DAVIS-MONTHAN AIR FORCE BASE
TUCSON, ARIZONA

FINAL

ENVIRONMENTAL ASSESSMENT FOR WING INFRASTRUCTURE DEVELOPMENT OUTLOOK (WINDO)

United States Air Force

355TH WING

June 2005

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
305 RQS	305th Rescue Squadron
355 WG	355th Wing
AAFES	Army and Air Force Exchange Service
AAM	Annual Arithmetic Mean
AAQS	Ambient Air Quality Standards
ACC	Air Combat Command
ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing material
ADEQ	Arizona Department of Environmental Quality
AFB	Air Force Base
AFI	Air Force Instruction
Air Force	United States Air Force
AIRFA	American Indian Religious Freedom Act
AMARC	Aerospace Maintenance and Regeneration Center
ANG	Air National Guard
ANSI	American National Standards Institute
AQCR	Air Quality Control Region
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
AZGF	Arizona Game and Fish Department
BMP	Best Management Practice
CAA	Clean Air Act
CATM	Combat Arms Training Maintenance
CEC	Engineering Flight
CECB	MILCON Programming Element
CECC	Contract Execution Element
CEFP	Fire Inspection Section
CEOE	Maintenance Engineering Element
CEOIE	Electric Element
CEOIL	Liquid Fuels Shop
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERR	Real Property
CES	Civil Engineering Squadron
CEV	Environmental Quality Flight
CEVA	Environmental Analysis Element
CEVC	Environmental Compliance Element
CEVQ	Environmental Quality Element
CEVR	Environmental Restoration Element
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
CSAR	Combat Search and Rescue
dB	decibel
dBA	A-weighted decibel
DNL	day-night average sound level
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EOD	explosive ordinance disposal
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAMCamp	Family Camping
FEMA	Federal Emergency Management Agency
FICUN	Federal Interagency Committee on Urban Noise
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GPM	gallons per minute
HAP	hazardous air pollutant
HAWC	Health and Wellness Center
I-10	Interstate 10
I-19	Interstate 19
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
kV	kilovolt
MCF	million cubic feet
MGD	million gallons per day
MSA	Metropolitan Statistical Area
MSGP	multi-sector general permit
MSL	mean sea level
MXS	Maintenance Squadron
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	Notice of Intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
OSS	Operations Support Squadron
Pb	lead
PCB	polychlorinated biphenyl
PCI	per capita income
$PM_{2.5}$	respirable particulate matter less than or equal to 2.5 micrometers in diameter
PM_{10}	respirable particulate matter less than or equal to 10 micrometers in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
RV	recreational vehicle
SAP	satellite accumulation point
SF	square feet
SFS	Security Forces Supply
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SWDA	Solid Waste Disposal Act
SWPPP	Storm Water Pollution Prevention Plan

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FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION

Environmental Assessment (EA) for Wing Infrastructure Development Outlook (WINDO) for Davis-Monthan Air Force Base (AFB), Tucson, Arizona.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The United States Air Force (Air Force) will implement the WINDO for Davis-Monthan AFB, in Tucson, Arizona. The WINDO is a plan designed to identify construction and demolition projects proposed for improving the physical infrastructure and functionality of Davis-Monthan AFB. The 355th Wing (355 WG) will implement construction projects associated with their WINDO that would include construction and/or modification of 23 new facilities, development of new pavements, and demolition of 28 facilities that are either deteriorated, obsolete, and/or in the footprint of proposed new construction.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Earth Resources. Under the proposal, 21.9 acres of surface disturbance will occur over the course of the three-year construction program associated with the WINDO. The grading of existing soil and placement of structural fill for new facilities will not substantially alter existing soil conditions at the Base, because to a large extent, the proposed activities are planned for along the flightline where surface disturbance has previously occurred. Best Management Practices (BMPs) will be used to limit soil movement, stabilize runoff, and control sedimentation. Impacts to earth resources will not be significant.

Water Resources. With implementation of the WINDO, there will be a net increase of 14.7 acres of impervious surface at Davis-Monthan AFB. The Base will update their Storm Water Pollution Prevention Plan (SWPPP) to include these projects and has obtained or will obtain, as appropriate, coverage under Construction General Permit AZG2003-001 for storm water. Adherence to the requirements of the permit will include implementation of BMPs to minimize the potential for exposed soils or other contaminants from construction activities to reach nearby surface waters. Impacts to water resources will not be significant.

Biological Resources. In general, the proposed projects are at sites that are highly altered by man. There are no sensitive plant species known to occur on Base, and animal species that would be found in specific project areas are well-adapted to the human environment. The Base will coordinate with appropriate state and federal agencies regarding western burrowing owls, cave myotis, peregrine falcon, lesser long-noised bat, and Pima pineapple cactus, should there be a need. Additionally, the Base will comply with the Arizona Native Plant Law regarding all sensitive native plants. Prior to construction and/or demolition activities, a qualified field biologist will survey the sites to determine whether sensitive species are present. Impacts to biological resources will not be significant.

Air Quality. In general, combustive and fugitive dust emissions from proposed WINDO construction activities will produce localized, elevated air pollutant concentrations, that will occur for a short duration and which will not result in any long-term impacts on the air quality of Pima County (Air Quality Control Region [AQCR] 015). Prior to construction and/or demolition activities, an activity permit will be obtained from Pima County, Department of Environmental Quality. Impacts to air quality in the County will not be significant.

Noise. Construction noise emanating off-site as a result of the proposed projects will probably be noticeable in the immediate site vicinity, but is not be expected to create adverse impacts. The acoustic environment on and near Davis-Monthan AFB is expected to remain relatively unchanged from existing conditions. Impacts from noise will not be significant.

Land Use/Visual Resources. The proposed construction projects associated with the WINDO are expected to enhance Base planning and compatibility of functions on Base. Some existing incompatibilities will be corrected. Land use off-base is not expected to be impacted. Visual resources are generally not expected to be impacted. Impacts to land use and visual resources will not be significant.

Socioeconomics/Environmental Justice. There are no long-term changes in Base population and/or employment as a result of implementation of the WINDO. Additionally, these projects are not expected to create adverse environmental or health effects, and therefore no disproportionately high or adverse impacts to minority, low-income, or youth populations are expected. Impacts to socioeconomics and environmental justice will not be significant.

Cultural Resources. Activities associated with the WINDO are not expected to impact archaeological or traditional resources. All facility demolitions and modifications have been coordinated with the Base Cultural Resource Manager and the State Historic Preservation Office (SHPO), which have been determined to be ineligible for inclusion in the National Register of Historic Places (NRHP). Impacts to traditional cultural resources are not expected. Impacts to cultural resources will not be significant.

Safety. Implementation of the proposed projects do involve ground activities that may expose workers performing the required site preparation, grading, and building construction to some risk. Strict adherence to all applicable occupational safety requirements will minimize the relatively low risk associated with these construction activities. All projects have been sited outside any quantity-distance (QD) arcs, as appropriate. Additionally, the proposed projects will include measures to enhance and correct anti-terrorism/force protection (AT/FP) shortfalls as part of the facility designs. Impacts to safety will not be significant.

