractor should segregate recoverable and recyclable materials from the wastestream for reuse and nonrecyclable material transported to an approved state-licensed facility.	During incremental maintenance projects, solid waste may be generated. Minimizations: Solid waste should be recycled or disposed of in the base landfill, or at an approved state-licensed facility.
BIOLOGICAL RESOURCES		
Potential harm to desert tortoise and habitat	The modernization of facilities may disturb habitats that may have been established at the Complex, Main Base, and AFRL. Minimizations: Coordinate activities with a natural resource specialist from the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division (95 ABW/CEV) to ensure that potential encounters with the desert tortoise or habitats do not occur.	Modernization projects are not anticipated. Projects would occur on an as-needed basis. Minimizations: Similar to Alternative A during the implementation of as-needed projects.

TABLE 2 (Continued)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
BIOLOGICAL RESOURCES (Concluded)		
Effects to migratory birds and sensitive species	Demolition and renovation of storage buildings and structures could potentially disturb bird nesting sites and roosting bats. Minimizations: Coordinate activities with a natural resource specialist from 95 ABW/CEV to ensure bird and bat habitats are not affected.	Demolition and renovation projects would occur on an as-needed basis. Minimizations: Coordination with natural resource specialist whenever projects are implemented.
CULTURAL RESOURCES		
Proximity of the offsite holding/staging pad to cultural sites	The pad would be a 20,000 square-foot holding pad southwest of the Complex to check vehicles carrying suspect inventory. A Phase 1 cultural resource survey has been conducted in the area. Minimizations: Coordinate final location of the suspect-vehicle holding pad with the Base Historic Preservation Office to prevent disturbance with cultural sites. Field workers shall complete a cultural resources awareness education program.	The pad would not be constructed since further expansion of the Complex would not be needed. Minimizations: None required because the holding pad would not be constructed.
Potential cultural sites and historic structures within the Complex	Facilities in the Complex were surveyed for the identification of historic buildings. Similar surveys were conducted in the area of the storage buildings at Main Base and AFRL. Findings were included in the *Integrated Cultural Resources Management Plan* (ICRMP) *for Edwards AFB, California* (AFFTC 2005). Minimizations: None required because survey findings did not identify historic resources.	Cultural resource survey was completed and results included in the ICRMP. Minimizations: Same as Alternative A.

TABLE 2 (Continued)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
GEOLOGY AND SOILS		
Surface soil excavations	Surface disturbances during the construction of building foundations, access roads, installation of fencing, and addition of fill material for storage igloos may cause soil erosion and exposure to particulate matter. Minimizations: All earthwork activities should be planned and conducted to minimize soil erosion. This would include minimizing the area of disturbance and excavations delayed during high wind conditions. Exposed surfaces should be periodically sprayed with water to minimize wind erosion and the generation of particulate matter.	Surface disturbances may occur during projects performed on an as-needed basis. Minimizations: Implement measures similar to Alternative A during project implementation.
Effects from earthquakes	Earthquakes in the area have produced a range of earth-shaking intensities that could affect building structures. Minimizations: Construction of new storage buildings and retrofitting of existing structures should comply with current earthquake building codes.	Similar conditions to Alternative A. Minimizations: Same as Alternative A.
SOCIOECONOMICS		
Generation of revenue into the local economy	Incremental benefit would be realized from funds spent in nearby communities. Minimizations: None required.	Changes to existing conditions would be minor and incremental. Minimizations: None required
INFRASTRUCTURE		
Construction equipment and materials to and from the project site have the potential to impact existing traffic patterns	Minor short-term congestion is expected when large, slow-moving vehicles travel on access roads to the Complex. Minimizations: Traffic routes may need to be controlled during construction periods.	Changes to existing conditions would be minor and incremental. Minimizations: Same as Alternative A.

TABLE 2 (Concluded)
COMPARISON OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVE

ENVIRONMENTAL ISSUES	ALTERNATIVE A MODERNIZE MUNITIONS STORAGE FACILITES IN THE MUNITIONS COMPLEX AND THROUGHOUT THE BASE (PREFERRED ALTERNATIVE)	ALTERNATIVE B NO ACTION ALTERNATIVE
INFRASTRUCTURE (Concluded)		
Roadway closure or the rerouting of traffic	The movement of equipment to the site, removal of solid waste, or transport of fill material to the site may disrupt traffic flow. Minimizations: Coordinate activities with the Security Forces, Fire Department, and Public Affairs Office to minimize disruptions.	Projects would occur on an as-needed basis; therefore, disruptions to traffic would not be affected. Minimizations: Similar to Alternative A and would occur whenever projects are implemented.
Potential interruption of utility and communication services	Subsurface installation of utility and communication lines may sever lines and cause accidental disruption of service. Minimizations: Coordinate activities with Civil Engineering and obtain a digging permit..	The installation of utility and communication systems would be made on an as-needed basis. Minimizations: Similar to Alternative A and would occur on an as-needed basis.
ENERGY CONSERVATION		
Use of energy-efficient equipment	The incorporation of energy-saving heating and air conditioning, hot water, and energy management control systems would meet the goals of the *Energy Policy Act of 1992* (Public Law 102-486) and Executive Order 13123, *Greening the Government Through Efficient Energy Management*. It would also result in energy and cost savings to the Air Force. Minimizations: Implementing energy efficient awareness training to building personnel would add to energy cost saving over the long term.	Changes would occur incrementally as needed. Minimizations: Similar to Alternative A, but would occur on an as-needed basis.

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3.0 AFFECTED ENVIRONMENT

This section describes the relevant environmental resources at Edwards AFB that may be impacted by the modernization projects of the Complex and renovation of six storage buildings located throughout the base. Each of the resources has been further divided into subsections that describe impacts due to the proposed action and measures to minimize project impacts.

3.1 Land Use

Land on base is used for a variety of uses including residential, industrial, commercial, agricultural, recreational, and military. Specialized land uses include administration buildings, housing, flight training and Developmental Test and Evaluation (DT&E) facilities, aircraft hangars, runways and taxiways, radio transmission areas, and storage facilities. The Base General Plan (AFFTC 2001) lays out long-range development at Edwards AFB. This plan establishes the goals, policies, plans, and anticipated actions regarding the physical, social, and economic environment.

The area of the Complex is designated for munitions storage in the Base General Plan. Construction and renovation to modernize the facilities in the Complex would be in compliance with the Base General Plan. Six storage igloos located outside the Complex would also be renovated as part of this project. The igloos are in separate locations on Main Base and at AFRL.

3.1.1 Land Use Restrictions

The Complex is located in an open area at the southern portion of the base near the runway. The Complex is designated a restricted access area.

Some hazardous materials are associated with restricted areas on base. These areas vary in size depending upon the quantity and types of inventory being used or stored. These zones ensure the safety of all personnel within a given area.

3.1.2 Foreign Object Damage Control

The Complex is located south of Runway 04/22. Any construction or renovation of storage buildings and structures in the Complex and near the flightline has the potential to generate FOD. Foreign object damage refers to damage, particularly to aircraft, which occurs as a result of collision with or ingestion of objects on or around runways, taxiways, and other areas near aircraft operations. The prevention of FOD is targeted specifically at flightline areas, and implementation procedures are contained in AFFTC Supplement 1 to AFI 21-101, *Maintenance Management of Aircraft*. The 412th Test Wing Logistics Quality Assurance Inspection Branch manages the reduction and/or elimination of FOD.

3.2 Air Quality

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing weather conditions determine air quality. The

significance of the pollutant concentration is determined by comparing it to federal and state ambient air quality standards. These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety.

3.2.1 Regulatory Requirements/Guidance

The 1970 Federal *Clean Air Act* (CAA) (42 United States Code [U.S.C.] 7401–7671) and the 1990 *Clean Air Act Amendments* (CAAA) (Public Law [PL] 101-549) regulate air pollution emissions from stationary and mobile sources to protect public health and welfare. Air quality regulations were first promulgated with the CAA and revised with the CAAA. Stationary sources at Edwards AFB typically include fixed sources such as internal combustion engine generators, external combustion boilers, and spray-paint booths. Mobile sources typically include motor vehicles, construction equipment, and aircraft.

3.2.2 Environmental Setting

The CAA and CAAA established the National Ambient Air Quality Standards (NAAQS) for the regulation of criteria pollutants. Criteria pollutants are chemical compounds that are known to have serious public health impacts, as well as cause damage to the environment in general. Designated state and local agencies have the primary authority and responsibility to implement rules and regulations to control sources of criteria pollutants. Within the State of California, the authority to regulate sources of air emissions resides with the California Air Resources Board (CARB) and is delegated to local air pollution control and air quality management districts. The criteria pollutants include ozone (O_3), carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), and PM10. In addition, reactive organic gases (ROGs) and NO_x pollutants are classified as O_3 precursors and are subject to further regulations.

Based on measured ambient criteria pollutant data, the United States Environmental Protection Agency (U.S. EPA) designates all areas of the United States as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. An area is often designated as unclassified when there are insufficient ambient criteria pollutant data for the U.S. EPA to form a basis for attainment status. Once an area is classified as nonattainment, the degree of nonattainment is divided into categories of marginal, moderate, serious, severe, or extreme. The assignment of a nonattainment category is based on measured criteria pollutant concentrations in a given location and varies according to the criteria pollutant of concern.

States are required to develop a State Implementation Plan (SIP) that sets forth how the CAAA provisions would be implemented within the state (40 CFR Part 51, *Requirements for Preparation, Adoption, and Submittal of Implementation Plan*). The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state. The purpose of the SIP is twofold. First, it must provide a control strategy that would result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area. The California O_3 SIP was prepared by the state legislature and adopted in 1994. The SIP was approved by the U.S. EPA in September 1996 and codified as law in 40 CFR 52, Subpart F, *California State Implementation Plan*.

Ambient air emissions standards for criteria pollutants in eastern Kern County are presented in Table 3. The Table presents the number of times the criteria pollutants measured at the Mojave Air Station equaled or exceeded the NAAQS for a given year (in 2004). The information is provided to illustrate the current ambient air quality in the Edwards AFB area. The measurement of existing ambient criteria pollutant concentrations is accomplished using air quality monitoring stations. The closest CARB air quality monitoring station to Edwards AFB is located in Mojave, California. The location of the Mojave Air Monitoring Station and other CARB monitoring stations in the Edwards AFB area is presented in Figure 7.

TABLE 3
AMBIENT AIR STANDARDS FOR CRITERIA POLLUTANTS

Criteria Pollutant	National Ambient Air Quality Standard (NAAQS)	Number of Times NAAQS Exceeded in 2004 Eastern Kern County
Ozone	0.12 ppm – hourly average	0
Particulate Matter <10 µm	50 µg/m^3 – annual average 150 µg/m^3 – 24-hour average	NR NR
Nitrogen Oxides	0.053 ppm – annual average	0

Notes: 1. ppm–parts per million
2. µm– 1x10^{-6} meters
3. µg/m^3–1x10^{-6} grams per cubic meter
4. NR – Not Reported
5. Data was provided by the California Air Resource Board.

3.2.3 Local District Control

Within the state of California, the authority to regulate sources of air emissions resides with the CARB and is delegated to local air pollution control and air quality management districts. Local districts enact rules and regulations to achieve SIP requirements. As shown in Figure 7, Edwards AFB is located within the jurisdiction of three local air districts: Kern County Air Pollution Control District (KCAPCD), Mojave Desert Air Quality Management District (MDAQMD), and Antelope Valley Air Pollution Control District (AVAPCD).

The nonattainment status of each of the three air districts is shown in Figure 8. The KCAPCD is designated as being in Maintenance O_3 nonattainment and in attainment or Unclassified for all other pollutants. The MDAQMD is designated as being Severe-17 O_3 nonattainment, Moderate PM10 nonattainment, and in attainment or Unclassified for all other pollutants. The AVAPCD is designated as being Severe-17 O_3 nonattainment and in attainment or Unclassified for all other pollutants.[1]

[1] The KCAPCD has jurisdiction over the eastern half of Kern County. All of Kern County is designated as Serious O_3 nonattainment. Parts of the MDAQMD (exclusive of Edwards AFB) are Unclassified for O_3 nonattainment. The AVAPCD has jurisdiction over northern Los Angeles County and is classified with regard to attainment status separately from the rest of Los Angeles County.

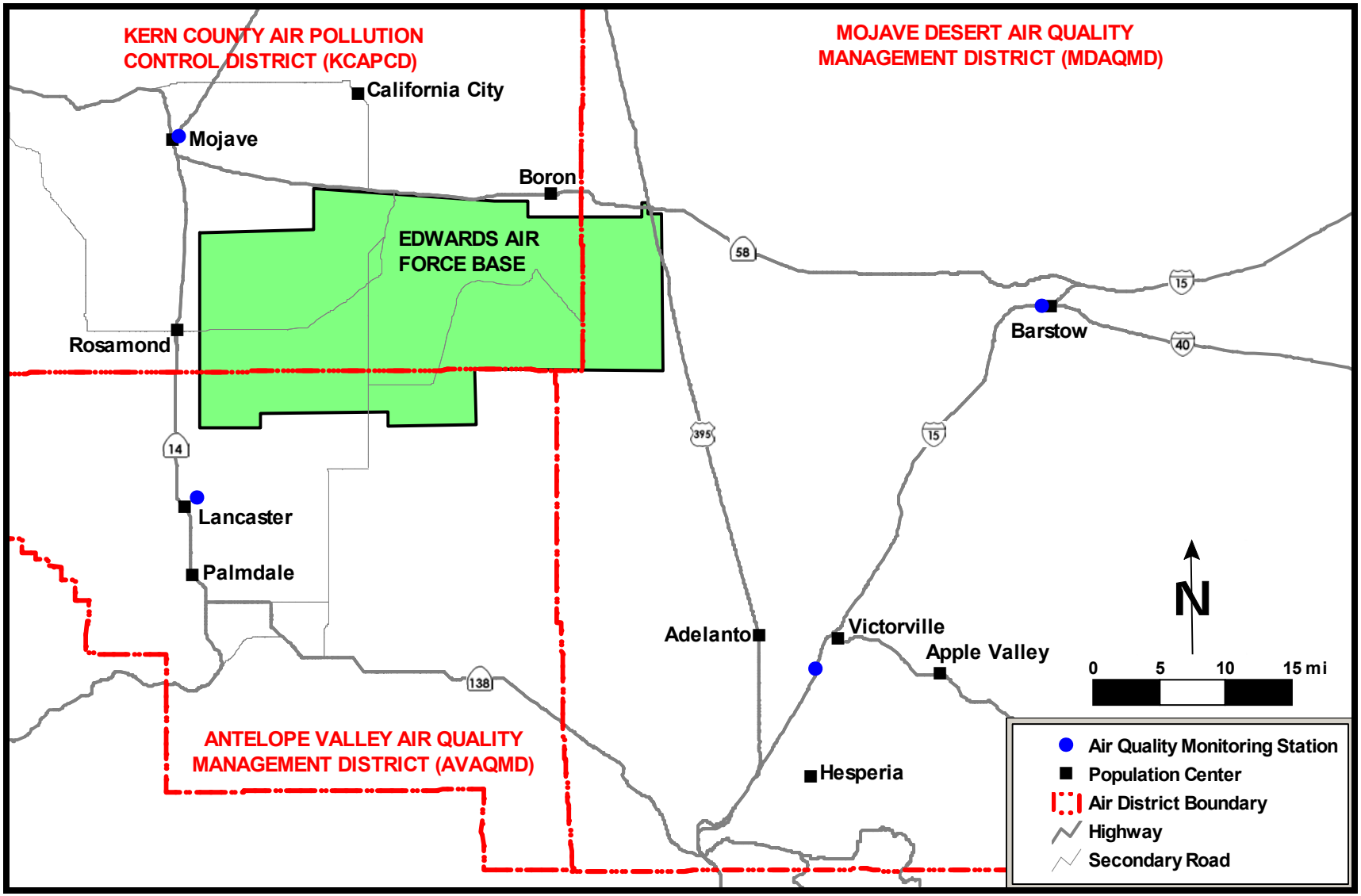
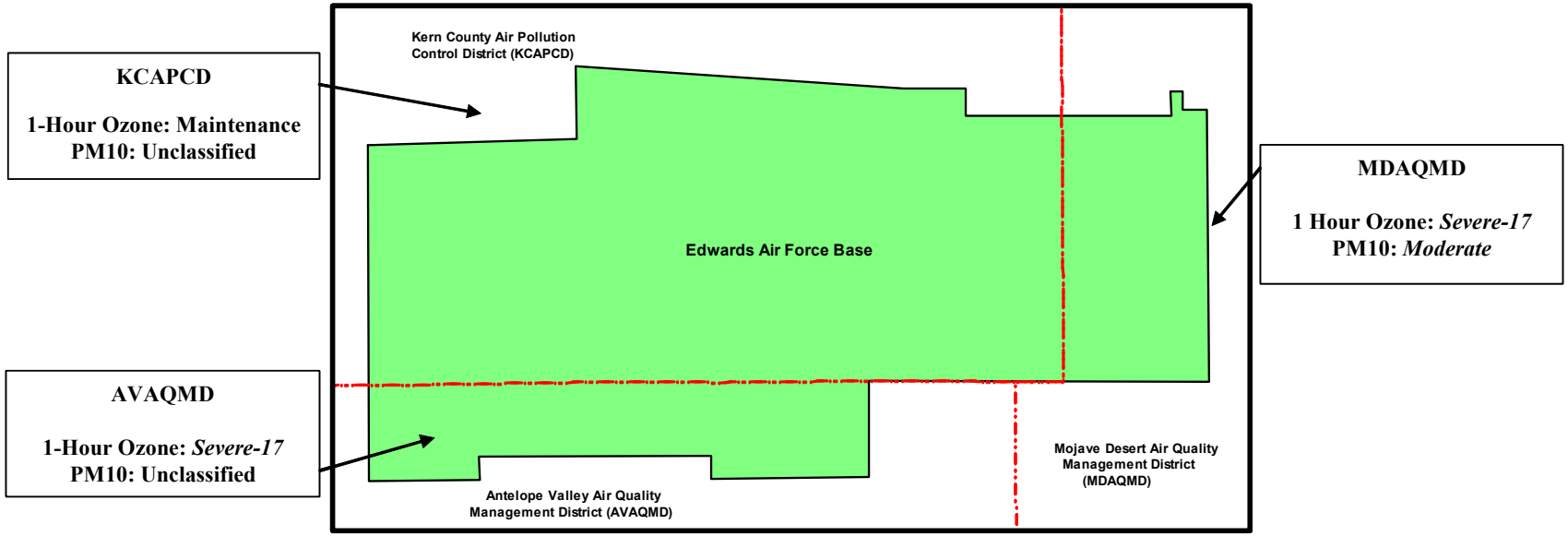


Figure 7. Air Districts Boundaries

Edwards AFB
Current NAAQS Attainment Status



LEGEND

Severe-17 – 25-ton limit per pollutant per action per year
Maintenance – 100-ton limit per pollutant per action per year
Moderate – 100-ton limit per pollutant per action per year
Unclassified – no established limit

SOURCE: 40 CFR 81.305

Figure 8. Attainment Status Map

For KCAPCD, New Source Review (NSR) is implemented under Rule 210.1, 2000, *New and Modified Stationary Source Review (NSR)*. Specifically, these rules and regulations provide for the preconstruction review of new and modified stationary sources of affected air pollutants to ensure emissions would not interfere with the attainment of ambient air quality standards; ensure appropriate new and modified sources of affected pollutants are constructed with the Best Available Control Technology (BACT); and provide for no net increase in emissions from new and modified stationary sources for all nonattainment pollutants and their precursors. In order to enforce these rules, the air districts have established baseline emission levels for new or modified stationary sources of PM10, SO_x, NO_x, and ROGs in nonattainment areas. Proposed projects that generate emissions in excess of these threshold levels would require offsets. These threshold emission levels are presented in Table 4.