Hazardous Materials and Waste Management. The proposed projects associated with the WINDO will generate construction and demolition waste that will be recycled and/or taken to the local landfill, as appropriate. There are no capacity issues with the existing landfills. Hazardous materials and wastes will be handled, stored, and disposed of in accordance with applicable regulations. Any asbestos containing material (ACM), lead-based paint, or contaminated soils associated with facility demolitions, will be removed and disposed of per applicable regulations. Any contaminated soil encountered during construction activities would be tested

and disposed of in accordance with appropriate Arizona Department of Environmental Quality (ADEQ) regulations. A waiver for construction near any Environmental Restoration Program (ERP) sites will be acquired prior to construction activities. Impacts to hazardous materials and waste management will not be significant.

Infrastructure. The proposed projects associated with the WINDO will result in some temporary interruption of utility services and minor hindrance of transportation and circulation during construction activities. These impacts will be temporary, occurring only for the duration of the construction period. In general, infrastructure at Davis-Monthan AFB will improve under these actions, as there will be some upgrades to existing and extensions to non-existent utilities. Impacts to infrastructure will not be significant.

No-Action Alternative: Under the No Action Alternative, the WINDO would not be implemented. None of its associated construction and demolition would occur. Conditions would remain unchanged from the current baseline situation.

CONCLUSION

Based on the findings of this EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR 989, et seq., *Environmental Impact Analysis Process* (formerly known as Air Force Instruction [AFI] 32-7061), and after careful review of the potential impacts, I conclude implementation of the Proposed Action would not result in significant impacts to the quality of the human or the natural environment. Therefore, a Finding of No Significant Impact is warranted, and an Environmental Impact Statement is not required for this action.

MICHAEL W. SPENCER
Colonel, USAF
Commander, 355 WG

31 May 05
Date

DAVIS-MONTHAN AIR FORCE BASE
TUCSON, ARIZONA

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June 2005

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force) proposes to implement the Wing Infrastructure and Development Outlook (WINDO) plan for Davis-Monthan Air Force Base (AFB), in Tucson, Arizona. The WINDO is a plan designed to identify construction and demolition projects proposed for improving the physical infrastructure and functionality of Davis-Monthan AFB, and is Air Combat Command's (ACC) initiative to improve the facility planning process. The intent of the WINDO is to capture the Wing Commander's vision of what infrastructure improvements are necessary over the next three years to support the mission of the 355th Wing (355 WG) and their tenants.

The 355 WG proposes to implement construction and demolition projects associated with their WINDO and Base Master Plan (currently under revision) that would include construction of several new facilities, modifications to some existing facilities, development of new pavements, and demolition of facilities that are either deteriorated, obsolete, and/or in the footprint of proposed new construction. The WINDO presents these upgrades and improvements at Davis-Monthan AFB required under the Wing Commander's vision of facilities necessary for the Davis-Monthan AFB mission. The goal of the WINDO is to document the projects needed over the next three years, provide an environmental analysis of these projects, and be prepared to implement the appropriate facility improvements as funds become available. The WINDO benefits Davis-Monthan AFB through:

- Coordinating land use planning and infrastructure projects;
- Expediting project execution through early planning;
- Streamlining the National Environmental Policy Act (NEPA) review process for defined infrastructure projects;
- Providing cost savings through a comprehensive NEPA analysis;
- Maintaining a current baseline for future analysis;
- Supporting tiering of environmental analysis and application of categorical exclusions;
- Meeting legal requirements and resource protection responsibilities;
- Encouraging agency coordination on a suite of projects rather than individually.

Davis-Monthan AFB will undergo changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances. This WINDO Environmental Assessment (EA) can be used as a baseline for future environmental analysis of such mission and training requirements.

In accordance with NEPA of 1969 (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR Part 989, et seq., Environmental Impact Analysis Process (formerly known as Air Force Instruction [AFI] 32-

7061), the 355 WG has prepared this EA that considers the potential consequences to the human and natural environment that may result from implementation of these projects or their alternatives.

1.2 BACKGROUND

Davis-Monthan AFB borders the southeastern edge of the City of Tucson in Pima County, Arizona, and falls within the city limits of Tucson (Figure 1.2-1).

The Base is approximately 10,700 acres of federally owned land, of which 5,700 acres are developed or semi-improved, 4,700 acres are undeveloped, and 300 acres are under easement to and maintained by Pima County (Figure 1.2-2).

The 355 WG is the host unit providing medical, logistical, and operational support to all Davis-Monthan units. The Wing's missions are to train A-10 and OA-10 pilots and to provide A-10 and OA-10 close support and forward air control to ground forces worldwide.

Nearly every major air command, the Air Force Reserve, and the Air National Guard (ANG) are represented at Davis-Monthan AFB. Major associate units at Davis-Monthan AFB include Headquarters 12th Air Force, the 305th Rescue Squadron (305 RQS) of the Air Force Reserve Command, the Aerospace Maintenance and Regeneration Center (AMARC), and United States (U.S.) Customs. The 563rd Rescue Group directs flying operations for the Air Force's only active duty rescue wing dedicated to Combat Search and Rescue (CSAR). The group is responsible for training, readiness, and maintenance of one HC-130 squadron and two HH-60 squadrons, two pararescue squadrons, two maintenance squadrons, and an operations support squadron. Twelfth Air Force is charged with commanding, administering, and supervising tactical air forces west of the Mississippi River. As one of ACC's numbered air forces, 12th Air Force operates combat-ready forces and equipment for air superiority. Their mission is to gain and maintain control of airspace, disrupt enemy lines of communication and logistics, and working with U.S. and allied forces to defeat the enemy at the point of contact.

AMARC is responsible for more than 5,000 aircraft stored at Davis-Monthan AFB. An Air Force Materiel Command unit, AMARC is responsible for the storage of excess Department of Defense (DoD) and Coast Guard aircraft. The center in-processes approximately 400 aircraft for storage and out-processes approximately the same number for return to the active service, either as remotely controlled drones or sold to allied forces annually.