Under the CAAA of 1990, Title V requires that major sources of air pollutants within each air district obtain a federal operating permit. This permit is an all encompassing permit which includes all local air district permits (i.e., criteria pollutants and hazardous air pollutants [HAPs]) and documents compliance with other CAA regulations. Edwards AFB filed Title V permit renewal applications on 27 September 2005. Compliance with local air district permits and other CAA regulations are required until such time as the permit is approved. Once issued, the Title V permit compliance would be an additional requirement.

TABLE 4
NEW SOURCE REVIEW THRESHOLD EMISSION LEVELS

	New Source Review Threshold Emission Levels per Pollutant (tons/year)			
Air District	**PM10**	**SO_x**	**ROG**	**NO_x**
KCAPCD	15	27	25	25
MDAQMD	15	25	25	25
AVAPCD	15	25	25	25

Source: California Air Resources Board 2005a

Notes:
1. PM10–particulate matter less than or equal to 10 microns
2. SO_x–sulfur oxides
3. ROG–reactive organic gas
4. NO_x–oxides of nitrogen
5. KCAPCD–Kern County Air Pollution Control District
6. MDAQMD–Mojave Desert Air Quality Management District
7. AVAPCD–Antelope Valley Air Pollution Control District

3.2.4 Conformity Requirements

Federal facilities located in an NAAQS nonattainment area are required to comply with the rules and regulations of 40 CFR 51.853/93.153 (b)(1), *Federal Air Conformity/Air Standards*. A facility (such as Edwards AFB) that initiates a new action (such as the proposed action) must quantify air emissions from stationary and mobile sources associated with that action. Calculated emissions would be first compared to established *de minimis* emission levels (based on the nonattainment status for each applicable criteria pollutant in the area of concern [AOC]). The

relevant compliance requirements would then be determined. If the calculated emissions are equal to or greater than *de minimis* levels, then an air conformity determination must be accomplished.

The proposed project is located within the Kern County portion of Edwards AFB. Thus, the NAAQS nonattainment and regional planning emission inventories for KCAPCD would be used to determine the applicability of air conformity requirements to the proposed action. In accordance with the air conformity requirements of 40 CFR 51.853/93.153(b)(1) and KCAPCD Rule 210.7, 1994, *Federal General Conformity Rule* (1994), the *de minimis* levels set for the O_3 maintenance nonattainment area of KCAPCD for O_3 precursor emission for 1 hour is 100 tons per O_3 precursor pollutant (NO_x and ROG) per year per action.

In addition, even if calculated emissions are less than *de minimis* levels, a subsequent comparison must be made. Specifically, the calculated project emissions must be compared to the regional planning emission inventories for each applicable criteria pollutant in the nonattainment AOC. If the calculated emissions are equal to or greater than 10 percent of the regional planning emission inventory, then the action is considered to be regionally significant and the requirements of air conformity apply. Otherwise, if the calculated emissions are less than both *de minimis* levels and 10 percent of the regional planning emissions inventories, then the requirements of air conformity do not apply to the action. Table 5 presents the 1990 baseline from which the 1994 SIP was based; in addition, the 10 percent threshold values for the regional planning inventory are also presented.

The emission inventory for KCAPCD is compared with the other air districts that comprise Edwards AFB: MDAQMD and AVAQMD. The emission inventory is based on the 1994 California O_3 SIP, and includes the O_3 precursor pollutant (NO_x and ROG) emissions. The California O_3 SIP is based on the regional planning baseline year 1990 for each of the three districts. For MDAQMD, the regional planning emission inventory for PM10 pollutant emissions are from the 1990 baseline year. To measure the progress of controlling air pollution by the districts, recent emission records (using 2004 data) is compared with the 1990 baseline year and presented in Table 6.

TABLE 5
1990 BASELINE AND 10 PERCENT THRESHOLD VALUES

	1990 Baseline Values (tons/year)			10 percent threshold (tons/year)		
District	**NO_x**	**VOC**	**PM10**	**NO_x**	**VOC**	**PM10**
AVAPCD	10,220	12,775	NA	1,022.0	1,277.5	12,492
KCAPCD	14,965	6,205	NA	1,496.5	620.5	10,116
MDAQMD	41,610	16,790	34,310	4,161.0	1,679.0	34,668

Source: California Air Resources Board 2005b

Notes:
1. NO_x–oxides of nitrogen
2. VOC–volatile organic compound
3. PM10–particulate matter less than or equal to 10 microns
4. AVAPCD–Antelope Valley Air Pollution Control District
5. KCAPCD–Kern County Air Pollution Control District
6. MDAQMD–Mojave Desert Air Quality Management District

TABLE 6
COMPARISON OF AIR QUALITY EMISSIONS WITH BASELINE

	Ozone Precursor Pollutant Emissions and Particulate Matter (tons/year)					
	NO_x		ROG		PM10	
Districts	**1990**	**2004**	**1990**	**2004**	**1990**	**2004**
AVAPCD	10,220	9,468	12,775	7,380	NA	12,492
KCAPCD	14,965	13,500	6,205	4,680	NA	10,116
MDAQMD	41,610	59,148	16,790	13,896	34,310	34,668

Source: California Air Resources Board 2005b

Notes:
1. NO_x–oxides of nitrogen
2. ROG–reactive organic gases
3. PM10–particulate matter less than or equal to 10 microns
4. AVAPCD–Antelope Valley Air Pollution Control District
5. NA–not applicable
6. KCAPCD–Kern County Air Pollution Control District
7. MDAQMD–Mojave Desert Air Quality Management District

3.3 Safety and Occupational Health

Health and Safety is defined as the protection of workers and the public from hazards. The total accident spectrum encompasses not only injury to personnel, but also damage or destruction of property or products. For worker safety, the boundary of the immediate work area defines the region of influence. Potential health and safety issues are associated with the demolition, renovation, and construction of facilities in the Complex.

3.3.1 Regulatory Requirements/Guidance

The Occupational Safety and Health Administration (OSHA) has developed standards to promote a safe working environment. The standards establish general environmental controls, including personal protective equipment, wherever necessary because of hazards, processes, or the environment. Exposure limits for noise, toxic, and hazardous substances have been established. The OSHA Act also provides standards for emergency response to releases of hazardous chemicals and hazardous wastes. Potential risks of exposure to biological hazards such as hantavirus and valley fever during the demolition of unused buildings and outdoor construction activities are possible under certain environmental conditions that exist in the base environment.

Federal OSHA requirements and AFIs are the applicable regulatory requirements. California OSHA (Cal-OSHA) regulations do not apply to Edwards AFB Department of Defense (DOD) workers (e.g., military and civilian). Independent contractors are responsible for meeting Cal-OSHA requirements. Statutory and regulatory requirements of the federal OSHA and Air Force Occupational Safety and Health (AFOSH) Standards, which apply to the safety of workers on Edwards AFB, are enforced locally by Bioenvironmental Engineering, Ground Safety, and the Base Fire Department. In addition, operational safety is supervised by various offices for specific activities.

The Complex is located near the flightline where personnel may be subjected to excessive aircraft noise. Title 29 CFR 1910.95, *Occupational Noise Exposure*, states that protection against the effects of noise exposure should be provided when the sound levels exceed those shown in this regulation.

During the modification to structures and demolition of buildings, exposure to possible friable asbestos may result. Title 29 CFR 1910.1001, *Asbestos*, applies to all occupational exposures to asbestos in all industries covered by the OSHA Act. Exposure to heavy-metal and LBP may also occur during the modification to structures and demolition of buildings. Title 29 CFR 1926.62, *Lead*, *Occupational Health and Environmental Controls,* applies to all construction work where an employee may be occupationally exposed to lead. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. California asbestos regulations follow the federal statutes related to asbestos exposure for all construction work and are located in Title 8 California Code of Regulations (CCR) 1502, *Application,* and 1529, *Asbestos*.

The AFMAN 91-201, *Explosives Safety Standards*, implements AF Policy Directive (AFPD) 91-2, *Safety Programs*, and DOD 6055.9-STD, *DOD Ammunition and Explosives Safety Standards*. It establishes a central source for explosive safety criteria. It identifies hazards and states safety precautions and rules when working with explosives. It applies to everyone involved in explosives operations of any kind at Air Force, Air National Guard, and Air Force Reserve-owned or leased facilities, and to U.S.-titled ammunition in contractor or host-nation facilities. Compliance is mandatory, but only as minimum safety standards.

3.3.2 Exposure Hazards

3.3.2.1 Hazardous Noise

Noise is generated by pressure fluctuations in the air. The common measure of noise, or sound pressure level, is the decibel, with zero being the threshold of audible sound to the human ear. Examples of sound pressure levels are 40 to 50 dB in an office setting, 70 dB inside a car at high speeds, 80 to 85 dB at a distance of 50 feet from highway truck traffic, and 100 dB inside near an airport during aircraft flyovers. Figure 9 compares the relative noise of common sounds.

Hazardous noise exposure occurs when workers are present in areas where ambient noise levels exceed 85 dB, such as along the main flightline. An example of noise levels along the flightline are presented as noise contours in Figure 10. To prevent potentially harmful effects to Air Force and civilian personnel from exposure to hazardous noise, the USAF has established protective measures in compliance with AFOSH Standard 48-19, *Hazardous Noise Program*. Under this Program, Bioenvironmental Engineering is responsible for conducting hazardous noise surveillance to determine if military or DOD civilian personnel working in areas where hazardous noise exposure may occur require engineering and administrative controls or personal protection. Non-DOD civilian personnel working on the installation are exempt from AFOSH Standard 48-19, but must comply with applicable federal and state regulations.

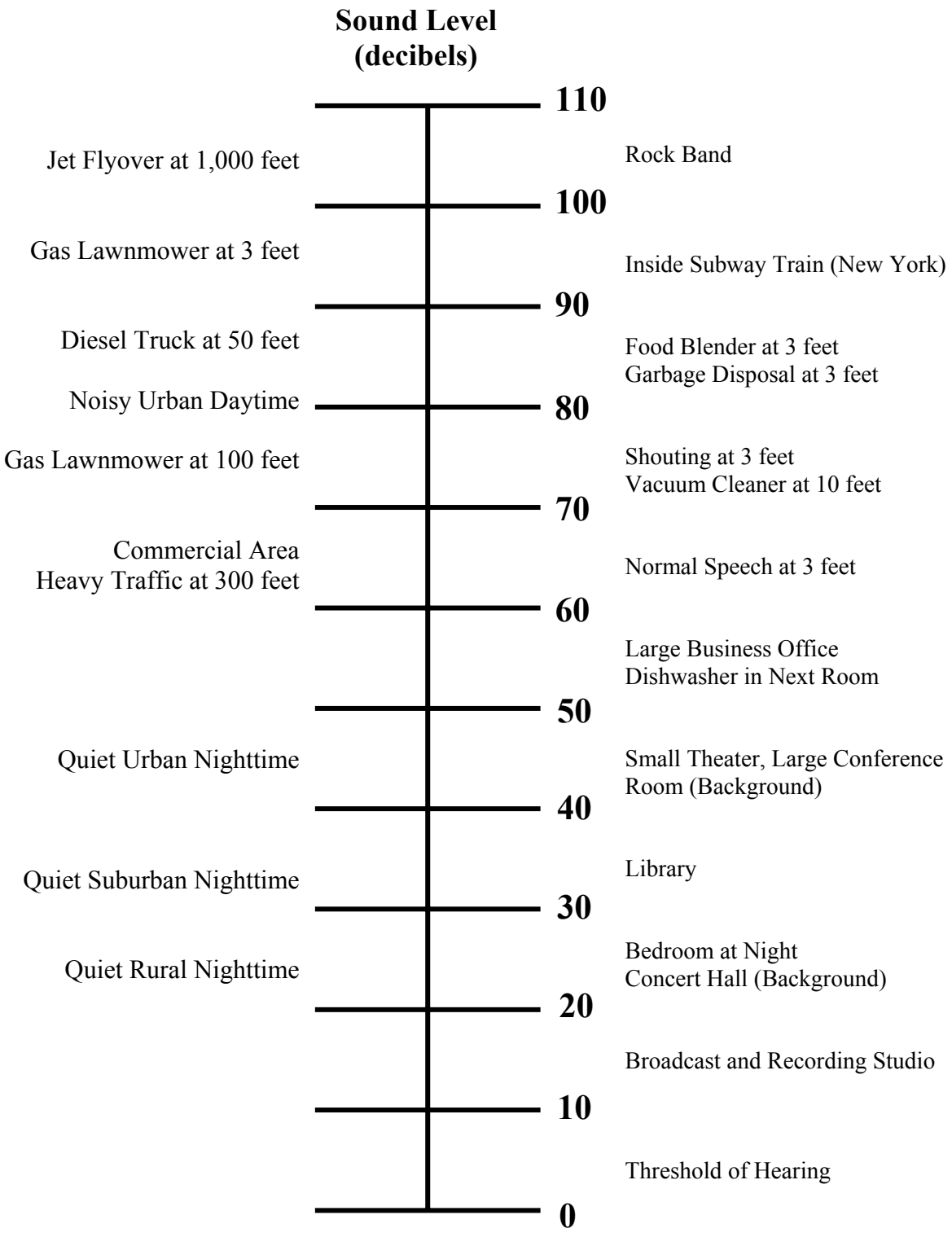


Figure 9. Comparative Levels of Common Sound

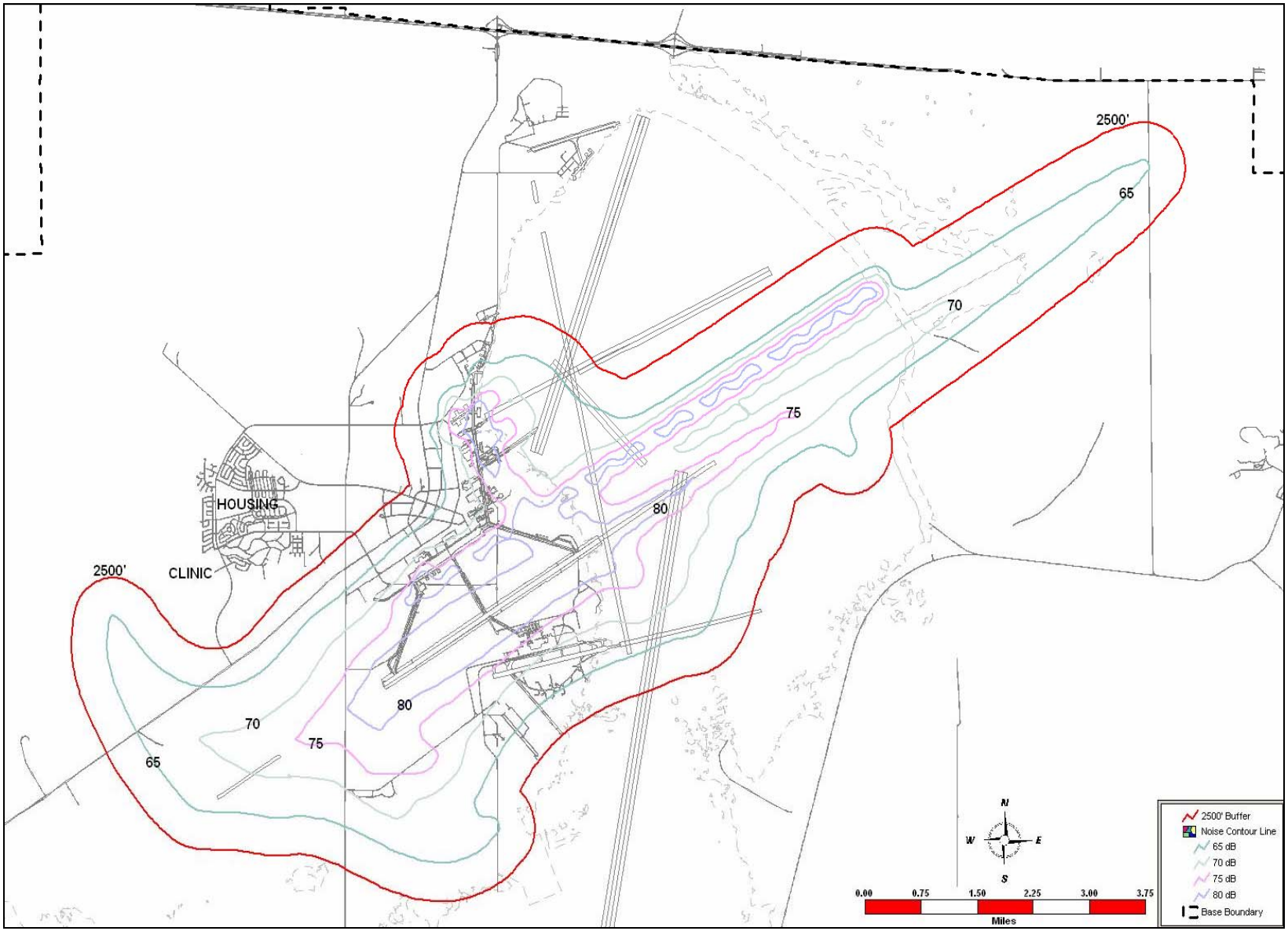


Figure 10. Noise Contours Along the Main Base Flightline

Current aircraft operations out of Edwards AFB are both subsonic and supersonic. Noise due to subsonic flights is produced from engine/propulsion noise and airflow noise generated as the airframe passes through the air. The same noise sources are present with supersonic flights, but the aircraft are often at such an altitude that noise has been greatly reduced because of the distance and atmospheric absorption. Based on the noise contour map (see Figure 10), the Complex would be located in the 70 to 75 dB zone during normal use of the main flightline.

Noise generated during construction activities is mainly due to the operation of various types of heavy equipment including, but not limited to, pneumatic hammers and drills, concrete saws, vibrating compactors, bulldozers, backhoes, graders, and cable plows. Noise levels would range from 70 dB to greater than 85 dB. The proponent/contractor is responsible for following the applicable federal and state OSHA laws and regulations, and the applicable AFOSH standards, ensuring that construction workers have received appropriate training and notification. Construction workers may need to be fitted with appropriate hearing protection devices during periods of hazardous noise levels.

3.3.2.2 Asbestos Containing Material

The buildings that would be demolished and renovated were constructed prior to enactment of current legislation regarding asbestos. Asbestos is commonly found in ceiling tiles, walls, insulation, floor tiles, piping insulation, and in some paints. The U.S. EPA has established that any materials containing more than 1 percent asbestos by weight is considered to be ACM and must be handled in accordance with the procedures outlined in 40 CFR 61, Subpart M, *National Emission Standard for Asbestos*. Disturbance of regulated ACM without the use of proper engineering controls or personal protective equipment, causing visible emissions, is a violation of the *Asbestos National Emission Standards for Hazardous Air Pollutants* (NESHAP) (40 CFR 61). According to 40 CFR 61.141, "friable asbestos material means any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure." The U.S. EPA and OSHA regulate ACM remediation.

The State of California defines ACM as any manufactured construction material that contains more than 0.1 percent asbestos by weight (8 CCR 1529). Asbestos is considered a hazardous waste by the State of California and must be disposed of in U.S. EPA-approved landfills.

3.3.2.3 Heavy Metal Paints

Heavy metal paints are used for their adhesive qualities on a variety of surfaces. The most commonly used are LBP and mercury-based paint. The use of LBP was common from the 1950s to the present. Lead is a heavy, ductile metal that is commonly found in association with organic compounds, as well as inorganic compounds such as lead oxides, lead salts, or metallic lead. Sources of exposure to lead are through paints, dust, and soil. Wastes containing levels of lead exceeding the total threshold limit concentration (TTLC) of 1.3 micrograms per kilogram or the soluble total lung capacity (TLC) of 5.0 milligrams per liter are defined as hazardous under 40 CFR 261, *Identification and Listing of Hazardous Waste*, and applicable to state regulations.

Mercury-based paints were commonly used in the United States prior to the 1950s. Chromium is used in some paints due to its corrosion inhibiting properties. Chromium has been detected in yellow paint samples from existing on-base facilities. Lead-, mercury-, and chromium-based paints may, therefore, be present on exterior and interior painted surfaces in

existing buildings and structures. The heavy metal paints, when disposed of, are considered hazardous waste and are managed by Bioenvironmental Engineering and Environmental Management.

3.3.2.4 Polychlorinated biphenyls

Polychlorinated biphenyls are a group of chemical mixtures produced by the chlorination of biphenyls. Polychlorinated biphenyls persist in the environment, accumulate in organisms, and concentrate in the food chain. Polychlorinated biphenyls are used as insulators in electrical equipment such as capacitors and transformers (i.e., fluorescent light ballasts), because they are electrically nonconductive and stable at high temperatures. Since 1995, Edwards AFB has performed a basewide removal of transformers containing PCBs that were not in compliance (>5 parts per million [ppm] PCBs). Transformers are labeled indicating PCB compliance (less than 5 ppm) or that fluids have been sampled and PCB concentrations are in compliance. During renovation of the aged buildings, fluorescent light ballasts and electrical fixtures containing PCBs may be encountered and will require removal and disposal. Disposal of PCB-containing equipment is handled by Bioenvironmental Engineering and Environmental Management, and is regulated under the *Toxic Substances Control Act* (TSCA) (15 U.S.C. 2601).

3.3.2.5 Environmental Hazards

Environmental conditions exist at Edwards AFB that can present a human health hazard to personnel. Specifically, personnel working outdoors could experience heat stress from exposure; be bitten by venomous snakes; be exposed to potential hantavirus conditions from infected rodents; and be exposed to potential valley fever from soils hosting spores. Occurrences of hantavirus or valley fever have not been reported at Edwards AFB; however, cases of valley fever have been diagnosed in the cities of Lancaster and Palmdale, 35 to 45 miles to the south. Edwards AFB has rodent control measures in place under AFI 32-1053 *Pest Management Program*, and minimization measures to control dust emissions during construction and demolition projects. Personal protective equipment is also recommended to minimize exposure risks during high particulate matter conditions.

3.3.3 Safety

The statutory and regulatory requirements of the federal OSHA and AFOSH standards, which apply to the safety of DOD workers on Edwards AFB, are enforced locally by Bioenvironmental Engineering, AFFTC Safety, and the Base Fire Department. Operational safety is supervised by the AFFTC Safety Office, which includes Flight, Ground, Test (Systems), Weapons, and Range Safety. The Proposed Action would include activities supervised by the Weapons Safety Office. Safety management uses the AFPD 91-series, other AFI 91-series and AFOSH standards, and applicable federal, state, and Air Force guidance to implement the base safety program.

Each building location where equipment is stored or handled has a designated building separation distance (or clear zone) associated with it (AFFTC 2001). Procedures for the safe handling and use of stored materials are in accordance with AFMAN 91-201.

3.4 Hazardous Materials and Waste

A hazardous material is any material whose physical, chemical, or biological characteristics, quantity, or concentration may cause or contribute to adverse effects in organisms or their offspring; pose a substantial present or future danger to the environment; or result in damage to or loss of equipment, property, or personnel.

Hazardous wastes are those substances that have been "abandoned, recycled, or are inherently wastelike," and which (because of their quantity, concentration, or characteristics) have the potential to cause an increase in mortality or serious irreversible illness or pose a substantial hazard to human health or the environment if improperly treated, stored, transported, and/or discarded.

For purposes of this analysis, the terms hazardous material and hazardous waste are those substances as defined by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) (42 U.S.C. 9601) and the *Resource Conservation and Recovery Act* (RCRA) *of 1976* (42 U.S.C. 6901–6991).

3.4.1 Regulatory Requirements/Guidance

The Air Force Flight Test Center Instruction (AFFTCI) 23-1, *Hazardous Material Management Program,* implements AFI 32-7086, *Hazardous Materials Management*. It provides guidance for all AFFTC, base contractors, and tenant organization personnel on Edwards AFB; establishes responsibilities; and outlines procedures essential to operating an effective Hazardous Material Management Program (HMMP). The instruction details standards regarding implementation of the HMMP and is readily available to all Air Force and contractor personnel procuring hazardous materials from the Hazardous Materials Pharmacy. A key component of the HMMP is the Hazardous Materials Integrated Process Team (HMIPT). It is comprised of specialists from Environmental Management, Procurement, Safety, Supply, and Bioenvironmental Engineering who are responsible for developing and implementing policies concerning the HMMP.

The AFFTCI 32-19, *Hazardous Material Management Process,* ensures that the AFFTC remains in compliance with all applicable federal, state, local, and Air Force regulations and laws regarding hazardous materials management. The instruction involves the use of information systems and positive control of hazardous material to minimize occupational exposures, monitor and minimize environmental releases, and minimize hazardous waste disposal. The hazardous materials processes would be reviewed by the workplace supervisor. Environmental Management, Ground Safety, and Bioenvironmental Engineering would ensure that the least occupational and environmentally hazardous materials are used. All hazardous material transactions would occur using the most current automated data system fielded for use at Edwards AFB.

The *Edwards Air Force Base Hazardous Waste Management Plan* (HWMP) (AFFTC 1998a) supports Air Force regulations and is intended to ensure compliance with applicable federal, state, and local regulations. The objective of the HWMP is to provide sufficient administrative direction and instructions for originators of RCRA and non-RCRA wastes to properly characterize, package, label, store, treat, handle, and transport hazardous waste at Edwards AFB. The goals are to ensure compliance with the applicable federal, state, and local hazardous waste regulations, simplify administrative procedures, and reduce pollution and environmental impacts through improved waste management practices.

The *Edwards Air Force Base Solid Waste Management Plan* (AFFTC 1999) describes Environmental Management's functional management of municipal solid waste disposal and recycling on Edwards AFB. The purpose of the plan is to comply with federal, state, and local regulations and Air Force policy and guidance on the management of nonhazardous municipal solid waste.

3.4.2 Hazardous Materials

Edwards AFB uses a wide variety of hazardous materials in construction projects that include acids, corrosives, caustics, glycols, compressed gasses, paints and paint thinners, solvents, sealants, adhesives, cements, caulking, fire retardant, and hot asphalt (140 degrees Fahrenheit or greater). Building and facility maintenance requires the use of heating fuels, paints, aerosols, and fluorescent light bulbs, all of which are hazardous materials.

When any project (including a DT&E program or increase in mission support) is considered at Edwards AFB, Program Introduction Documents or the equivalent are reviewed by Bioenvironmental Engineering and Environmental Management to identify any hazardous material/hazardous waste concerns. Prior to bringing any new hazardous material on base, contractors are required to provide a copy of the relevant Material Safety Data Sheet (MSDS) to Bioenvironmental Engineering, who maintains a master hazardous material inventory list for Edwards AFB with all listed MSDSs.[2] All organizations and contractors are required to maintain strict inventories of all their hazardous materials. Furthermore, organizations are also required to reduce the quantity of hazardous materials used or replace them with nonhazardous material, if possible, as a part of the Pollution Prevention Program. Guidelines used by Edwards AFB include AFI 32-7086, *Hazardous Materials Management*; AFI 32-7042, *Solid and Hazardous Waste Compliance*; and AFFTCI 23-1, *Hazardous Material Management Program*.

3.4.3 Hazardous Waste

The use of hazardous materials results in generation of hazardous waste (e.g., paint waste, used oil, and contaminated rags), which requires proper handling. The U.S. EPA enforces the RCRA (40 CFR 260–272), which provides guidelines for the generation, storage, transportation, and disposal of hazardous waste. The California Environmental Protection Agency (Cal/EPA) enforces hazardous waste laws embodied in 22 CCR Chapters 10 through 20, *Hazardous Waste Management,* and the California Health and Safety Code (Section 25100), *Hazardous Waste Control*. Environmental Management manages hazardous waste accumulation. Guidelines used by Edwards AFB include the HWMP (AFFTC 1998a), which was prepared IAW AFI 32-7042, *Solid and Hazardous Waste Compliance*. The HWMP establishes procedures to achieve compliance with applicable federal, state, and local regulations for hazardous waste management, except munitions, explosives, biohazard, and radioactive waste.[3] Specifically, it contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in and disposal, as well as procedures for inspections, permits, and recordkeeping.

[2]The OSHA regulations (29 CFR 1910.1200, *Hazard Communication*) require MSDSs for all hazardous chemicals used on base. The MSDS identifies a chemical's identity, its physical and health hazard information, safe handling and use procedures (including exposure control measures), and product use warnings. The AFOSH Standard 48-21, *Hazard Communication*, reestablishes the minimum requirements for an effective hazard communication program for personnel who use or produce hazardous chemicals.

[3]The applicable hazardous waste regulations are in 40 CFR 260–272, Subtitle C.

Many of the structures on Edwards AFB were constructed prior to enactment of current legislation regarding asbestos. Asbestos is commonly found in ceiling and floor tiles, walls, insulation, piping insulation, and in some paints. The U.S. EPA has established that any material containing more than 1 percent asbestos by weight is considered to be ACM, and must be handled IAW procedures outlined in 40 CFR 61. Disturbance of regulated ACM without the use of proper engineering controls or personal protective equipment, and which causes visible emissions, is a violation of NESHAPs (40 CFR 61, *Asbestos National Emissions Standards for Hazardous Air Pollutants).* According to 40 CFR 61.141, "friable asbestos material means any material containing more than 1 percent asbestos … that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure." Asbestos-containing material remediation is regulated by U.S. EPA and OSHA.

Lead-based paints were commonly used from the 1950s until recently. Lead is a heavy, ductile metal that is commonly found in association with organic compounds, as well as inorganic compounds such as lead oxides, lead salts, or metallic lead. Sources of exposure to lead are through paints, dust, and soil. Wastes containing levels of lead exceeding the TTLC of 1,300 micrograms per kilogram or the soluble TLC of 5.0 milligrams per liter are defined as hazardous under 40 CFR 261, *Identification and Listing of Hazardous Waste,* and applicable state regulations.

Mercury-based paints were commonly used in the United States prior to the 1950s. Chromium is used in some paints due to its corrosion inhibiting properties. Chromium has been detected in some paint samples from existing on-base facilities. Lead-, mercury-, and chromium-based paints may be present on exterior and interior painted surfaces in existing support buildings. Civil Engineering and Environmental Management manage these hazardous wastes.

Polychlorinated biphenyls are a group of chemical mixtures produced by the chlorination of biphenyls. Polychlorinated biphenyls persist in the environment, accumulate in organisms, and concentrate in the food chain. Polychlorinated biphenyls are used as insulators in electrical equipment such as capacitors and transformers (e.g., pre-1976 fluorescent light ballasts),[4] because they are electrically nonconductive and stable at high temperatures. The Exterior Electric Shop manages transformer repair, including tests to determine the PCB content of transformers. Civil Engineering and Environmental Management manage handling and disposal of PCBs, which are regulated under the federal TSCA.

3.4.4 Solid Waste

Solid waste refers to nonhazardous garbage, refuse, sludge, and any other discarded solid material resulting from residential, commercial, and industrial activities, or operations. Solid waste can be classified as construction/demolition, nonhazardous recyclable, or nonhazardous nonrecyclable wastes.

Edwards AFB operates a nonhazardous (municipal solid) waste landfill within the Main Base and is in the process of establishing a processing center for inert debris such as construction and demolition waste. Currently, Edwards AFB has an established procedure for staging and

[4]If fluorescent light ballast is not marked "non-PCB," it is considered to contain PCBs.

processing inert debris and disposing of the construction and demolition debris. Inert debris is stockpiled in specified areas according to Civil Engineering instruction. The volume of construction and demolition debris is minimized by removing recyclable materials to the maximum extent practicable before demolition. The remaining construction and demolition debris and other construction-related solid waste will be disposed of at an approved state-licensed landfill.

The base actively participates in a recycling program. A contractor operates the program under contract with Edwards AFB, with program oversight provided by Environmental Management. Some waste metals generated during construction and demolition projects, as well as the routine operations of various base organizations, are diverted to the Defense Reutilization Marketing Office (DRMO) for resale.

3.5 Biological Resources

The biological resources that occur in the vicinity of the Complex and the six storage igloos outside the Complex are common varieties of plant and animal species that characterize the desert community. The area of the Complex and the six storage igloos has been previously disturbed by equipment storage activities.