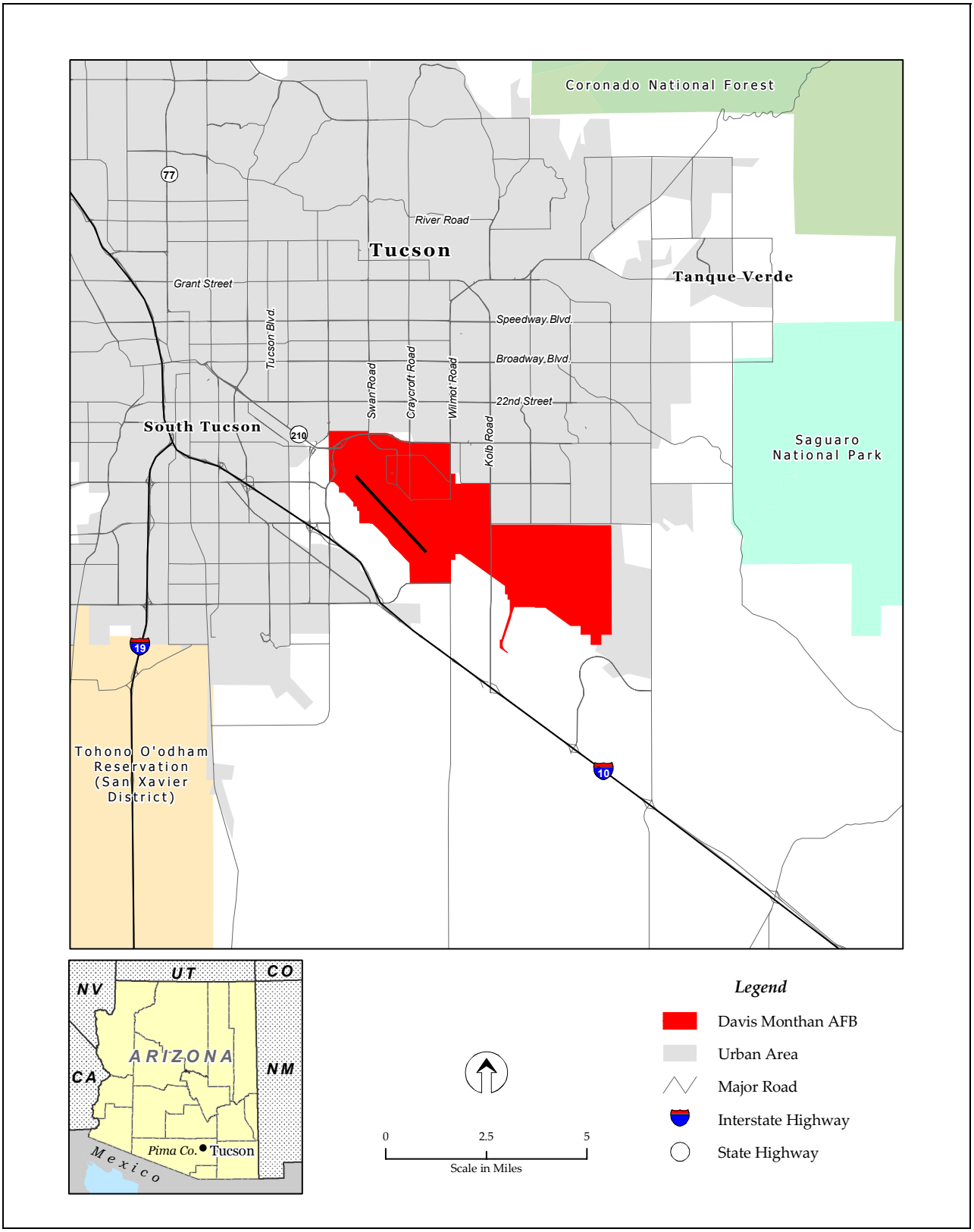


Figure 1.2-1. Regional Location of Davis-Monthan Air Force Base, Tucson, Arizona

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to provide Davis-Monthan AFB infrastructure improvements that have been deemed necessary by the Wing Commander to fully support and implement their mission. The Wing Commander's vision for Davis-Monthan AFB is to maintain, revitalize, and expand facilities supporting the current and projected Davis-Monthan AFB missions, which play a predominant role in protecting and preserving the national interests of the United States of America. This vision responds to current needs and anticipated future Air Force requirements and initiatives. The Proposed Action is needed to replace outdated facilities and to accommodate the continuously evolving missions assigned to Davis-Monthan AFB. Many of the existing facilities are outdated and no longer support current mission requirements adequately. In other instances, necessary facilities are simply absent and must be provided per Air Force Handbook 32-1084, Facility Requirements. Table 1.3-1 identifies the proposed construction projects and provides a brief description of each.

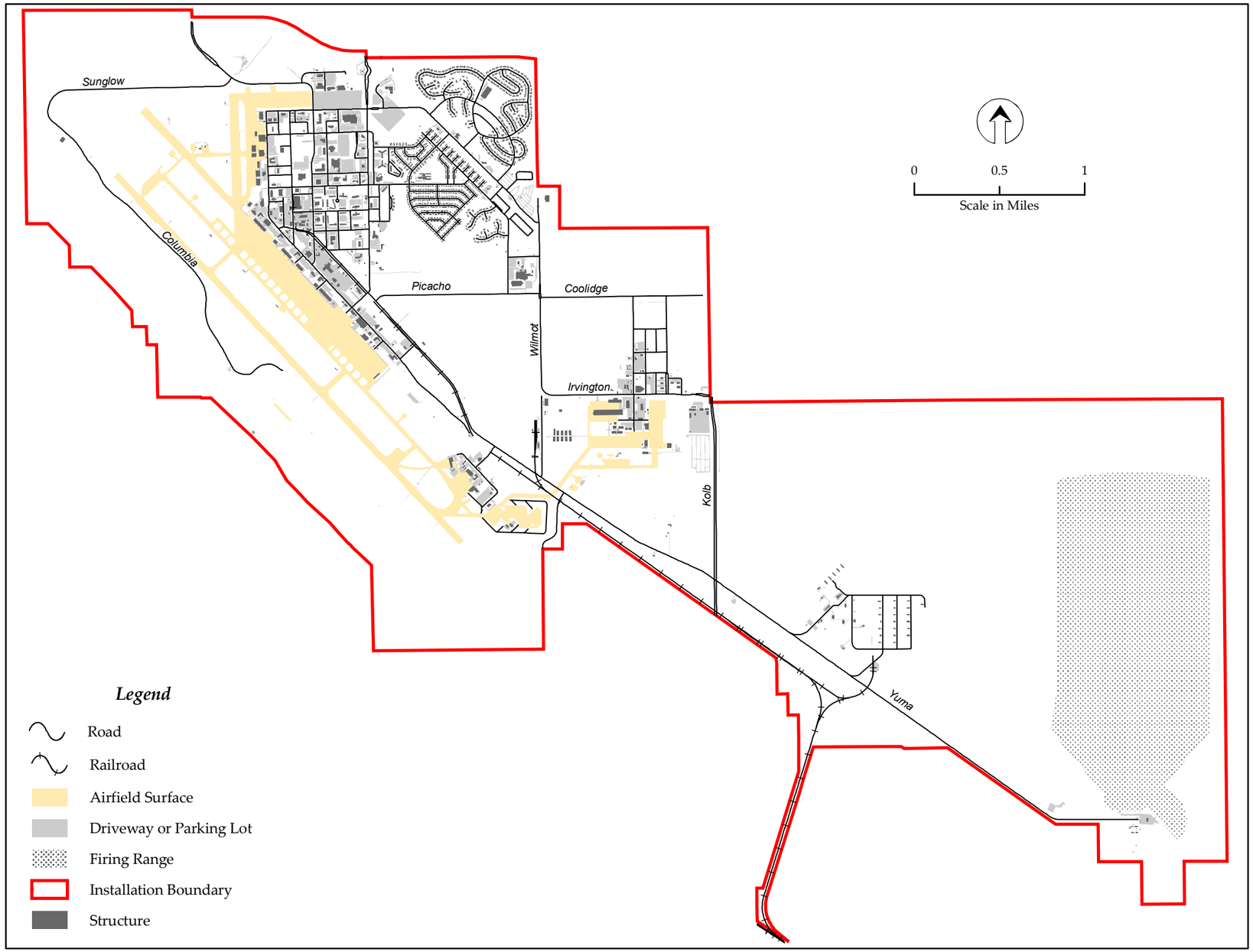


Figure 1.2-2. Davis-Monthan Air Force Base – General Layout

Table 1.3-1. Description of Proposed Construction Projects for the Davis-Monthan WINDO (Page 1 of 2)

Project Number	*Project Title*	*Description/ Need*
FBNV040060	Construct Desert Lightning City	Would provide an Expeditionary Exercise area that would give trainees practice in setting up "military cities" for wartime operations.
FBNV040165	Expand Communications Infrastructure	The project would expand the communications infrastructure into the Desert Lightning City project area for future development purposes. There is currently no communications infrastructure into this area.
FBNV040062	Construct Recycle Facility	The existing recycling facility is being demolished because it is not compatible with existing adjacent functions.
FBNV050037	Construct Security Forces Supply Mobility Facility	Security Forces Supply (SFS) is being displaced by the Combat Search and Rescue (CSAR) expansion into existing facility; and will therefore need a new facility.
FBNV850033	Construct Roads and Parking Lot, Site 5	New parking necessary to comply with anti-terrorism/force protection (AT/FP) requirements.
FBNV010054	Construct Addition to Combat Arms Training Maintenance (CATM) Facility	CATM requires larger facility based on current needs.
FBNV063501	Construct AMARC Aircraft Hangar	There is currently no existing, dedicated hangar to support aircraft as large as the KC-135. Work is conducted outdoors, which is not particularly efficient.
FBNV073502	Construct Consolidated Packing and Crating Center	The function exists across seven facilities. This one facility would consolidate these functions under one roof, increasing efficiency.
FBNV004005 FBNV040143 FBNV040144	Modifications to Family Camping (FAMCamp)	The existing FAMcamp does not provide enough recreational vehicle camping opportunities for the large military community that visits Tucson in the winter.
FBNV974006	Construct Youth Center	The Youth Center has been occupying the Open Recreation Center. New facility would leave the existing facility for its intended purpose.
FBNV064002	Construct Shopette Addition	The addition would include amenities such as drive-thru food vendor and gas pumps.
FBNV980088	Construct Transfer Line to Pumphouse	The purpose of the line is to supply Pump House 202 with JP-8 fuel.
FBNV980086	Construct Grounds Product Storage	This would consist of two 12,000-15,000 gallon aboveground storage tanks (ASTs) that would supply unleaded and diesel fuel, thereby adding necessary capacity.
FBNV040026	Extend JP-8 Header Line	Adding the necessary plumbing to existing fuel pumps so that fuel delivery capacity would be increased.

Table 1.3-1. Description of Proposed Construction Projects for the Davis-Monthan WINDO (Page 2 of 2)

Project Number	*Project Title*	*Description/ Need*
FBNV010065	Construct Secondary Containment at Pump Houses	Installation of a 4-6 inch berm around the existing filter separator concrete slabs to ensure containment, should a spill occur.
FBNV040141	Construct Liquid Oxygen Facility	The Combat Rescue Group Squadron Operations facility is displacing this facility and therefore it must be relocated.
FBNV060501	Construct new Health and Wellness Center	The current facility is going to be demolished due to its dilapidated condition, thereby requiring a new facility to house this function.
FBNV040079 FBNV040105	Construct Sim Tower Parking Lot, Lavatory and Break Room	Replacement of the existing gravel parking lot and construct break room and restrooms.
FBNV040135	Construct Parking Lot at Building 1440 (Phase Dock)	Gravel parking lot would be paved (with asphalt) to support 200 parking spots.
FBNV030122	Construct CATM jogging trail (rails to trails)	Railroad track would be converted to a 5-6 mile running trail to provide additional physical training opportunities in support of combat readiness.
FBNV040138	Construct Helicopter Landing Pad for HH-60's	The existing heli-pad violates airfield clearance criteria and produces a foreign object damage issue with the F-16 aircraft. This project would eliminate that violation.
FBNV053002	Construct EC-130 Hangar	The existing hangar was transferred to the CSAR mission, and therefore leaves this mission without a hangar.
FBNV043001	Construct Education Center	The Education Center would provide for the academic and professional development of officers, airmen and civilian employees in support of Air Force and national goals.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Air Force proposes to implement construction and demolition projects at Davis-Monthan AFB in support of the WINDO. This plan includes numerous infrastructure improvement projects that the Wing Commander has identified as necessary for the Wing to achieve its current and foreseeable future missions.

Planners at Davis-Monthan AFB have worked with the Wing Commander to review the existing facilities, infrastructure, land use, and development constraints to develop a vision for future development of the Base to meet mission requirements. Existing Davis-Monthan AFB facilities and infrastructure generally meet existing mission requirements; although specific facilities and supporting infrastructure are outdated and in need of replacement. The intention of the WINDO plan is to upgrade the quality of existing facilities through either renovation or replacement, and also to establish some capabilities that have been lacking. Project planners evaluated four development goals while identifying individual projects to be included in the WINDO:

- Obtain the highest possible combat capability and mission readiness
- Take care of our people
- Modernize our force
- Reduce operating costs

By taking a comprehensive approach to the planning and implementation of these projects over the next three years, Davis-Monthan AFB will ensure that these goals are not only achieved, but also maximized. The WINDO Environmental Impact Analysis Process (EIAP) will be revisited in three years to make adjustments to the planning process based on any changes in mission requirements or identified gaps in capabilities. Table 2.1-1 identifies the list of projects and describes the areal extent of the project. Figure 2.1-1 identifies the proposed location for each specific project, as determined though the planning process.

In addition to the described construction activities, several facilities are proposed for demolition. Many of the existing facilities proposed for demolition were constructed prior to 1980 and are now more than 25 years old and no longer support current mission requirements adequately. Many of these older facilities are rated as Condition Code 3 facilities. A facility Condition Code is a code that describes the physical capability of a facility to accommodate the currently approved activity or function within it. There are six Air Force condition codes, as described in Table 2.1-2 (Air Force Institute of Technology n.d.). Facilities that are proposed for demolition are identified in Table 2.1-3. These structures are either obsolete or deteriorated or would be in the footprint of proposed construction activities (Figure 2.1-2).