The base manages species under consideration for listing under the state and federal Endangered Species Acts, as well as other species considered sensitive by various agencies. Although protection of nonlisted species is not mandatory on federal installations, management of these species contributes to the overall maintenance of their natural populations and reduces the likelihood that these species would have to be given additional legislative protection in the future. Edwards AFB also manages nonfederally listed species through the use of general conservation measures in the INRMP (AFFTC 2004).

3.5.1 Regulatory Requirements/Guidance

The *Endangered Species Act* of 1973 (ESA) (16 U.S.C. 1531–1544) provides a framework for the protection of endangered and threatened species. Federal agencies may not jeopardize the existence of listed species, which includes ensuring that actions they authorize, fund, or carry out do not adversely affect the species or adversely modify designated critical habitats. Under the ESA, all federal departments and agencies also must utilize their authorities, as appropriate, to promote the recovery of listed species. In addition, the ESA prohibits all persons, including federal agencies, from harming or killing (taking) individuals of a listed species without authorization. While federal agencies must consult with the United States Fish and Wildlife Services (USFWS) when their activities may affect listed species, projects cannot be stopped unilaterally by the USFWS; however, for any anticipated take to be authorized, applicable measures developed in the consultation to minimize the take must be followed.

The *Migratory Bird Treaty Act* (MBTA)of 1918 (16 U.S.C. 703–712), as amended, provides for federal protection of all migratory bird species, their active nests, and eggs. Permits are required to remove these birds from their roosting and nesting areas. The U.S. Government is exempt from the MBTA permit requirements based on the court decision in *Newton County Wildlife Association vs U.S. Forest Service* 113 F 3d 110 (8th Cir 1997), but must minimize take

caused by their activities. Nonfederal contractors are required to obtain a depredation permit from the USFWS prior to removal or disturbance of nesting birds.

The *California Endangered Species Act* (CESA) (Fish and Game Code Section 2050 et seq.) generally parallels the main provisions of the federal ESA and is administered by the California Department of Fish and Game (CDFG). Under the CESA, the term "endangered species" is defined as a "species of plant, fish, or wildlife which is in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species native to California. The CESA establishes a petitioning process for the listing of state threatened or endangered species, and the CDFG is required to adopt regulations for this process. The CESA prohibits the taking of state-listed species except as otherwise provided in state law. Unlike the federal ESA, the CESA applies prohibitions to species petitioned for state listing (i.e., state candidates).

3.5.2 Animal Species

Common mammals on Edwards AFB include the Mohave ground squirrel, the black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audobonii*), and coyote (*Canis latrans*). Common rodents include the deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys torridus*), little pocket mouse (*Perognathus longimembris*), Merriam's kangaroo rat (*Dipodymus merriami*), and desert woodrat (*Neotoma lepida*). Common bats include the western pipistrelle (*Pipistrellus hesperus*) and little brown bat (*Myotis lucifugus*).

The desert tortoise (*Gopherus agassizii*) is a herbivorous reptile that resides at Edwards AFB. The reptile range includes the Sonoran and Mojave deserts of southern California, southern Nevada, Arizona, extreme southwestern Utah, and Sonora and northern Sinaloa, Mexico.

Common birds include the turkey vulture (*Cathartes aura*), common raven (*Corvus corax*), sage sparrow (*Amphispiza belli*), barn owl (*Tyto alba*), house finch (*Carpodacus mexicanus*), and western meadowlark (*Sturnella neglecta*). Common bird species found in creosote bush scrub include the horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), and sage sparrow. Seasonal rains on lakebeds and claypans attract wading bird species, including the black-necked stilt (*Himantopus mexicanus*), aermican avocet (*Recurvirostra americana*), and greater yellowlegs (*Tringa melanoleuca*). Birds associated with ponds include the yellow-headed blackbird (*Xanthocephalus xanthocephalus*), black-crowned night heron (*Nycticorax nycitorax*), and green heron (*Butorides striatus*). Seasonal migratory birds use both permanent and temporary bodies of water for foraging shrimp. These birds include ducks and geese such as the ruddy duck (*Oxyura jamaicensis*), northern mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), Canada goose (*Branta canadensis*), and snow goose (*Chen caerulescens*).

3.5.3 Plant Species

Creosote bush (*Larrea divaricata*) scrub is dominant in the project area. At Edwards AFB, there are approximately 103,000 acres of creosote bush scrub that comprise approximately 34 percent of the area of the base. Common species found in this community include winterfat (*Ceratoides lanata*), cheesebush (*Hymenoclea salsola*), and Nevada tea (*Ephedra nevadensis*).

Arid phase saltbush scrub is dominated by allscale (*Atriplex polycarpa*). At Edwards AFB, there are approximately 45,300 acres of arid phase saltbush scrub that comprise approximately

15 percent of the area of the base. Common species found in this community include burrobush (*Ambrosia dumosa*), goldenhead (*Acamptopappas sphaerocephalus*), and cheesebush (*Hymenoclea salsola*).

3.6 Cultural Resources

Cultural resources are defined by AFI 32-7065, *Cultural Resources Management*, as any historical, archaeological, or American Indian artifacts and properties of interest. Cultural resources at Edwards AFB include archaeological resources, from prehistoric and historic periods; historic period resources, including historic period structures and objects; and traditional cultural places.

3.6.1 Regulatory Requirements/Guidance

The *National Historic Preservation Act* (NHPA) *of 1966*, as amended (16 U.S.C. 470 et seq.), provided for the establishment of the National Register and authorized the establishment of criteria to determine the eligibility of cultural sites for listing on the National Register. Section 106 of the NHPA requires federal agencies to evaluate the effects of their activities and programs on cultural resources, which include prehistoric and historic archaeological resources, historic resources, and traditional cultural places. Section 110 of the NHPA directs federal agencies to undertake, to the maximum extent possible, planning and actions necessary to minimize harm to cultural resources under their ownership or control, or affected by their activities and programs. Compliance with 16 U.S.C. 470 et seq., NHPA; 36 CFR Part 800, *Protection of Historic Properties*; and AFI 32-7065, *Cultural Resources Management*, at Edwards AFB is coordinated by the Base Historic Preservation Officer (BHPO).

The *Archaeological Resources Protection Act* (ARPA) (16 U.S.C. 470aa–470ll) was intended to address the growing concern about the plundering of archaeological and historic sites. The act makes it illegal to remove any archaeological resources from federal lands without a permit. Arrowheads lying on the surface are the only exception. Violations of the ARPA can result in fines of up to $250,000 and up to 5 years imprisonment.

3.7 Geology and Soils

Geologic resources consist of naturally-formed minerals, rocks, and unconsolidated sediments. Soil refers to the uppermost layers of surficial geologic deposits and is developed by the weathering of those deposits. Concerns associated with the geologic setting at Edwards AFB, which could either affect or be affected by the proposed project, include material use, Environmental Restoration Program (ERP) site disturbance, and seismicity.

3.7.1 Regulatory Requirements/Guidance

The purpose of the *Alquist-Priolo Earthquake Fault Zoning Act* (California Public Resources Code, Division 2, Chapter 7.5, Section 2621, et seq.) is to provide for the adoption and administration of zoning laws, ordinances, rules, and regulations by cities and counties in implementation of the general plan that is in effect in any city or county. The Legislature declares that this act is intended to provide policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibility to prohibit the location of developments and

structures for human occupancy across the trace of active faults. Further, it is the intent of this act to provide the citizens of the state with increased safety and to minimize the loss of life during and immediately following earthquakes by facilitating seismic retrofitting to strengthen buildings, including historical buildings, against ground shaking

3.7.2 Material Use

Fill material for this project would either come from recycled asphalt and concrete or approved borrow sites. An environmental report, *Environmental Assessment for Borrow Sites at Edwards Air Force Base, California* (United States Army Corps of Engineers [USACE] and AFFTC 1996) discusses the environmental condition, advantages, and disadvantages associated with the use of on-base borrow sites. It identifies five sites (1, 5, 21, 23, and 28) in addition to those previously in use.

Cultural resource site surveys have been performed over a 5-acre area at each of the proposed borrow sites. Partial surveys were performed over a 40-acre area surrounding some of the borrow sites. At other sites, a 40-acre survey was never conducted. Cultural surveys at Borrow Site B (16) found cultural artifacts of lithic fragments indicating prehistoric habitation. There is a high probability that further excavation in the borrow pit area may uncover additional cultural artifacts and prehistoric sites. Cultural surveys performed at the remaining active borrow sites have not found indications of cultural artifacts. The probability of finding prehistoric sites in these areas remains low.

3.7.3 Environmental Restoration Program

The ERP usually involves surface soil cleanup actions or the installation of extraction wells to remediate contaminated groundwater. For the remediation of groundwater, wells are drilled down to the groundwater which can extract both groundwater and air from the unsaturated zone. These wells are connected by a series of underground or aboveground pipes that convey air, water, and compressed air (for pneumatic pumps located within the wells). The extracted material is then piped to a treatment compound where equipment is located to treat the incoming vapors and liquids. The treatment compound will have some connections for electricity and sewer hookups.

3.7.4 Seismicity

The Mirage Valley fault extends into the Complex and is seismically dormant with no record of historic earthquake activity along its trace. Earthquakes have occurred along local faults in the vicinity of Edwards AFB with magnitude less than 4.4 on the Richter scale and no reported damage to structures. Near Bissell, about 2 miles northwest of the base, an earthquake of 4.6 to 6.5 on the Richter scale was recorded. The earthquakes were accompanied by ground motion with little or no ground displacement or structural damage to buildings.

Edwards AFB is located in a structural triangle that is formed by the convergence of the Garlock Fault to the north and the San Andreas Fault to the southwest. Seismic activity in the region is controlled mainly by plate movement along these two regional fault systems. Earthquake activity in the region is currently to the east of Edwards AFB near the Barstow area,

where earthquakes with magnitudes measuring less than 4.0 to 7.0 and greater on the Richter scale have been recorded (United States Geological Survey [USGS] 2005).

3.8 Socioeconomics

Socioeconomic resources are the economic, demographic, and social assets of a community. Key elements include fiscal growth, population, employment, housing, schools, and environmental justice. For the purpose of this EA, those counties or portion of counties in which the proposed action will occur defines the boundary of the socioeconomic environment. The economic impact region (EIR) includes all areas within this boundary. The EIR for an impacted community is fundamentally important to the analysis because it defines the area in which changes in fiscal growth, population labor force and employment, housing stock and demand, and school enrollment will be assessed. The EIR for Edwards AFB is that area located within 75 miles of the Main Base, and includes portions of Los Angeles, Kern, and San Bernardino counties. However, the majority of potential socioeconomic impacts from base activities would be expected to occur with the Antelope Valley area (refer to Figure 2).

3.8.1 Fiscal Growth

Edward AFB makes a substantial contribution to the economic status of the surrounding communities within the Antelope Valley of California. For FY2002, the estimated cumulative economic impact from Edwards AFB's annual operating expenditures including salaries, DOD acquisitions, and educational assistance in the surrounding communities was approximately $1.2 billion (AFFTC 2002).

3.9 Infrastructure

Infrastructure refers to the physical components that are used to deliver utilities to the point of use. Elements of the base infrastructure system include water, wastewater, electricity, natural gas, communications lines (e.g., telephone and computer), and circulation systems (e.g., streets and railroads) that run in a network through the base.

3.9.1 Regulatory Requirements/Guidance

The *Uniform Plumbing Code* (UPC) (International Conference of Building Official [ICBO] 1997, establishes standards applicable to the erection, installation, alteration, repair, relocation, replacement, addition to, or maintenance of plumbing systems. These standards ensure protection of public health, safety, and welfare.

The *Uniform Building Code* (UBC) (International Association of Plumbing and Mechanical Officials 1997) establishes minimum standards to safeguard life, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures.

The National Fire Protection Association's (NFPA) *National Electrical Code* (NEC), NFPA 70, was first published in 1897 and is adopted and enforced in all 50 states. It provides practical safeguarding of persons and property from hazards arising from the use of electricity by establishing requirements for electrical wiring and equipment in virtually all buildings. It

specifically covers the installation of electric conductors and equipment in public and private buildings, industrial substations, and other premises (e.g., parking lots); installation of fiber-optic cable, wiring, general electrical equipment, the use of electricity in specific occupancies and equipment; special conditions (e.g., emergency and standby power or conditions requiring more than 600 volts); and communication systems.

3.9.2 Transportation System

Internal circulation on base is by way of paved and unpaved primary, secondary, and tertiary roads. Primary roads connect components such as the flightline, engineering and administration, and support areas to entry points. Secondary roads connect base components to one another and support facilities such as commercial or housing areas. Tertiary roads are unpaved access roads or residential streets with the housing area. Lancaster and Rosamond Boulevards are the two primary roads on Main Base. These two primary roads form the spine of the base road system, providing high-speed, high-volume access to connecting secondary and arterial roads and activity centers. Significant secondary roads are Fitzgerald Boulevard, Forbes Avenue, Yeager Boulevard, and Wolfe Avenue on Main Base. Jones Road is the access into South Base and the Complex area.

3.9.3 Utilities

Utilities require periodic upgrades in the project area. Utilities that may be encountered during digging and trenching operations at the project location could include water, electrical, communications, stormwater, and/or sanitary sewer systems. Water mains are typically transite™ (i.e., asbestos cement) pipe. Utility service lines are galvanized steel or copper pipe. Sewer lines are vitrified clay pipes that run beyond 5 feet from the buildings and are cast iron within the 5-foot line and under building slabs.

3.9.4 Communication Systems

Communication systems on Edwards AFB include telephone, microwave, Land Area Networks (LANs), and Land Mobile Radios (LMRs). The distribution system for these communication equipment generally consist of copper-pair cable, fiber-optic cable, and a communication manhole/conduit system.

3.10 Energy Resources

The general policy of the Air Force regarding energy is: "Energy is essential to the Air Force's capability to maintain peacetime training, readiness, and credible deterrence; to provide quality of life; and to perform and sustain wartime operations. In short, energy is an integral part of the weapon system. The most fundamental Air Force energy policy goal is to assure energy support to the national security mission of the Air Force in a manner which emphasizes efficiency of use, effectiveness of costs, and independence from foreign sources for mission-essential operations" (AFFTC 1995a).

3.10.1 Regulatory Requirements/Guidance

The *Energy Policy Act of 1992* (PL 102-486) requires federal entities to identify and accomplish all energy and water conservation measures with payback periods of less than 10 years.

Executive Order 13123, *Greening of the Government through Efficient Energy Management*, identifies the Department of Energy as the lead agency responsible for implementing the Act and establishes seven goals regarding energy use that are applicable to federal agencies. These goals target reduction of:

a. greenhouse gases;

b. petroleum use;

c. energy use by industrial, laboratory, and other facilities;

d. total energy use (as measured at the source);

e. water consumption (and associated energy use); and

f. expanded use of renewable energy.

The *Edwards Air Force Base Energy Plan* (AFFTC 1995) serves as a component of the Base Comprehensive Plan and documents the policies, direction of development, and specific projects associated with the base's desire to meet the national energy goals established by the *Energy Policy Act of 1992* (PL 102-486).

3.10.2 Energy Consumption

Edwards AFB uses electricity, natural gas/propane, and other petroleum-based products (i.e., gasoline, jet fuel, and diesel) as sources of energy to operate facilities, vehicles, equipment, and aircraft. Consistent with federal law and Air Force policy, Edwards AFB has developed various programs and methods to reduce energy use. These include awareness and education programs (including standards for heating and cooling) and installation of energy management control systems for cooling, heating, and lighting. Electric, gas, and water meters are being installed to heighten awareness of consumption. Other energy reduction projects at Edwards AFB include installation of swamp coolers, ceiling and wall insulation, double-pane windows, building foyers, and energy efficient lighting tubes.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Land Use

4.1.1 Alternative A Effects (Preferred Alternative)

4.1.1.1 On-Base Land Use

The construction and renovation of facilities in the Complex would be consistent with the Base General Plan. For the six storage igloos located at Main Base and AFRL, only renovations would occur. In addition, the siting and construction of new facilities would require approval from the Base Planning and Zoning Committee. The modernization of facilities would be within the Complex boundary. The six storage igloos located at Main Base and AFRL would also be modernized by renovation projects. The project activities in both the Complex and at locations on Main Base and at AFRL would ensure buildings and structures, utilities, and communication systems would be updated to operational and current Air Force standards.

The project would be performed within the current footprint of the Complex and would include the construction of a small suspect-vehicle holding pad (20,000 square feet) 4 miles southwest of the Complex. The Base General Plan discusses the project which would include replacing outmoded storage structures with new, upgraded facilities capable of safely and efficiently accommodating present and future munitions test projects. Renovations to the six storage igloos would also be part of this project. Changes in the existing land use or adverse effects to the environment would not be anticipated.

4.1.1.2 Foreign Object Damage Control

Demolition debris, such as nuts, bolts, screws, wood, trash, pieces of concrete, or asphalt may end up on the adjacent runway, taxiways, or the apron. These objects could puncture tires, damage engines, or be blown by helicopter rotor downwash. This could cause damage to aircraft and helicopters and possible injury or death to personnel. Rotary winged aircraft, in particular, produce large quantities of rotor downwash during takeoff, landing, and aircraft hover operations. The downwash from these operations can produce large quantities of FOD if the operations occur near exposed surfaces, such as cleared dirt areas. However, continued implementation of standard practices and existing policies would reduce the potential for these impacts. Therefore, no significant impact is anticipated as a result of FOD.