Table 2.1-1. Proposed Davis-Monthan WINDO Project Details (Page 1 of 3)

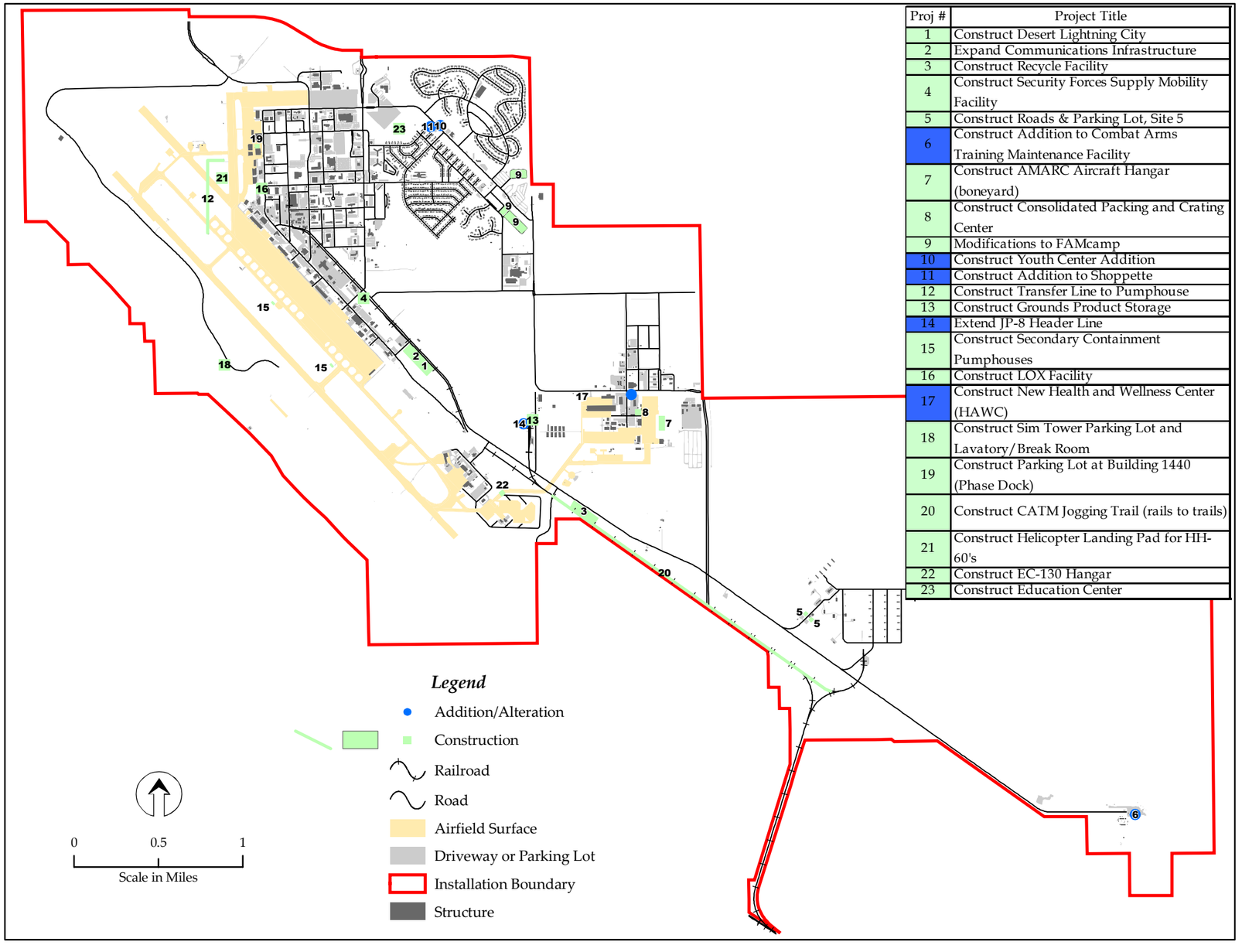
Project Number	*Project Title*	*Areal Extent/Disturbance*	*Project Details*
FBNV040060	Construct Desert Lightning City	Building: none Pavements: 16,200 square feet (SF) Demo: none	27 concrete slabs used for tents (16,200 SF).
FBNV040165	Expand Communications Infrastructure	Building: 100 SF Pavements 15,500 SF Demo: none	Communications building constructed (100 SF). Roadway (7,500 SF), parking (8,000 SF).
FBNV040062	Construct Recycle Facility	Building: 5,500 SF Pavements: none Demo: 5,000 SF	The existing recycling facility (Bldg 4868) is in a non-compatible location and function would be relocated.
FBNV050037	Construct Security Forces Supply Mobility Facility	Building: 6,000 SF Pavements: 1,000 SF Demo: none	CSAR will take over the existing SFS facility (Bldg 4818). SFS would be relocated to new facility.
FBNV850033	Construct Roads and Parking Lot, Site 5	Building: none Pavements: 112,000 SF Demo: none	Two new parking lots would be converted from gravel to asphalt.
FBNV010054	Construct Addition to Combat Arms Training Maintenance (CATM) Facility	Building: 4,100 SF Pavements: none Demo: none	Addition to the existing CATM (Bldg 165).
FBNV063501	Construct AMARC Aircraft Hangar	Building: 91,192 SF Pavements: 10,000 SF Demo: none	No existing KC-135 hangar. Additional aircraft apron of 10,000 SF.
FBNV073502	Construct Consolidated Packing and Crating Center	Building: 32,292 SF Pavements: none Demo: 28,804 SF	Function currently out of 7 facilities (7431, 7434, 7435, 7409, 7446, 7427, 7437). All would be demolished.
FBNV004005 FBNV040143 FBNV040144	Modifications to Family Camping (FAMCamp)	Building: 10,000 SF Pavements: 50,600 SF Demo: 12,800 SF	250 new concrete pads w/ hookups for recreational vehicle (RV) camping. 2 laundromats, 2 lavatories, roadways thru RV park. Clubhouse – 6,000 SF. Existing concrete pads would be demolished.
FBNV974006	Construct Youth Center	Building: 15,500 SF Pavements: 5,000 SF Demo: none	Currently using Bldg 6000, which is dedicated to open recreation. New Youth Center would allow for dedicated use of Bldg 6000.

Table 2.1-1. Proposed Davis-Monthan WINDO Project Details
(Page 2 of 3)

Project Number	*Project Title*	*Areal Extent/Disturbance*	*Project Details*
FBNV064002	Construct Shoppette Addition	Building: 4,000 SF Pavements: none Demo: none	Would allow for fast food service, as well as other amenities.
FBNV980088	Construct Transfer Line to Pumphouse	Building: none Pavements: none Demo: none Temporary surface disturbance of 5,000 SF (2,500 linear feet * 2-foot wide trench)	A subterranean transfer line would be installed under taxiways A& B to supply JP-8 to pumphouse 202.
FBNV980086	Construct Grounds Product Storage	Building: none Pavements: 1,116 SF Demo: none	Two 12,000-15,000 gallon aboveground storage tanks (ASTs) to supply unleaded and diesel fuel. Concrete pad 36'*31'.
FBNV040026	Extend JP-8 Header Line	Building: none Pavements: none Demo: none	Plumbing to enable 4 issue pumps to serve as transfer pumps also.
FBNV010065	Construct Secondary Containment at Pumphouses	Building: one Pavements: Negligible Demo: none	Adding a berm surrounding the concrete pads at pumphouses 206 and 207.
FBNV040141	Construct LOX Facility	Building: 3,200 SF Paving: 6,000 SF Demo: 2,684 SF	The CSAR Squad Ops is displacing this function in Bldg 4863, which must be relocated. Canopy (4863) would be demolished.
FBNV060501	Construct new Health and Wellness Center (HAWC)	Building: 2,500 SF Pavements: none Demo: 6,800 SF	The HAWC is currently in Bldg 7713, which is in dilapidated condition. Addition to Bldg 7406 would accommodate HAWC.
FBNV040079 FBNV040105	Construct Sim Tower Parking Lot, Lavatory and Break Room	Building: 1,000 SF Pavements: 5,994 SF Demo: none	Parking lot would be converted from gravel to asphalt. Break room and lavatory would be constructed.
FBNV040135	Construct Parking Lot at Building 1440 (Phase Dock)	Building: none Pavements: 60,000 Demo: none	Parking lot would be converted from gravel to asphalt.
FBNV030122	Construct CATM jogging trail (rails to trails)	Building: none Pavements: 158,400 SF Demo: none	Existing railway (approx. 5-6 miles) would be converted to an asphalt jogging trail.

Table 2.1-1. Proposed Davis-Monthan WINDO Project Details
(Page 3 of 3)

Project Number	*Project Title*	*Areal Extent/Disturbance*	*Project Details*
FBNV040138	Construct Helicopter Landing Pad for HH-60's	Building: none Pavements: 71,250 SF Demo: none	Existing heli-pad violates airfield clearance criteria. New site would correct violation.
FBNV053002	Construct EC-130 Hangar	Building: 44,100 SF Pavements: 10,000 SF Demo: none	The existing hangar (Bldg 4844) has been transferred to CSAR. New hangar required.
FBNV043001	Construct Education Center	Building: 55,800 SF Pavements: none Demo: none	Provides academic pursuits of officers, airmen, and civilian employees.



Proj #	Project Title
1	Construct Desert Lightning City
2	Expand Communications Infrastructure
3	Construct Recycle Facility
4	Construct Security Forces Supply Mobility Facility
5	Construct Roads & Parking Lot, Site 5
6	Construct Addition to Combat Arms Training Maintenance Facility
7	Construct AMARC Aircraft Hangar (boneyard)
8	Construct Consolidated Packing and Crating Center
9	Modifications to FAMcamp
10	Construct Youth Center Addition
11	Construct Addition to Shoppette
12	Construct Transfer Line to Pumphouse
13	Construct Grounds Product Storage
14	Extend JP-8 Header Line
15	Construct Secondary Containment Pumphouses
16	Construct LOX Facility
17	Construct New Health and Wellness Center (HAWC)
18	Construct Sim Tower Parking Lot and Lavatory/Break Room
19	Construct Parking Lot at Building 1440 (Phase Dock)
20	Construct CATM Jogging Trail (rails to trails)
21	Construct Helicopter Landing Pad for HH-60's
22	Construct EC-130 Hangar
23	Construct Education Center

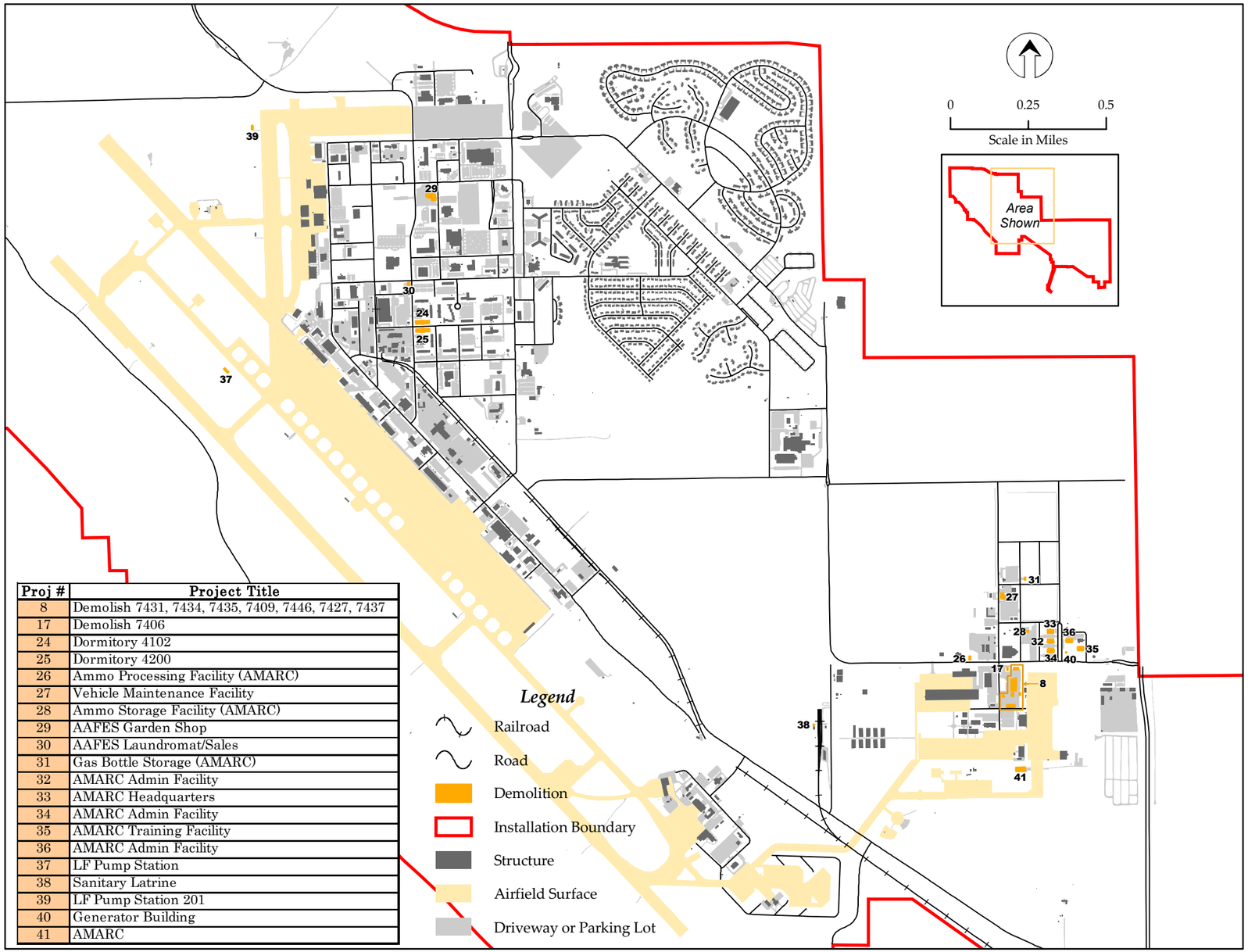
Figure 2.1-1. Proposed Construction Associated with Davis-Monthan WINDO