4.1.2 Direct/Indirect Effect

The demolition of 11 buildings would have a direct effect on land use by removing outmoded facilities that are no longer adequate for munitions storage. The demolition of facilities would have an indirect effect by allowing 14,000 square feet of additional space for new construction.

4.1.3 Short-Term Use Versus Long-Term Productivity

Project activities would have a possible short-term effect on the storage of munitions in the Complex. Prior planning and scheduling of test programs would alleviate some of the storage space problems that may arise. The facility upgrades would bring long-term beneficial effects to

the Complex as a wider range of munitions systems would be stored to support the various test missions.

4.1.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are recommended to minimize potential impacts to land use:

a. The proposed project shall be reviewed and approved by the Base Planning and Zoning Committee to ensure consistency.

b. All project personnel shall use standard operating procedures for the prevention of FOD, as identified in AFI 21-101, *Maintenance Management of Aircraft*. In addition, Air Force Joint Manual (AFJMAN) 24-306, *Manual for the Wheeled Vehicle Driver*, and AFFTCI 10-2, *Control of Vehicles on the Airfield*, shall be followed.

c. New construction, renovation, or demolition activities near the flightline have the potential to leave objects on taxiways or runways that could cause damage to aircraft and interrupt flightline operations. The proponent/contractor should contact Airfield Management for FOD reduction guidelines.

d. Soils surrounding the Complex may need to be stabilized in order to prevent FOD during operations. Contact Airfield Management for recommendations on preferred methods of soil stabilization.

4.1.5 Alternative B Effects

Under this alternative, effects to land use would be incremental as maintenance of facilities would be performed as-needed.

4.1.6 Alternative B Minimization Measures

Minimization measures to land use would be incremental, would be similar to those stated in Alternative A, and would be implemented as-needed.

4.2 Air Quality

4.2.1 Alternative A Effects (Preferred Alternative)

4.2.1.1 National Ambient Air Quality Standards

A short-term degradation in air quality may be experienced during construction activities. Fugitive dust emissions (PM10) could be generated by: grading the building sites, constructing access roads, and driving off established paved roadways. Use of associated motor vehicles and construction equipment could also cause degradation to air quality from engine emissions.

4.2.1.2 Local District Control

The proposed renovation and construction projects in the Complex would involve use of construction equipment over 50 bhp. If such equipment remains on base for more than 45 days,

an air quality operational permit is required from the KCAPCD. This would ensure that generated air emission would be in compliance with local air emission standards.

4.2.1.3 Conformity Requirements

Total air emissions from the use of construction equipment were estimated and totaled 0.27 tons of NO_x and 0.06 tons of volatile organic compound (VOC). The concentrations are *de minimis* under 40 CFR 51.853/93.153 (b)(1) and are below the KCAPCD *de minimis* levels as determined from air emission calculations. The air emissions from base missions are less than 100 tons per year for all criteria pollutants. The basis for the calculations and a copy of the conformity letter can also be found in Appendix B.

The relevant and applicable *de minimis* levels for criteria pollutant emissions in all air districts are less than the corresponding 10-percent threshold values. The proposed action has emissions that are below KCAPCD *de minimis* levels as determined from air emission calculations. Thus, the proposed action would not have a regionally significant impact in the KCAPCD. Estimated air emissions from the proposed project are less than 100 tons per year for all criteria pollutants. These emissions are less than the 10-percent threshold values for the adjacent air quality districts, the MDAQMD and AVAPCD identified in Section 3.2; and therefore, the proposed project would not be regionally significant in these air districts.

4.2.2 Direct/Indirect Effects

The use of construction equipment would have a direct effect on air emissions from the Complex. The total emissions generated would have an indirect effect on the base ozone emissions budget during the implementation of construction and demolition projects. The total air emissions generated during construction was estimated and determined to be in *de minimis* concentrations and within local regulatory requirements.

4.2.3 Short-Term Use Versus Long-Term Productivity

A short-term degradation in air quality may be experienced during construction activities. Fugitive dust emissions (PM10) would be generated during excavation of building sites and access roads. To minimize dust, exposed soils would be sprayed with water or soil binder and grading activities would be delayed during high wind conditions. These measures would help to control soil erosion and ensure the long-term productivity of the area by maintaining air quality and soil cover.

4.2.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are required or recommended to minimize impacts to air quality:

b. The project shall comply with all applicable KCAPCD rules and regulations.

c. The proposed project shall comply with all applicable rules and regulations as identified in AFI 32-7040, *Air Quality Compliance*.

d. Air quality operational permits are required for all construction equipment containing more than 50 bhp, if such equipment remains on base for more than 45 days.

e. All vehicles transporting clean fill material or construction debris would require a cover to reduce PM10 emissions during transport.

f. All earthworks activities should be planned and conducted to minimize the duration that soils would be left unprotected. The extent of the area of disturbance necessary to accomplish the project should be minimized. Exposed surfaces should be periodically sprayed with water or soil binder. Use of soil binders should be coordinated with Environmental Management because some soils binders contain hazardous substances.

g. Ground disturbing activities should be delayed during high-wind conditions (over 29 miles per hour [mph]).

h. All mechanical equipment should be kept in working order according to applicable technical orders and equipment maintenance manuals to reduce emissions to acceptable levels.

4.2.5 Alternative B Effects

Under this alternative, there would be no changes to the current condition of the Complex. Minor maintenance repairs would occur incrementally and effects to air quality are not anticipated to be significant.

4.2.6 Alternative B Minimization Measures

As renovations or upgrades occur, minimization measures similar to Alternative A would be required.

4.3 Safety and Occupational Health

4.3.1 Alternative A Effects (Preferred Alternative)

4.3.1.1 Exposure Hazards

Exposure hazards and safety are concerns that would affect personnel involved in projects at the Complex. Exposure hazards would include hazardous noise, friable ACMs, heavy-metal paints, PCBs, and environmental hazards associated with working outdoors. Hazardous noise would include exposure to ambient noise levels exceeding 85 dB during flight tests along the flightline, and the operation of heavy equipment during construction and renovation projects. Exposure to possible friable ACM, heavy-metal paint, and PCBs would be of concern during the demolition and renovation of buildings based on the age of the structures. Environmental hazards would be of concern for personnel working outdoors and during the renovation and demolition of buildings. Personnel would be exposed to possible heat stress, venomous snakes, potential hantavirus conditions from infected rodents, and potential valley fever from soils hosting spores.

4.3.1.2 Safety

Safety concerns refer to the handling, moving, and storing of inventory during the modernization projects. Measures to ensure personal safety would be implemented and would comply with standard Air Force procedures.

4.3.2 Direct/Indirect Effects

Outdoor construction, building demolition, and renovation projects would have a direct effect on workers' health. Exposure to excessive construction noise, friable ACMs, heavy-metal paints, PCBs, and certain environmental conditions is possible. Exposure to some environmental conditions could also have an indirect effect on workers' health by exposure to hantavirus and valley fever conditions. Safety measures are instituted by the base to ensure worker safety during project implementation including the use of personal protective wear.

4.3.3 Short-Term Use Versus Long-Term Productivity

Short-term implementation of health and safety measures for the protection of workers during the construction, demolition, and renovation phase of the project would be designed to assure the long-term productivity of the worker.

4.3.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are required or recommended to minimize impacts to safety and occupational health:

a. Operation of equipment may generate noise above acceptable levels established by OSHA regulations. The proponent/contractor shall be responsible for implementing hearing protection measures for their employees. If federal employees are involved in work activities, AFOSH regulations must be followed and 95th Aerospace Medicine Squadron, Bioenvironmental Engineering shall be contacted for specific requirements.

b. Major noise sources on the flightline are from aircraft and helicopter operations, engine testing, and the operation of powered tactical support equipment (TSE). Although the Complex is located about 1 mile south of the flightline, workers may be exposed to increased noise levels that may be above acceptable levels established by federal, state, and Air Force OSHA regulations. The contractor shall be responsible for implementing OSHA hearing protection measures for their employees. Where federal employees are involved in project work, contact Bioenvironmental Engineering for specific requirements.

c. This project has the potential to encounter ACM and/or LBP at the buildings to be demolished and renovated. For information on previous surveys and whether additional sampling is required, or guidance regarding abatement and disposal of wastes, contact the Environmental Office at Civil Engineering (95 ABW/CETS).

d. Any ACM that has the potential to be disturbed as a result of demolition of facilities must first be abated by qualified and trained asbestos workers, as defined in 29 CFR 1926.1101, *Asbestos*.

e. Plans to abate ACM or LBP must have a design package (i.e., design drawings, specifications, submittal requirements, and any ACM/metal-based paint surveys). Provide plans to Environmental Management and Bioenvironmental Engineering at for review to determine if all regulatory requirements have been addressed (OSHA, NESHAP, Federal/State/Air Force, and local requirements).

f. Abatement and Disposal Plans would be submitted to the 95 ABW/CETS and Bioenvironmental Engineering prior to abatement and disposal activities. Coordination by the contractor is required to ensure proper engineering controls are in place for the abatement and disposal. This would include the appropriate heavy-metal paint testing requirements for waste characterization.

g. If mercury or chromium is detected, the proponent/contractor should coordinate the removal, safe handling, and disposal through the 95 ABW/CETS and Bioenvironmental Engineering to ensure the proper engineering controls are in place prior to any activities that would disturb the paint.

h. The contractor would contact 95th Air Base Wing, Civil Engineer Directorate, Environmental Management or Bioenvironmental Engineering for identification and proper means of removal, safe handling, and disposal of PCB-contaminated equipment. The PCB and PCB-containing equipment may not be stored on base.

i. All new electrical equipment procured for the project (e.g., switches and transformers) should be specified to contain no detectable PCBs.

j. The proponent/contractor should be aware of the potential for heat stress-related illnesses and the potential for encounters with venomous snakes and spiders. In addition, measures shall be taken to control dust during construction and renovation activities to reduce inhalation exposure. The use of face masks and personal protective wear would be recommended during indoor renovations and demolition to minimize inhalation exposure. Bioenvironmental Engineering will provide guidance on specific requirements for personal protective equipment.

k. If dead rodents are encountered in buildings during demolition or renovation projects, the use of personal protective wear may be advised during removal activities. Consult with Bioenvironmental Engineering or Environmental Management regarding the use of personal protective wear.

l. The storage of munitions would be cleared by the Explosive Ordnance Disposal group prior to movement into facilities. Procedures for safe handling and use of munitions shall be in compliance with the procedures contained in AFMAN 91-201, *Explosive Safety Standards*.

4.3.5 Alternative B Effects

Under this alternative, there would be no changes to the current condition of the Complex. Minor maintenance repairs would occur incrementally and effects to safety and health are not anticipated to be significant.

4.3.6 Alternative B Minimization Measures

Facilities would be maintained on an as-needed basis. Minimization measures would be similar to Alternative A.

4.4 Hazardous Materials and Waste

4.4.1 Alternative A Effects (Preferred Alternative)

4.4.1.1 Hazardous Materials

The types and quantities of hazardous materials used during construction and renovation of the Complex would not be different from those already used on base. Compliance with all applicable standards and/or regulations addressing hazardous materials management is required, and would ensure proper handling, use, and storage of these substances.

4.4.1.2 Hazardous Waste

The types and quantities of hazardous wastes generated during demolition, construction, renovation, and upgrades to the Complex would not be different from those already generated on base. Compliance with all applicable standards and/or regulations addressing hazardous waste management is required, and would ensure proper handling, storage, and disposal of hazardous wastes generated on base. Standard operating procedures identified in the Edwards AFB HWMP, governing the control of hazardous waste, would prevent the creation of new contamination sites.

Asbestos may be encountered during demolition and renovation of facilities. Asbestos waste is considered hazardous by the state of California, and must be disposed of properly. Heavy metal-based paints (including lead, chromium, and mercury) may also be encountered during demolition and renovation activities. Heavy metal-based paints are considered hazardous waste and must be disposed of properly. Polychlorinated biphenyls may be encountered in building lighting fixtures during demolition and renovation of facilities. Polychlorinated biphenyls are considered hazardous waste and must be disposed of properly.

4.4.1.3 Solid Waste

The demolition and renovation of buildings and structures would generate solid waste that would include concrete pads and footings, brick walls, corrugated metal from exterior walls and roofs, and asphalt pavements. The concrete and asphalt waste would be recycled, and the sheet metal would be resold as scrap. Reuse or recycling of appropriate materials could reduce the amount of solid waste discarded at landfills (either on or off base), resulting in an incrementally positive impact to solid waste management. About 200 cubic yards of concrete waste from building pads would be available. The concrete waste could provide alternate sources for required building materials and road ballast, potentially reducing future impacts on nonrenewable natural resources.

4.4.2 Direct/Indirect Effects

Replacing outmoded buildings with new structures would have a direct effect in addressing friable ACMs and LBPs in some of the buildings. By upgrading buildings to meet codes and Air Force standards, worker health and safety would also be addressed indirectly by the removal of the hazardous materials.

The demolition and renovation of buildings would have a direct effect on the solid wastestream of the base. The wastestream would have an indirect effect on the amount of material available for building pads, road ballast, and for grading purposes.

4.4.3 Short-Term Use Versus Long-Term Productivity

Buildings that contained damaged friable ACMs or worn painted surfaces containing LBP were often repaired or abated. These measures represented a short-term solution until renovations could take place. Removing potential exposure to ACM or LBP particulates would be included in any renovations of outmoded buildings. These measures would have a long-term positive effect on worker health and safety.

Some of the solid wastestream generated during demolition projects could be made into rip-rap material and used as a short-term measure to prevent soil erosion during surface sheet flow flooding. Some of the solid waste would be recycled into road ballast material that would ensure the long-term stability of the road base.

4.4.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are required or recommended to minimize impacts due to the use of hazardous materials and the generation of hazardous waste:

a. Contact the 95 ABW/CETS for ACM/LBP and other heavy-metal paint survey information on buildings to be demolished or renovated. The 95 ABW/CETS would advise if existing survey information is adequate or if additional sampling is required to determine if ACM/LBP and other heavy-metal paint is present in areas to be disturbed.

b. Asbestos-containing material/LBP project design packages (e.g., design drawings, specifications, submittal requirements, and any ACM/LBP surveys) must be provided to Environmental Management and Bioenvironmental Engineering for review to determine if all regulatory requirements have been addressed (OSHA, NESHAP, federal, state, Air Force, and local requirements).

c. Light bulbs and fixtures may contain mercury and/or PCB materials. Therefore, all light bulbs and fixtures are subject to hazardous waste disposal requirements. The proponent/contractor should coordinate disposal with the tasking organization's point of contact for hazardous waste. For more information, contact the Environmental Management's Natural Resource coordinator.

d. Proponent/contractor should ensure all hazardous materials are authorized and managed in compliance with applicable sections of AFFTCI 32-19, *Hazardous Material Management Process* (HMMP). This instruction is applicable to all organizations on Edwards AFB, including tenants and contractors. Questions regarding the HMMP should be directed to the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division, Compliance Branch Air Quality coordinator.

e. Hazardous wastes are subject to land disposal restriction requirements. Signed hazardous waste disposal manifests should be required for all hazardous waste that may be generated on this project to include ACM; lead-, mercury-, chromium-, or other heavy metal-based paints; and/or PCB-containing wastes prior to transportation for off-site disposal to a U.S. EPA-approved landfill.

The proponent/contractor should submit all manifests for signature. For submittal requirements, contact the Air Quality coordinator.

f. The proponent/contractor should ensure that all hazardous waste management on this project complies with all applicable sections of AFI 32-7042, *Solid and Hazardous Waste Compliance*, and the *Edwards Air Force Base Hazardous Waste Management Plan* (AFFTC 1998a). For questions and guidance on air quality issues, contact the Air Quality coordinator.

g. The disposal of solid waste shall be coordinated with the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division, Compliance Branch, Solid Waste Program manager to determine disposition of the wastestream. Some of the solid waste may be recycled, reused, or transported to a state-authorized landfill.

h. The contractor shall be responsible for segregating the wastestream for recycling or for reuse.

4.4.5 Alternative B Effects

Under this alternative, minor maintenance repairs would occur incrementally and effects to hazardous materials and waste and solid waste are not anticipated to be significant.

4.4.6 Alternative B Minimization Measures

Renovations or upgrades would occur incrementally on an as-needed basis and minimization measures would be similar to Alternative A.

4.5 Biological Resources

4.5.1 Alternative A Effects (Preferred Alternative)

Studies of sensitive plants at Edwards AFB indicate that no federal-listed plant species have been identified on base. The desert cymopterus (*Cymopterus deserticola*) occurs on base and is state-listed as threatened.

Migratory birds pass through the area during seasonal migrations. The nesting season is generally from February to July. Buildings and housing areas on base would be used as nesting habitats during this period. The birds are protected under the *Migratory Bird Treaty Act* (MBTA) of 1918, (16 U.S.C. 703–712), as amended, which provides protection for all migratory bird species, their active nests, and eggs.

The demolition of buildings may disturb nesting birds or bat roosts. Because bird species on base are protected under the MBTA, a biological survey is required prior to commencement of the project to determine the existence of any nesting birds. If nesting birds are found, the nests shall be removed.

There are six sensitive bat species on base, but none are candidates for federal listing. Two of the bat species, the western mastiff and the pallid, are federal species of concern. If bat roosts are encountered, the bats shall be removed.

The desert tortoise is federally listed as threatened under the Endangered Species Act, and is listed by the State of California as threatened. It is the only federally-listed species on Edwards AFB. Evidence of the desert tortoise has been observed within 2 miles of the Complex. The Complex and the six storage igloos are within the range of the desert tortoise, but are not located in critical habitats. A biological survey was conducted in the Complex and results were presented in a memorandum, *No Adverse Effect to Desert Tortoise*, dated 3 March 2003 (Appendix A). The tortoise densities in the Complex and the surrounding areas were found to be very low.

The new suspect-vehicle holding pad 4, miles southwest of the Complex, has not been surveyed for the desert tortoise or its habitat. The Complex is just outside the area covered in the *Biological Opinion for Routine Operations and Facility Construction within Cantonment Areas of Main and South Bases* (USFWS 1991). Therefore, a desert tortoise survey would be required prior to implementation of the project. The base is currently working to achieve a basewide biological opinion (BO) that would coordinate actions to be taken for animal and plant species. It is assumed that the basewide BO will be completed prior to the implementation of this project.

The storage igloos located at Main Base and AFRL are covered under the BOs for each area. The studies found the habitat was highly disturbed, and observed no signs of desert tortoise in the areas. The tortoise densities in the surrounding areas were found to be very low.

4.5.2 Direct/Indirect Effects

Demolition and renovation projects would have a direct effect on nesting birds or bat roosts found in the buildings and structures. Since bird species on base are protected under the MBTA, the occurrence of bird habitats could indirectly affect the implementation of demolition and renovation projects. Surveys would be performed prior to project implementation and removal of the bird nests would be required.

4.5.3 Short-Term Use Versus Long-Term Productivity

Biological resource protective measures are in-place on base to maintain the long-term productivity of both plant and animal species. No short-term use of the resources would be affected during the implementation of this project.

4.5.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are required to minimize impacts to biological resources:

a. A biological survey shall be conducted in the Complex, and the additional holding pad site, prior to the start of the modernization projects. A current field survey to verify the findings of the 3 March 2003 No Adverse Effect memorandum is necessary. A survey of the holding area is required to establish the conditions in the new area. To establish dates of the surveys, coordination with Natural Resources is recommended.

b. Coordination is required with Natural Resources to ensure that recommendations from the basewide Biological Opinion are also implemented.

c. Project personnel may encounter the desert tortoise, federally listed as a threatened species. The proponent/contractor should be responsible for ensuring that all project personnel complete a

desert tortoise education program conducted by Environmental Management. Training would be scheduled by contacting the Natural Resources **at least 3 days** before the start of the project to schedule the briefing.

d. All workers should be instructed that their activities must be confined to locations within the project area and not stray beyond the work area.

e. Open excavations created during project activities should be secured at the end of each day by backfilling, placing a cover over the excavation, installing temporary desert tortoise Environmental Management-approved fencing, and/or by creating a 3:1 slope at each end of the ditch.

f. Excavations left unsecured during the workday should be checked three times per day (morning, midday, and late afternoon) for trapped animals. If any animals are found in an excavation, notify the Natural Resources coordinator immediately.

g. Project personnel should remain on existing roads and use previously disturbed areas to store and stage equipment and materials. Speed limits on dirt roads within the project area should be less than 20 mph.

h. All project personnel should inspect under all vehicles and equipment for desert tortoises prior to operation. If a tortoise is present, the vehicle should not be moved and the Natural Resources coordinator shall be notified.

i. If desert tortoises are found within the project site prior to or during construction and cannot be avoided, consultation with USFWS may need to be accomplished. Coordinate findings with the Natural Resources coordinator.

j. A survey of buildings would be conducted by the Natural Resources coordinator prior to demolition or renovation projects to determine the existence of nesting birds and bats. Bird nests and bat roosts may be removed or demolition schedules may require revision based on the condition of the nests.

4.5.5 Alternative B Effects

Under this alternative, the current conditions of the Complex would remain the same. Minor maintenance repairs would be conducted incrementally. Impacts to biological resources would be the same as Alternative A, but of lesser magnitude.

4.5.6 Alternative B Minimization Measures

Renovations or upgrades would occur incrementally and minimizations would be similar to Alternative A.

4.6 Cultural Resources

Potential impacts to cultural resources could include disturbance from vehicle traffic on the site, construction activities, or construction personnel disturbing the resources.

4.6.1 Alternative A Effects (Preferred Alternative)

A cultural resources Phase I survey including a historic building survey was conducted for the Complex. No eligible cultural resources (prehistoric or historic) were identified for nomination to

the National Register. The findings were included in the ICRMP (AFFTC 2005. The six storage igloos were also surveyed and none of the structures were eligible for historic listing.

The proposed suspect-vehicle holding pad is located in a remote area about 4 miles southwest of the Complex. A Phase 1 survey was conducted in the area and located several scattered archaeological sites. Based on the survey, the suspect-vehicle holding pad (20,000 square feet) could be constructed in the area without disturbing the cultural site(s). Coordination with the Base Historic Preservation Office would be required.

4.6.2 Direct/Indirect Effects

The construction of the suspect-vehicle holding pad southwest of the Complex could have a direct effect on archaeological sites found in the area. A Phase I survey was performed to locate these sites. Information from the survey would be used to locate the pad without affecting cultural sites. Survey results would directly affect the pad location and have an indirect affect of possible site disturbances.

4.6.3 Short-Term Use Versus Long-Term Productivity

A Phase I cultural survey was performed in the area of the suspect-vehicle holding pad. To ensure the cultural sites in the area are not impacted over the short-term during construction, results from the Phase I survey would be used to locate the suspect-vehicle holding pad and preserve the long-term existence of the site.

4.6.4 Alternative A Minimization Measures (Preferred Alternative)

The following measures are required to minimize any potential impact to cultural resources in the area to a level of insignificance:

a. This project has the potential to impact archaeological resources. Early in the planning process, the proponent/contractor shall coordinate project activities with the Base Historic Preservation Officer for areas to avoid, monitoring requirements, and project scheduling by contacting the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division (95 ABW/CEV), Conservation Branch J-TECH contractor, JT3/CH2M HILL.

b. If artifacts or bones are discovered during project activities, the project activities **shall cease immediately** and the project foreman shall immediately contact JT3/CH2M HILL.

c. The proponent/contractor shall ensure all field workers complete a cultural resources awareness education program before commencing fieldwork. Call JT3/CH2M HILL, **at least 3 days prior** to starting work to arrange for this awareness briefing. If additional personnel are brought onto the project after the initial briefing, then the proponent/contractor must contact 95 ABW/CEV for the new personnel to receive a cultural resources briefing **prior to** working on the project.

4.6.5 Alternative B Effects

Under this alternative, there would be no changes to the current condition of the Complex. The buildings have been surveyed and remain ineligible for historic registration.

4.6.6 Alternative B Minimization Measures

Renovations or upgrades would occur incrementally and minimizations would be similar to Alternative A. Additional inspection sites constructed outside the boundary would have minimization measures similar to Alternative A.

4.7 Geology and Soils

4.7.1 Alternative A Effects (Preferred Alternative)

4.7.1.1 Topography

Grading and excavation activity during the construction of access roads and building pads may expose the loose soils to wind erosion. Due to the high winds which are common to the high-desert region, exposed soils can contribute to wind erosion, PM10 emissions, and reductions in visibility due to particles in the air. A short-term, minor impact is expected to soil erosion.

4.7.1.2 Material Site Use

Fill material used to construct building pads and access roads (about 1 mile of new access road) is a nonrenewable natural resource that is available at Edwards AFB. An estimated 7,000 cubic yards of fill material would be required for the construction of building pads, holding and staging areas, and access roads. Much of this fill material would most likely be obtained from an approved on-base borrow site. However, approved off-base sources of fill material may be used to meet specific soil-type requirements and/or to augment and avoid depletion of finite, on-base resources. Location of on-base material borrow sites is shown in Figure 11.

4.7.1.3 Environmental Restoration Program Site

The ERP Site 221-A, a former underground storage tank site, received regulatory closure; but several abandoned soil-boring locations remain, capped with concrete. The location of these soil-boring sites may need to be identified prior to any excavation or construction in the area. The sites do not have any land use restrictions. The ERP Site 427, a former storage area, was also closed after investigation found no soil contamination in the area. Locations of the ERP sites are shown in Figure 12.

The ERP Site 133, a former groundwater restoration area, located at the AFRL has been remediated and has received regulatory closure. Remediation was performed as part of Operable Unit 4 of the ERP. Three storage igloos (Buildings 8455, 8456, and 8457) that would be renovated are located in the area. Location of the former ERP site is presented in Figure 13.

Monitoring wells are located in the vicinity of the six storage igloos at Main Base and the AFRL. Locating the monitoring wells prior to renovation activities is important to ensure the wellheads are not damaged.

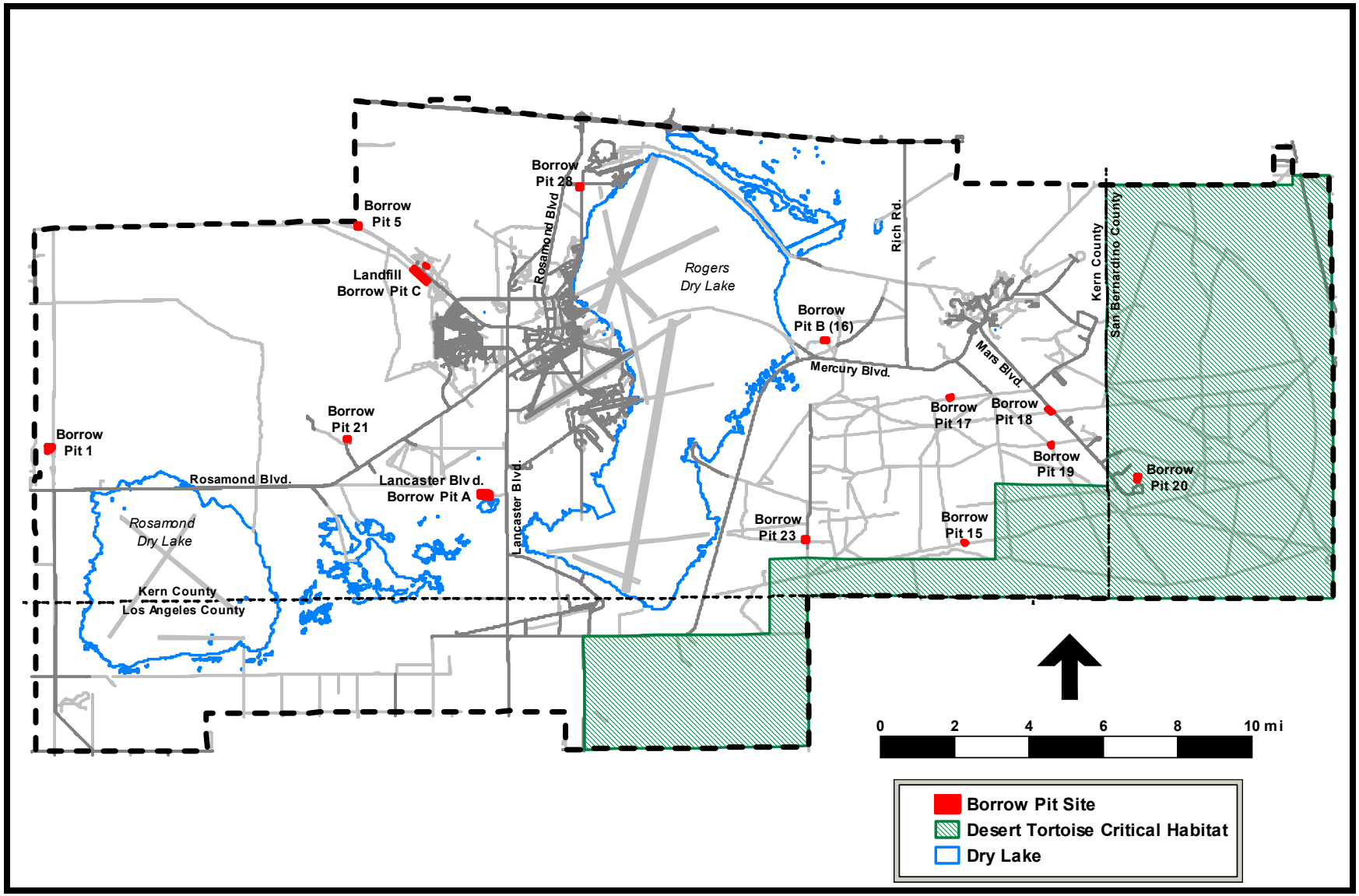

Figure 11. Locations of Borrow Sites for Fill Material and the Desert Tortoise Critical Habitat Area.

Figure 12. Location of Former ERP Site 427 Storage Area, and ERP Site 221-A, Former Underground Storage Tank Site .

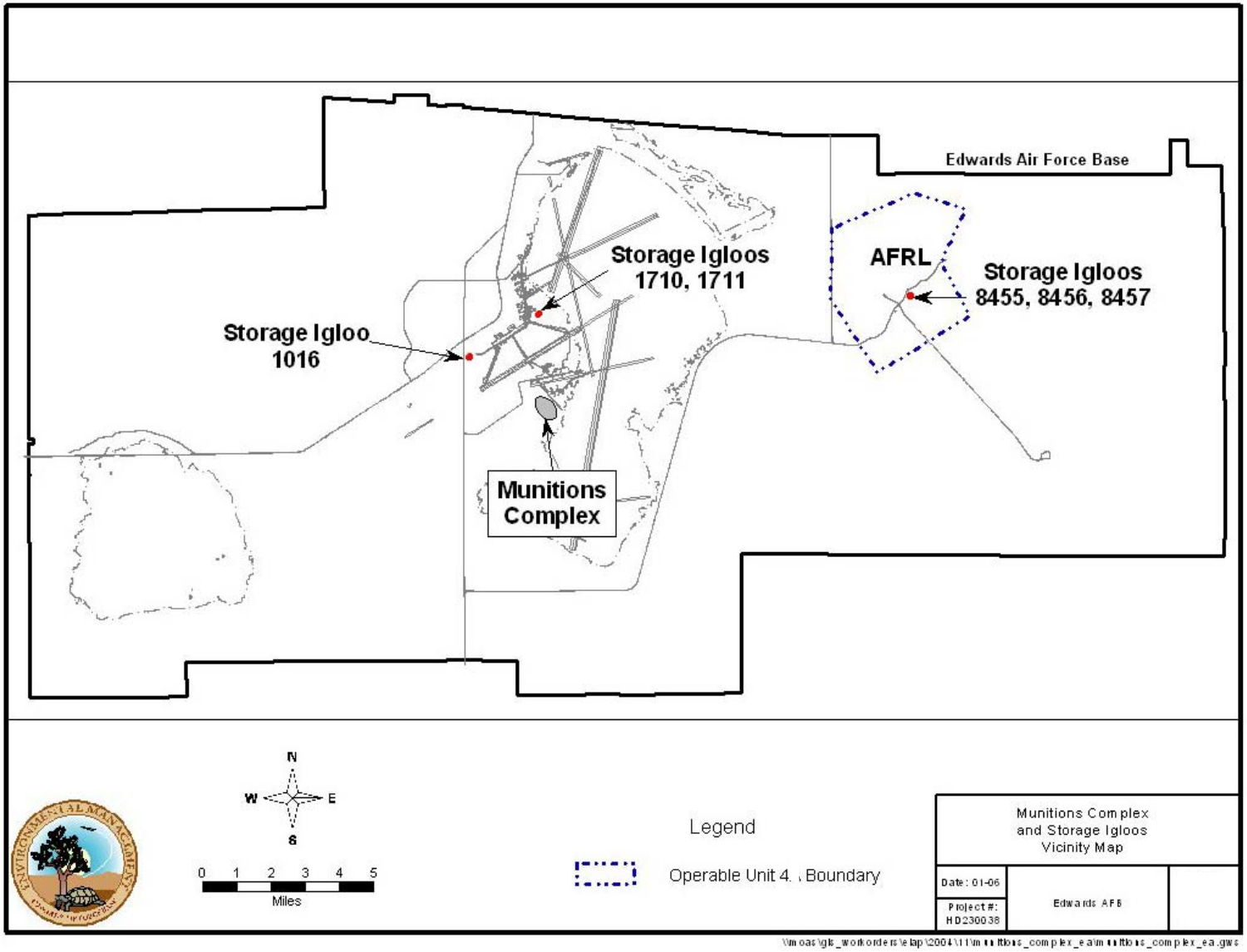

Figure 13. The Location of Operable Unit 4 in the AFRL Area.

4.7.1.4 Seismicity

The Mirage Valley fault extends into the area of the Complex. The fault is seismically dormant with no record of historic earthquake activity or ground movement along its trace. However, shaking from activity along the San Andreas and Garlock Faults to the southwest and north, respectively, appear to cause most of the seismic hazard. Maximum magnitudes of events along these faults are postulated to be greater than magnitude 8 on the Richter scale; this is sufficient to cause widespread, major damage. An earthquake of magnitude 6 or greater on the Palmdale segment of the San Andreas Fault could cause damage at Edwards AFB. The extent of the damage would have a direct relationship to the extent of the seismic activities. Local faults mapped within Edwards AFB are presented in Figure 14.

Damage could be expected to occur to holding pads and those structures that have not been retrofitted to current earthquake standards. The use of building codes with seismic construction requirements would reduce the potential impacts. No significant effects are anticipated.