Table 2.1-2. Facility Condition Codes

Condition Code	*Description*
Condition Code 1	Houses the function currently designated with reasonable maintenance and without major alterations or reconstruction and without major investment.
Condition Code 2	Upgrading is required and practical. Facility is of permanent construction, structurally sound but requires major investment to adequately serve its current purpose.
Condition Code 3	The facility is currently in use, but is of substandard construction and cannot practicably be raised to meet Condition Code 1 standards for housing the function for which it is currently designated.
Condition Code 4	Does not meet Condition Codes 1, 2, 3 or 5. Expenditure of maintenance funds on these facilities is not authorized except for safety, health, and/or "pickling" the facility.
Condition Code 5	Indicates that the facility has been committed to Congress for disposal.
Condition Code 6	Indicates that the disposal has been approved by all levels of the Air Force.
Source: Air Force Institute of Technology n.d.	

Table 2.1-3. Facility Demolitions Associated with Davis-Monthan WINDO

Facility/Building Number	*Condition Code (1-6)*	*Reason for Demolition*	*Square Feet*
Recycling Center, 4868	1	In the footprint of planned development	5,000
Liquid Oxygen Storage, 4863	1	In the footprint of planned development	2,684
Liquid Fuel Pump Station, 201	3	Outdated, deteriorated facility	499
Sanitary latrine 203	1	Surplus facility	80
Liquid Fuel Pump Station, 204	3	Outdated, deteriorated facility	499
AMARC Administrative Facility, 7613	3	Outdated, deteriorated facility	6,000
AMARC Training Facility, 7708	3	Outdated, deteriorated facility	6,000
AMARC Administrative Facility, 7507	3	Outdated, deteriorated facility	6,000
AMARC, Headquarters, 7514	3	Outdated, deteriorated facility	6,000
AMARC Administrative Facility, 7513	3	Outdated, deteriorated facility	6,000
Gas Bottle Storage, 7329	1	Surplus Facility	1,350
Army and Air Force Exchange Service (AAFES) Laundromat/Sales, 5000	3	Outdated, deteriorated facility	1,428
AAFES Garden Shop, 2409	1	Underutilized Facility	9,733
AMARC Ammo Storage Facility, 7403	3	Outdated, deteriorated facility	625
Vehicle Maintenance Facility, 7336	3	Outdated, deteriorated facility	5,028
AMARC Ammo Processing Facility, 7200	3	Outdated, deteriorated facility	1,468
Dormitory, 4200	3	Outdated, deteriorated facility	25,431
Dormitory, 4102	3	Outdated, deteriorated facility	25,431
Health and Wellness Center, 7713	3	Outdated, deteriorated facility	6,800
Material Processing Facility, 7431	1	Consolidated Packing and Crating Center to replace this facility.	16,000
Supply & Equipment Shed, 7434	1	Consolidated Packing and Crating Center to replace this facility.	3,440
Sanitary Latrine, 7435	1	Consolidated Packing and Crating Center to replace this facility.	524
Supply & Equipment Warehouse, 7409	2	Consolidated Packing and Crating Center to replace this facility.	1,980
Aircraft Corrosion Control, 7446	1	Consolidated Packing and Crating Center to replace this facility.	1,800
Material Processing Facility, 7427	1	Consolidated Packing and Crating Center to replace this facility.	800
Material Processing Facility, 7437	1	Consolidated Packing and Crating Center to replace this facility.	4,260
Non-Recoverable Support Facility (relocatable), 7449	1	Surplus facility	0
Generator Building, 7610	3	Outdated, deteriorated facility	188
		Total Demolition Square Footage	144,048 SF



Proj #	Project Title
8	Demolish 7431, 7434, 7435, 7409, 7446, 7427, 7437
17	Demolish 7406
24	Dormitory 4102
25	Dormitory 4200
26	Ammo Processing Facility (AMARC)
27	Vehicle Maintenance Facility
28	Ammo Storage Facility (AMARC)
29	AAFES Garden Shop
30	AAFES Laundromat/Sales
31	Gas Bottle Storage (AMARC)
32	AMARC Admin Facility
33	AMARC Headquarters
34	AMARC Admin Facility
35	AMARC Training Facility
36	AMARC Admin Facility
37	LF Pump Station
38	Sanitary Latrine
39	LF Pump Station 201
40	Generator Building
41	AMARC

Figure 2.1-2. Facility Demolition Associated with the Davis-Monthan WINDO

2.2 ALTERNATIVES TO THE PROPOSED ACTION: IMPLEMENTATION OF A SUBSET OF THE CONSTRUCTION AND DEMOLITION PROJECTS

It is feasible that only a subset of the highest priority projects would be implemented based upon availability of funding or modifications to force structure. While this alternative is less desirable than the Proposed Action, in which all projects are implemented, it is quite likely that the individual projects described under the Proposed Action would be prioritized and implemented as funding becomes available, essentially phasing the projects. This alternative would have, at most, the same set of impacts as the Proposed Action, and therefore this alternative is not carried forward for further analysis.

2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the 355 WG would maintain their existing facilities and would not build or demolish facilities, as proposed. In general, the No Action Alternative would require that the 355 WG continue to operate under unnecessarily inefficient conditions. Under the No Action Alternative, these deficiencies would continue to impair the 355 WG's ability to successfully conduct their mission and to maintain wartime readiness and training. Should the No Action Alternative be selected, Davis-Monthan AFB and the 355 WG could not adequately meet future mission requirements or changes due to deteriorating facilities and would not meet its WINDO development goals.

- Combat capability and mission readiness would be compromised;
- Military and civilian staff would not have optimal facilities;
- Modernization of the force would be compromised; and
- Operating costs would continue to be inefficient.

2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The EIAP is used to evaluate a proposal's potential environmental effects, and to notify and involve the public in the agency's decision-making process. The proponent of a given action is ultimately responsible for compliance with the EIAP. The Air Force EIAP requires that decisions on proposals be based on an understanding of the potential environmental effects of the Proposed Action, and its reasonable alternatives, including the No Action Alternative. Based on the EIAP, any of the alternatives could be selected for implementation.

As a part of the EIAP, this EA has been prepared to evaluate the potential environmental impacts of the proposed WINDO plan for Davis-Monthan AFB. The following resources are analyzed in this EA: earth resources, water resources, biological resources, air quality, noise, land use (including recreation) and visual resources, socioeconomics and environmental justice, cultural resources, infrastructure, hazardous materials and waste management, and safety. Chapter 3.0 describes the affected environment for these resources and Chapter 4.0 addresses the potential environmental consequences of implementing either the Proposed Action or the

No Action Alternative. A comparison of the environmental consequences is presented at the end of this chapter. The effects of the Proposed Action on airspace is not included for detailed consideration in this EA as there are no proposed changes in airspace, in the number of aircraft at the Base, or in the number of aircraft operations flown.