4.7.2 Direct/Indirect Effects

A major seismic event in the area along the San Andreas Fault Zone would have a direct effect on structures in the area by reactivating some of the local faults. Constructing buildings according to current earthquake code and retrofitting structures would have an indirect effect on minimizing structural failure and ensuring worker safety.

4.7.3 Short-Term Use Versus Long-Term Productivity

Fill material used to construct access roads would be a short-term use of a nonrenewable natural resource, since over time, fill material would be differentially compacted with continued road use and additional fill would be required to bring the road to grade. To ensure the long-term productivity of this resource during construction projects throughout the base, fill material would be obtained from approved sites.

4.7.4 Alternative A Minimization Measures (Preferred Alternative)

The following minimization measures are required or recommended:

a. Construction/design standards shall follow: AFMAN 88-3, *Seismic Design Guidelines for Upgrading Existing Buildings*; the USACE Guide Specification 13080, *Seismic Protection for Mechanical and Electrical Equipment*; the Uniform Building Code (ICBO 1997), Chapters 23, 26, 27, and 29 with the applicable California Supplements; and Kern County building codes.

b. All earthworks activities should be planned and conducted to minimize the generation of dust. The area of disturbance necessary to accomplish the project should be minimized as a dust-control measure. Ground disturbance activities should be delayed during high-wind conditions (in excess of 29 mph). Vehicular traffic, grading, and digging should not be permitted in the project area during high-wind conditions.

c. Exposed surfaces should be periodically sprayed with water.

d. Asphalt should be recycled and used in conjunction with fill materials to reduce the requirement for fill materials.

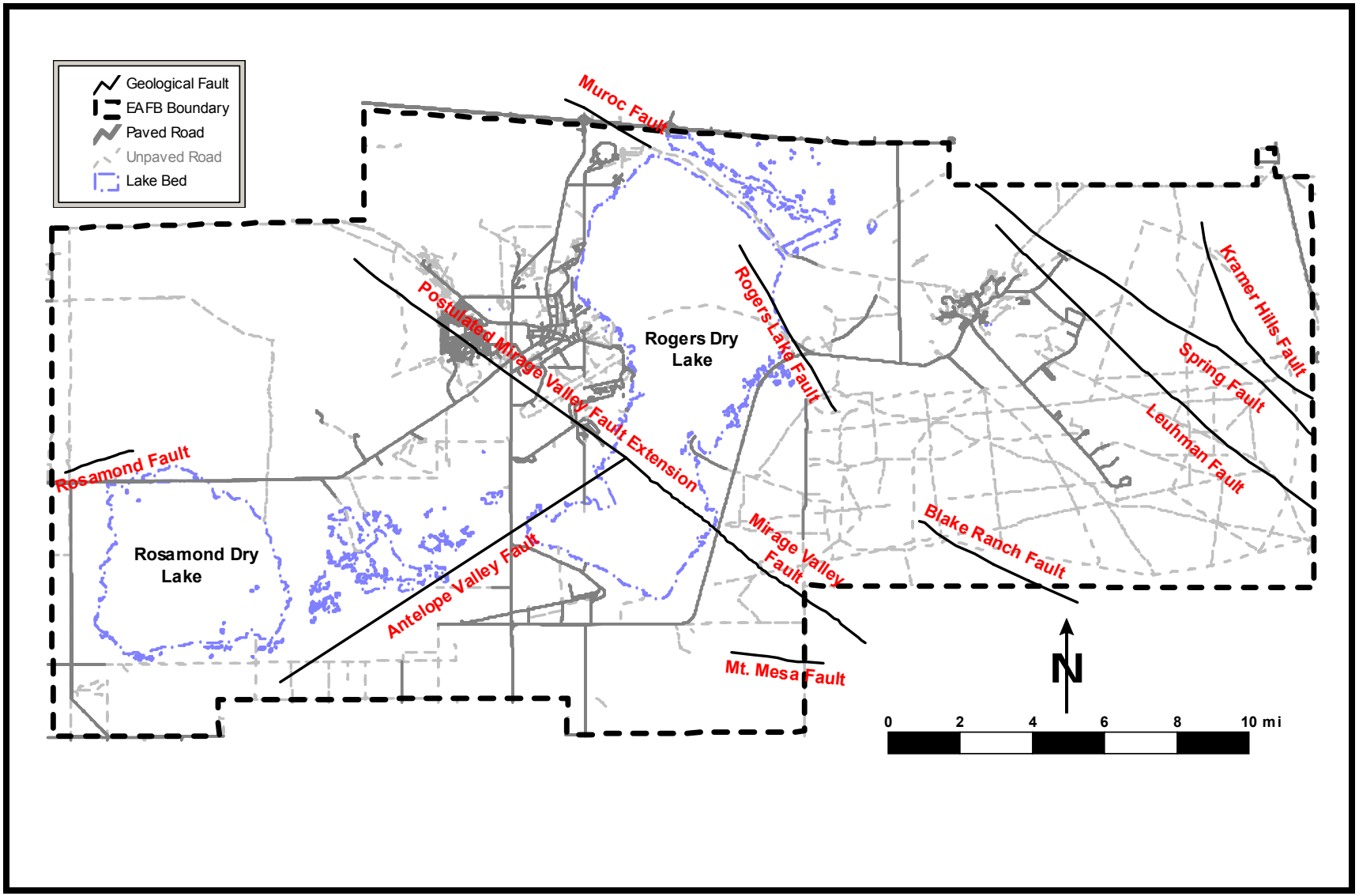

Figure 14. Location of Surface Faults on Edwards Air Force Base.

e. The use of fill material from an on-Base borrow pit should come from an approved borrow site as described in the Environmental Assessment for Borrow Sites at Edwards Air Force Base, California (USACE and AFFTC 1996). To determine appropriate borrow areas and applicable operating requirements to ensure compliance with natural and cultural resources, contact the Natural Resource coordinator.

f. Fill material from an off-base borrow source should be obtained from a state-licensed borrow area that has appropriate environmental clearance under the California Environmental Quality Act.

g. A desert tortoise presurvey is required at least 48 hours prior to activity commencing at an on-base borrow pit.

h. Prior to surface excavations or construction in the area of former ERP Site 221-A, locate soil boring wells that have been abandoned in the area. Contact the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division, Restoration Branch operations unit manager or Environmental Management for exact well locations.

i. Prior to renovation projects at storage igloos 1016, 1710, 1711, 8455, 8456, and 8457, locate monitoring wells in the area that may interfere with project activities. The wellheads are not to be damaged. Contact the 95th Air Base Wing, Civil Engineer Directorate, Environmental Management Division, Restoration Branch operations unit manager or Environmental Management for well locations.

j. The project may result in an increase in soil erosion. Some project areas may require reseeding, restabilization, or revegetation to minimize soil erosion. The contractor shall contact JT3/CH2M HILL for assistance in applying appropriate soil protection measures.

k. Project activities may require grading of the road shoulder. The shoulder shall not be widened any more than it presently is, nor shall habitat be disturbed or destroyed without receiving guidance from JT3/CH2M HILL.

l. This project would require an AFFTC IMT 5926, *Edwards AFB Civil Engineering Work Clearance Request* (digging permit). The proponent/contractor should coordinate the digging permit. Contact the 95th Air Base Wing, Civil Engineer Directorate, Infrastructure Controller for specific requirements.

m. Project activities involving welding, torching, cutting, and brazing require an AF Form 592, *USAF Welding, Cutting and Brazing Permit* (Hot Work Permit) from the Base Fire Department. For further information on hot work permits, contact the Base Fire Department.

4.7.5 Alternative B Effects

Under this alternative, there would be no changes to the current condition of the Complex. Minor maintenance repairs would be conducted incrementally as-needed. Building and structures would not be retrofitted to meet building earthquake codes, and fill material would not be required since no new access roads or building pads would be constructed.

4.7.6 Alternative B Minimization Measures

General maintenance to facilities would be performed incrementally and minimization measures would be similar to Alternative A, although to a lesser extent.

4.8 Socioeconomic

4.8.1 Alternative A Effects (Preferred Alternative)

4.8.2 Fiscal Growth

The modernization of facilities would provide a short-term positive, incremental impact to the economy of the Antelope Valley from increased revenue generation during the life of the project. The number of contracting personnel working the project is anticipated at between 20 to 100 and would be less than 1 percent of the base population. The increase in revenue is expected to occur from monies spent off base for construction materials and services. The total project is estimated at approximately $16 million.

4.8.3 Direct/Indirect Effects

Local contractors would be used during the construction and renovation projects. The income revenue generated during the life of the project would have a direct effect on the local economy. The project would also have an indirect effect on the use of certain construction materials and local services such as equipment suppliers.

4.8.4 Short-Term Use Versus Long-Term Productivity

The project is to be completed in 1 year and the revenue generated for the local economy would have a short-term use. The modern facilities that will be constructed would have a long-term productive use that would support additional munitions storage and test programs. The long-term use of the facility would benefit the local economy by bringing additional business to the base and the increased use of local services.

4.8.5 Alternative A Minimization Measures (Preferred Alternative)

No minimization measures are required or recommended.

4.8.6 Alternative B Effects

Under this alternative, construction and renovation projects would occur incrementally as needed; therefore, no significant affects would be anticipated.

4.8.7 Alternative B Minimization Measures

No minimization measures are required or recommended.

4.9 Infrastructure

Construction equipment and materials to and from the Complex would have the potential to effect existing traffic patterns at South Base. Minor short-term congestion would be expected when large, slow-moving equipment travel on the main access roads to the Complex. The control of traffic routes during the movement of construction equipment and trucks with fill material would minimize traffic movement to facilities at South Base.

4.9.1 Transportation System

Proposed project activities have the potential to impact the transportation system through traffic delays along Lancaster Boulevard and Jones Road, the access routes to the Complex. Traffic delays are anticipated due to slow-moving equipment using the existing roadways. These impacts would be expected to be short-term, lasting only as long as required to accomplish the work. Road closures or the rerouting of traffic would be temporary, lasting only as long as was necessary to ensure personnel safety while required work was completed. Early coordination with appropriate base organizations would ensure necessary safety precautions are taken, and would allow advance notice to affected commuters and personnel. No significant impacts are anticipated.

4.9.2 Utilities and Communication Systems

Proposed action activities have the potential to impact existing utility lines such as potable water, sewer, electrical, natural gas, or communication lines through accidental penetration, demand on existing or planned capacity of distribution system, or not meeting accepted standards of service. This could result in service interruptions, the repair and replacement of the severed utility line, or the inability to complete or deliver required activities or service.

4.9.3 Direct/Indirect Effects

The transportation of construction equipment to and from the Complex could have a direct impact to the normal traffic flow along Lancaster Boulevard and Jones Road, the main access routes to South Base and the Complex. Movement of equipment along these roads would have an indirect affect on traffic flow to regulated speed limits.

4.9.4 Short-Term Use Versus Long-Term Productivity

The use of storage facilities and storage areas may be disrupted during the installation of utility and communication systems. The short-term use of temporary storage shelters may be required until installation is completed. The installation of utility and communication systems is part of the modernization of the Complex that would ensure the long-term productivity of the Complex as a munitions storage facility.

4.9.5 Alternative A Minimization Measures (Preferred Alternative)

The following minimization measures are required if Alternative A is chosen.

a. All work that would affect closure, rerouting, or modification of roadways or streets shall be coordinated 15 days in advance with the Security Forces, Base Fire Department, and Public Affairs Office. A current copy of the California Department of Transportation *Manual of Traffic Controls for Construction and Maintenance Work Zones* (California Department of Transportation 1990) shall be used as guidance for traffic signs.

b. The proponent/contractor shall be responsible for obtaining an AFFTC IMF 5926, *Edwards AFB Civil Engineering Work Clearance Request* (digging permit). Contact the Base Civil Engineer Infrastructure Controller for coordination.

c. Some utilities require a representative to be present on site at all times when motorized construction equipment is being used closer than 20 feet from existing lines. The project sponsor shall coordinate with Civil Engineering Group in order to identify the location of affected lines.

d. If current as-built drawings indicating existing utility lines are not available, no mechanical digging can be performed within 4 feet of utilities or communication cables until they are physically exposed by hand digging.

4.9.6 Alternative B Effects

Projects affecting transportation and utility and communication systems would be performed incrementally as needed; therefore, the infrastructure would remain relatively unchanged.

4.9.7 Alternative B Minimization Measures

General maintenance to facilities would be performed incrementally and minimization measures would be similar to Alternative A.

4.10 Energy Conservation

4.10.1 Alternative A Impacts (Preferred Alternative)

Energy measures incorporated into the design of renovated and newly constructed buildings have the potential to reduce fuel costs compared to standard construction designs. These measures include the use of energy-saving HVAC, hot water units, and energy management control systems for lighting and security. These measures could result in substantial savings to the Air Force compared to utility systems currently in use. These measures would contribute to the achievement of energy-reduction goals and requirements established in PL 102-486, *Energy Policy Act of 1992*, and EO 13123, *Greening the Government through Efficient Energy Management.*

4.10.2 Direct/Indirect Effects

The installation of energy efficient systems would directly affect the working environment within the buildings. The working environment would be beneficially improved indirectly affecting worker productivity.

4.10.3 Short-Term Use Verses Long-Term Productivity

The installation of energy efficient systems in the construction of storage buildings and security lighting would control energy costs over the long-term productive use of the storage facilities. During construction and renovation projects, the use of energy resources would be of short-term duration and not affect the overall needs of the Complex.

4.10.4 Alternative A Minimization Measures (Preferred Alternatives)

No specific measures are required. It is recommended that the best available energy conservation measures be incorporated into the design of the storage buildings and renovation projects.

4.10.5 Alternative B Effects

Installation of energy efficient systems would be made incrementally on a case-by-case basis and associated with needed maintenance or repairs. Fuel efficient equipment would be installed.

4.10.6 Alternative B Minimization Measures

General maintenance to facilities would be performed incrementally and minimization measures would be similar to Alternative A.

4.11 NEPA Mandated Analysis

Additional environmental analyses are made to further determine potential impacts that may result if renovation and construction at the Complex is implemented. The analysis is based on determining the cumulative effects, unavoidable adverse effects, and the irreversible and irretrievable commitments of resources.

4.11.1 Cumulative Effects

The CEQ regulations implementing NEPA require agencies to consider the potential for cumulative impacts of proposed actions. "Cumulative impact" is defined in 40 CFR 1508.7 as "the impact on the environment, which results from the incremental impact of the action when added to other past, present (e.g., daily maintenance projects basewide; noise and air emissions from flights, and destruction of habitat), and reasonably foreseeable future actions (e.g., planned main runway overhaul and demolition of housing units). Cumulative impacts can result from individually minor, but collectively significant actions taking place over time."

Cumulative land use impacts are not expected. Although a wider variety of munitions systems could be accommodated and stored at the Complex with the improvements, it is expected that the missions using these systems would replace existing missions and the overall cumulative number of missions (and related impacts to air quality and noise) would not increase.

This project would generate PM10 and ozone precursor emissions. When added to the air emissions produced by on-going maintenance projects and other projects throughout the base, the effect would have a cumulative impact, but the impact would not be significant. Air emissions generated from construction equipment during project activities were calculated and the emissions were found to be in *de minimis* amounts. The air emissions from this project, therefore, are not expected to significantly affect the total emissions from the base.

The future paving and grading of roads, construction of the Base Operations Facility, demolition/replacement of older military family housing, the demolition of surplus family housing units, and construction along the flightline are projects that would be on-going and represent existing baseline conditions. Major projects to overhaul the main runway are scheduled for FY 2006 to FY 2009 completion. Impacts from these projects are anticipated to occur prior to implementing the modernization projects at the Munitions Complex.

Cumulative noise emissions are not expected to be significant. The noise produced by construction activities at the Complex would be dispersed and would not significantly affect the

surrounding base facilities due to the remote location of the Complex. The construction personnel would be required to wear protective equipment to minimize noise affects. Cumulative effects of construction noise from the Complex are not anticipated to be significant.

Cumulative impacts on solid and hazardous waste removal or disposal services are not expected to be significant. Solid waste (demolition debris) is addressed in contracts for construction work on base. These contracts require the contractor to reuse or recycle materials to reduce the amount of solid waste disposed of in landfills, either on base or in licensed facilities. The result would have an incremental positive impact to solid waste management and could provide an alternate source for building material. In addition, the recycling and reuse of waste could also reduce the necessity of excavating nonrenewable resources, such as sand and gravel deposits. Hazardous waste removal or disposal would be handled in accordance with existing AFIs and plans. Therefore, significant changes in waste disposal would not be anticipated.

Impacts to human health and safety from the inhalation of dust particulates, and potential viruses and spores, would be minimized through management practices. These measures are designed to reduce the cumulative impacts.

Impacts to biological and cultural resources would not contribute substantially to cumulative impacts in the surrounding areas, since the excavation and construction of building sites and the installation of access roads would, for the most part, occur in previously surveyed and disturbed areas. The new suspect-vehicle holding pad would be subject to disturbance of native vegetation and soils. However, the size of the pad (20,000 square feet) would be small enough so that the pad could be constructed in an area without disturbing cultural sites. Significant cumulative impacts to biological resources would not be anticipated.

Exposed soils during surface excavations could result in wind and water erosion. Soil erosion could have a cumulative impact in the generation of dust and the sediment load in sheet flow runoff during rainstorms. Control measures would be implemented to minimize soil erosion at construction sites. These measures would minimize the cumulative impact of excavating soils at construction sites.

Implementation of the proposed action would enhance the economics and have a positive minor cumulative impact on the local economy. Construction materials would be purchased from local vendors resulting in adding income to the local economy. Possible additions to the local labor force could also occur to complete equipment purchases. Personal incomes during the construction phase would rise, leading to a domino effect on state and local revenue.

4.11.2 Unavoidable Adverse Effects

Unavoidable adverse effects include those that are negative, occurring regardless of any identified minimization measures. Under the proposed actions, unavoidable effects are:

a. Air Quality. A short-term degradation in air quality may be experienced during construction activities;

b. Exposure Hazards. Exposure hazards would include hazardous noise, friable ACMs, heavy-metal paints, PCBs, and environmental hazards associates with working outdoors such as excessive noise levels, heat stress, venomous snakes, and air-borne spores;

c. Biological Resources. The demolition of buildings may disturb nesting birds or bat roosts;

d. Transportation System. Traffic delays would be anticipated due to slow-moving equipment using the existing roadways such as along Lancaster Boulevard and Jones Road; and

e. Utilities and Communication Systems. Service interruptions could result during accidental penetration of utility and communication lines during installation projects.

Under the no action alternative, the following adverse effects could occur:

a. Facilities would not be improved in a timely manner to meet current construction and earthquake standards for storage of materials, thus safety hazards could be present and materials could deteriorate due to exposure to the weather.

b. Road and drainage improvements might not occur in a timely manner, thus flooding and wind and water soil erosion could occur without mitigation being implemented.

c. Without improvements to facilities, some new systems that could potentially come to the base may not be able to be accommodated, thus impacting the base mission.

4.11.3 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources is the consumption of or adverse effect upon resources that cannot be reversed or persist for a long period of time. Irretrievable commitments of resources are those that are consumed, or affect resources for a short period of time that would be restored over time. Irreversible and irretrievable commitment of resources would result from the implementation of any of the proposed project alternatives. Implementation of the project, or its alternatives would require the commitment of labor, capital, energy, construction materials, and land resources. Labor, capital, and the use of fossil fuels would be a short-term commitment during the construction and renovation phase, and an indirect impact during the service of the project.

The long-term commitments of resources would result directly from the maintenance of storage facilities, access roads, the communication network, and utility systems throughout the Complex and at separate locations at Main Base and the AFRL where storage igloos will be renovated. The duration of the commitment of land resources would depend upon the continued use of the Complex as a storage facility for munitions and the six storage igloos for material storage. Barring unforeseen changes in Air Force planning, the commitment of land resources would continue into the future.

Under the No Action Alternative, the commitment of resources would be limited to labor, capital, fossil fuels, and material used for continued general maintenance to facilities on an as-needed basis.

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APPENDICES

April 2006

APPENDIX A
MEMORANDUM: *NO ADVERSE EFFECT TO DESERT TORTOISE, UPGRADE COMPLEX (CONTROL NUMBER 01-0796A)*

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFMC)
EDWARDS AIR FORCE BASE, CALIFORNIA

3 March 03

MEMORANDUM FOR RECORD

FROM: AFFTC/EMXC

SUBJECT: No Adverse Effect to Desert Tortoise (*Gopherus agassizii*), Upgrade Munitions Complex (Control Number 01-0796a).

1. The 95th Air Base Wing, Civil Engineer Directorate, Transportation Management is proposing to upgrade the existing munitions Complex to meet the requirements of current and projected munitions test projects. The project entails demolishing and replacing four munitions storage structures with new, upgraded facilities, constructing three new storage igloos and one drive-through igloo, constructing two new concrete munitions holding areas and access roads to connect proposed storage structures with munitions area, and reconfiguring existing perimeter fencing to enclose the entire munitions storage Complex. The munitions Complex is located to the south of the intersection of Missile and Ordnance Roads (Rd.) at South Base. From the intersection of Missile and Ordnance Rd., the munitions Complex divides into two separate clusters with one area continuing south and the other east and southeast. Approximately 9 acres of permanent habitat disturbance may occur as a result of this project.

2. This action is not covered by an existing U.S. Fish and Wildlife Service (USFWS) Biological Opinion. Therefore, take (e.g., death, injury, or harassment) of desert tortoises or destruction of their burrows may not occur.

Figure A-1. Proposed Expansion Area on the West Side of the Munitions Complex. Southern Aspect.

3. Desert tortoise relative density and corrected sign are not available for this area, however, desert tortoise relative density and corrected sign approximately 1.9 miles (mi) (3 kilometers [km]) to the west are 7 and 0, respectively (*Relative Density Estimates of Desert Tortoise on Edwards Air Force Base, California,* AFFTC, August 1996).

4. A preliminary scoping survey of the project area was conducted on 26 February 2003 to determine the presence/absence of federally listed species. The survey was accomplished following *Field survey protocol for any Federal and non-Federal action that may occur within the range of the desert tortoise* (USFWS Jan 1992). The proposed site is located in a previously disturbed arid phase saltbush (*Atriplex sp.*) scrub community. Additional plant species observed include Joshua tree (*Yucca brevifolia*), red-stem filaree (*Erodium cicutarium*), rabbit-brush (*Chrysothamnus nauseosus*), and rough-stemmed Mormon tea (*Ephedra nevadensis*). No desert tortoise or sign were observed. Based on the amount of habitat disturbance in the area and the surrounding desert tortoise densities, there exists a very low potential for desert tortoises to move through the project area.

5. The following measures should be applied to ensure no take of desert tortoise occurs. If these measures are followed, this action is determined by AFFTC/EM to have "no effect" on the desert tortoise.

a. All project personnel working in the area should attend desert tortoise awareness training prior to commencing work or visiting the work site. Training would be scheduled by contacting the Natural Resources Contractor at (661) 275-2434 or 277-2017 at least 3 days before work begins to schedule a 0.5-hour desert tortoise awareness briefing.

b. The project area should be clearly marked at the outer boundaries to define the work area. All workers should be instructed that their activities must be confined to locations within the fenced, flagged or marked areas.

c. Open excavations outside of the existing perimeter fence created during activities should be secured at the end of each day by backfilling, placing a cover over the excavation, installing temporary desert tortoise EMXC approved fence, and/or by creating a 3:1 slope at the ends of the ditch.

d. Excavations outside of the existing perimeter fence left unsecured during the workday should be checked three times per day (morning, mid-day, and late afternoon) for trapped animals. If any animals are found in an excavation, notify AFFTC/EM at (661) 277-1401 immediately.

e. Desert tortoises and their burrows should be avoided. Desert tortoises cannot be moved from the project site or access routes. If a desert tortoise is discovered within the project site, work that would likely result in a take (e.g., death, injury, or harassment) of desert tortoise should immediately cease. Desert tortoises interfering with the project must be allowed to continue on their way with no encouragement or discouragement from project personnel. Any sightings of desert tortoise in the area must be reported immediately to the monitoring biologist or AFFTC/EM at (661) 277-1401.

f. Project personnel should use existing access roads and staging areas, and follow flagged access routes that have been surveyed or cleared of desert tortoises.

g. All project personnel outside of the existing perimeter fence should inspect under all vehicles and equipment for desert tortoises prior to operation. If a tortoise is present, the vehicle should not be moved. Notify AFFTC/EM at (661) 277-1401 immediately.

h. All project personnel should immediately report sightings of desert tortoise or desert tortoise burrows found within the project area. Notify AFFTC/EM at (661) 277-1401.

i. Speed limits on dirt roads within the project area should be less than 20 m.p.h.

j. All trash would be contained within raven-proof (covered) containers and removed from the project site.

k. No pets or firearms would be allowed on the project site.

6. If desert tortoises are found within the project site prior to or during construction and cannot be avoided, this "no effect" determination would be null and void, and consultation with USFWS may need to be accomplished. If you have any questions or require any further information, please contact the Natural Resources Contractor at (661) 275-2434.

CHRISTOPHER J. RUSH, Chief
Conservation Branch

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APPENDIX B
MEMORANDUM: *CLEAN AIR ACT CONFORMITY STATEMENT FOR CONTROL NO. 01-0796A, ENVIRONMENTAL ASSESSMENT OF THE RENOVATION AND UPGRADES TO THE MUNITIONS COMPLEX, EDWARDS AIR FORCE BASE, CALIFORNIA*

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 95TH AIR BASE WING (AFMC)
EDWARDS AIR FORCE BASE, CALIFORNIA

MEMORANDUM FOR 95 ABW/CETEM

FROM: 95 ABW/CEVX

SUBJECT: Clean Air Act Conformity Statement for Control No. 01-0796a, *Environmental Assessment of the Renovation and Upgrades to the Munitions Complex, Edwards Air Force Base, California*

1. The following finding is made on the need for a conformity statement under the *Clean Air Act* with respect to the Proposed Action.

a. The Proposed Action is located in the Kern County Air Pollution Control District (KCAPCD).

b. Under regulations promulgated pursuant to the *Clean Air Act*, Title 42 United States Code (U.S.C.) Part 7506 (c), the portion of the project area regulated by the KCAPCD is located in a *Maintenance* nonattainment area for ozone over a 1-hour interval. The *de minimis* level set for this area for emissions of ozone precursor pollutants (volatile organic compounds [VOC] or oxides of nitrogen [NO_x]), IAW Title 40 Code of Federal Regulation (CFR) Part 51.853/93.153 (b)(1) and KCAPCD Rule 210.7, is up to 100 tons per pollutant (VOC or NO_x) per year per action.

c. For the KCAPCD, the 1990 regional planning baseline emission inventories for ozone precursor pollutants are included in the 1994 California Ozone State Implementation Plan. The baseline planning values for KCAPCD are 14,965 tons per year (tpy), 6,205 tpy of NO_x and VOC respectively. In accordance with 40 CFR 93.153, the 10 percent threshold values for determination of regional significance for KCAPCD are 1,496.5 and 620.5 tpy of NO_x and VOC, respectively.

d. It has been determined that the relevant air emissions associated with the renovation and upgrades to the Munitions Complex would be *de minimis*. The VOCs are estimated at 0.06 tons per year (T/yr) and the NO_x are estimated at 0.27 T/yr. The direct and indirect emissions, when totaled, are less than the *de minimis* amounts specified in Title 40 CFR 51.853/93.153 (b)(1), and are less than the 10 percent threshold values for determination of regional significance; therefore, a conformity determination is not required.

2. Should you have any questions with respect to this finding, please direct them to Kelly Lark at (661) 277-9156.

ROBERT M. SHIRLEY, Chief
Environmental Quality Branch

				EMISSION FACTORS				
Fuel	Equipment	Size	Hours	VOC	NOx	CO	SOx	PM
Diesel	Backhoe			0.19	1.27	3.59	0.14	0.11
Diesel	Dump Truck			0.01	0.05	0.05	0.00	0.00
Diesel	Air Compressor			0.15	1.69	0.68	0.14	0.14
Gas	Concrete cutter			15.20	4.97	250.00	0.39	0.44
Gas	Compactor			15.20	4.97	250.00	0.39	0.44
Gas	Water Pump			15.20	4.97	250.00	0.39	0.44

Equipment Data			TOTAL EMISSIONS				
Equipment	Size	Hours	VOC	NOx	CO	SOx	PM
Backhoe	50	40	0.00	0.03	0.07	0.00	0.00
Dump Truck	350	6400	0.04	0.14	0.17	0.00	0.00
Air Compressor	60		0.00	0.00	0.00	0.00	0.00
Concrete cutter	18		0.00	0.00	0.00	0.00	0.00
Compactor	5		0.00	0.00	0.00	0.00	0.00
Water Pump	5		0.00	0.00	0.00	0.00	0.00
			0.05	**0.17**	**0.24**	**0.00**	**0.00**

These emission factors are established in the AP-42

TOTAL EMISSIONS				
VOC	NOx	CO	SOx	PM
0.06	**0.27**	**0.27**	**0.01**	**0.01**

# of Units	# Days/Trips	Equipment Description	Operation Hours/Miles	Equipment Category	Total Hours	Total Miles
2	5	Loader	**8**	Loader		**80**
2	5	Track Dozer	**8**	Track Dozer		**80**
1	5	Backhoe	**8**	Backhoe		**40**
1	5	Ditch Witch (< 50 BHP)	**8**	LDDT		**40**
1	5	High Lift	**8**	LDGT		**40**
1	5	Scraper/Grader	**8**	Scraper/Grader		**40**
1	5	Sprayer	**8**	HDDT		**40**
8	5	Dump Truck	**160**	Dump Truck	**6400**	

Emission Factors (lb/mi)					
	CO	NOx	VOC	SOx	PM
LDGV	0.237	0.007	0.021	0.0004	0.0003
LDGT	0.068	0.003	0.007	0.0001	0.0002
LDDT	0.008	0.004	0.002	0.001	0.001
HDGT	0.066	0.01	0.006	0.0004	0.0003
HDDT	0.053	0.045	0.014	0.007	0.006

Light Duty Gasoline Engines for Construction Use (based on hp/Hr)				
CO	NOx	VOC	SOx	PM
250	4.97	15.2	0.39	0.44

AP-42 Emission Factors for Small General Utility Engines (g/hp hr)

Engine Hours =		
Number of Units =		
Horsepower Rating =		

Emission Factors (lb/hr)					
Equipment Type	CO	NOx	VOC	SOx	PM
Track Tractor	0.346	1.26	0.121	0.137	0.112
Wheeled Tractor	3.59	1.269	0.188	0.09	0.136
Track Loaders	0.201	0.827	0.098	0.076	0.058
Wheeled Loaders	0.572	1.89	0.25	0.182	0.172
Motor Graders	0.151	0.713	0.04	0.086	0.061
Off-Road Trucks	1.794	4.166	0.192	0.454	0.256
Misc. Wheeled	0.675	1.691	0.152	0.143	0.139
Gas Forklifts	12.6	0.326	0.421	0.017	0.021
Diesel Forklifts	0.434	2.01	0.16	0.133	0.143
Shipping Trucks	0.046	0.026	0.051	0	0.01215
Track Dozers	0.346	1.26	0.121	0.137	0.112
Graders	0.151	0.713	0.04	0.086	0.061
Excavator	0.675	1.691	0.152	0.143	0.139
Haul Trucks	1.794	4.166	0.192	0.454	0.256
Scraper	1.257	3.84	0.282	0.463	0.406

Government Heavy Duty Equipment (TPY)					
	CO	NOx	VOC	SOx	PM
Track Tractor	0.000	0.000	0.000	0.000	0.000
Wheeled Tractor	0.000	0.000	0.000	0.000	0.000
Track Loaders	0.008	0.033	0.004	0.003	0.002
Wheeled Loaders	0.000	0.000	0.000	0.000	0.000
Motor Graders	0.000	0.000	0.000	0.000	0.000
Off-Road Trucks	0.000	0.000	0.000	0.000	0.000
Misc. Wheeled	0.000	0.000	0.000	0.000	0.000
Gas Forklifts	0.000	0.000	0.000	0.000	0.000
Diesel Forklifts	0.000	0.000	0.000	0.000	0.000
Shipping Trucks	0.000	0.000	0.000	0.000	0.000
Track Dozers	0.014	0.050	0.005	0.005	0.004
Graders	0.003	0.014	0.001	0.002	0.001
Excavator	0.000	0.000	0.000	0.000	0.000
Haul Trucks	0.000	0.000	0.000	0.000	0.000
Scraper	0.000	0.000	0.000	0.000	0.000
HDGT	0.000	0.000	0.000	0.000	0.000
HDDT	0.001	0.001	0.000	0.000	0.000
LDGT	0.001	0.000	0.000	0.000	0.000
LDGV	0.000	0.000	0.000	0.000	0.000
LDDT	0.000	0.000	0.000	0.000	0.000
Ligh Duty Constr	0.000	0.000	0.000	0.000	0.000
TOTALS	**0.027**	**0.099**	**0.010**	**0.010**	**0.008**

Enter Data Here	→	↓	↓
	Motor Vehicles	Miles	Hours
1	Track Tractor		
2	Wheeled Tractor		
3	Track Loaders		80
4	Wheeled Loaders		
5	Motor Graders		
6	Off-Road Trucks		
7	Misc. Wheeled		
8	Gas Forklifts		
9	Diesel Forklifts		
10	Shipping Trucks		
11	Track Dozers		80
12	Graders		40
13	Excavator		
14	Haul Trucks		
15	Scraper		
16	HDGT		
17	HDDT		40
18	LDGT		40
19	LDGV		
20	LDDT		40

APPENDIX C
PHOTOGRAPHS OF BUILDINGS AND EQUIPMENT AT THE COMPLEX

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Photo 1. Building 601. Former warehouse, shop, and office, scheduled to be demolished. The building was constructed in 1943 and is 1,225 square feet.

Photo 2. Building 602. Former administrative office scheduled to be demolished. The building was constructed in 1955 and is 800 square feet.

Photo 3. Building 640. Storage facility scheduled to be demolished. The building was constructed in 1959 and is 323 square feet.

Photo 4. Building 642. Storage facility scheduled to be demolished. The building was constructed in 1944 and is 1,350 square feet.

Photo 5. Building 643. Storage facility scheduled to be demolished. The building was constructed in 1944 and is 1,350 square feet.

Photo 6. Building 644. Storage facility scheduled to be demolished. The building was constructed in 1944 and is 1,350 square feet.

Photo 7. Building 650. Storage facility scheduled to be demolished. The building was constructed in 1943 and is 572 square feet. Similar constructed buildings will be demolished and include Buildings 649, 651, 652, and 653.