2.4.1 Public and Agency Involvement

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), Davis-Monthan AFB notified concerned federal, state, and local agencies and allowed them sufficient time to evaluate potential environmental impacts of the proposed action. All federal, state and local agency input can be found in Appendix A of this document. All relevant comments have been addressed and incorporated into the text, as appropriate.

The Air Force prepared and published newspaper advertisements announcing the availability of the Draft EA for a 30-day public and agency review to facilitate public involvement in this project. These advertisements were placed in the *Arizona Daily Star* and the *Tucson Citizen* on February 16, 2005 and in the Desert Airman on February 18, 2005.

2.4.2 Regulatory Compliance

2.4.2.1 NATIONAL ENVIRONMENTAL POLICY ACT

NEPA requires federal agencies to take into consideration the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. The CEQ was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued the Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Sections 1500–1508) (CEQ 1978). These requirements specify that an EA be prepared to:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).
- Aid in an agency's compliance with NEPA when an EIS is not necessary.
- Facilitate preparation of an EIS when one is necessary.

The activities addressed within this document constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of this EA to address the environmental issues related to the proposed activities. The Air Force implementing procedures for NEPA are contained in 32 CFR Part 989 et seq., *Environmental Impact Analysis Process.*

2.4.2.2 ENDANGERED SPECIES ACT

The Endangered Species Act (ESA) of 1973 (16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Act.

2.4.2.3 CLEAN AIR ACT

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter, and lead (Pb). The Act also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

2.4.2.4 WATER RESOURCES REGULATORY REQUIREMENTS

The Clean Water Act of 1977 (33 USC § 1251 *et seq*.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the Clean Water Act, and EO 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains.

2.4.2.5 CULTURAL RESOURCES REGULATORY REQUIREMENTS

The National Historic Preservation Act (NHPA) of 1966 (16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP), outlining procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. NHPA requires federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their

traditional culture. Section 106 of NHPA requires federal agencies to consult with State Historic Preservation Offices (SHPO) if their undertakings might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provided an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO.

The American Indian Religious Freedom Act (AIRFA) (42 USC § 1996) established federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (25 USC §§ 3001–3013) requires consultation with Native American tribes prior to excavation or removal of human remains and certain objects of cultural importance.

2.4.2.6 OTHER REGULATORY REQUIREMENTS

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children will be considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

In a policy formulated to address EO 13084, *Consultation and Coordination with Indian Tribal Governments*, the DoD has clarified its policy for interacting and working with federally recognized American Indian and Alaska Native governments. Under this policy guidance, proponents must provide timely notice to, and consult with, tribal governments prior to taking any actions that have the potential to affect protected tribal resources, tribal rights, or Indian lands. Tribal input must be solicited early enough in the planning process that it may influence the decision to be made.

2.5 PERMIT REQUIREMENTS

This EA has been prepared in compliance with NEPA; other federal statutes, such as the CAA and the Clean Water Act; and applicable state statutes and regulations. A list of Davis-Monthan AFB permits was compiled and reviewed during the EA process. Table 2.5-1 summarizes these applicable federal, state, and local permits and the potential for change to the permits due to the Proposed Action. Management actions and procedures would need to be reviewed, coordinated and/or updated to ensure Air Force compliance with applicable instructions, guidance, and directives.

Table 2.5-1. Permit Requirements for Davis-Monthan WINDO Implementation

Permit	***Resource***	***Proposed Action***
Synthetic Minor Permit	Air	No change to existing permit expected
Operating Permit #1701	Air	No change to existing permit expected
Activity Permit from Arizona Department of Environmental Quality	Air	New permit required for any land stripping, earth moving, trenching, and/or road construction.
Davis-Monthan AFB National Pollutant Discharge Elimination System (NPDES) Storm Water	Storm Water	The Storm Water Pollution Prevention Plan (SWPPP) would need to be updated for each project.
Construction General Permit AZG2003-001	Storm Water	The Base would have to file a Notice of Intent (NOI) with the Arizona Department of Environmental Quality (ADEQ) to obtain coverage under this permit.
Davis-Monthan AFB Disposal Permit	Hazardous Waste	No change to existing permit expected

2.6 COMPARISON OF ALTERNATIVES

Table 2.6-1 summarizes the potential environmental consequences of the Proposed Action and No-Action Alternative, based on the detailed impact analyses presented in Chapter 4.0.

Table 2.6-1. Summary of Potential Environmental Consequences of Implementation of the Davis-Monthan WINDO
(Page 1 of 2)

Resources	*Proposed Action*	*No Action*
Earth Resources	Temporary disturbance of soils; impacts avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs incorporated. No significant impact expected.	No changes to earth resources would occur; no impact expected.
Water Resources	Base to obtain coverage under Construction General Permit AZG2003-001 for storm water. Construction would increase amount of impervious surface. After construction, update SWPPP for each project. Site design currently does not affect waters of the U.S.; however, if final site design results in impacts to waters of the U.S., a Section 404 permit would be obtained from USACE. No significant impact expected.	No changes to water resources would occur; no impact expected.
Biological Resources	Minor impacts to vegetation, wildlife and migratory birds. Implement Arizona Game and Fish Department (AZGF) protocol if protected species are found to be present in construction area. Comply with Arizona Native Plant Law regarding all sensitive plants covered under law.	No changes to biological resources would occur; no impact expected.
Air Quality	Combustion engines and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality.	No changes to air quality would occur; no impact expected.
Noise	Construction noise would be intermittent and short-term, and no long-term noise impacts would result.	No changes to the noise environment would occur; no impact expected.
Land Use/Visual	Proposed construction projects compatible with Base planning, some existing incompatible land uses would be corrected. Visual setting of the Base would improve.	No changes to land use or visual resources would occur. Some land use compatibility issues would remain.
Socioeconomics/ Environmental Justice	No long term change in Base employment or expenditures; no change in minority population; no impact expected.	No change in Base employment or expenditures; no change in minority population; no impact expected
Cultural Resources	No cultural or historic resources affected by action; no impact expected.	Cultural resources would remain the same; no impact expected.

Table 2.6-1. Summary of Potential Environmental Consequences of Implementation of the Davis-Monthan WINDO
(Page 2 of 2)

Resources	***Proposed Action***	***No Action***
Safety	No new safety issues would occur. Proposed AT/FP projects would correct current deficiencies; no impact expected.	Safety conditions would remain the same; no impact expected.
Hazardous Materials and Waste Management	Construction and demolition waste that cannot be recycled would be landfilled. Hazardous materials and construction debris would be handled, stored, and disposed of in accordance with applicable regulations. Any asbestos containing material (ACM), lead-based paint associated with construction and/or demolition would be disposed of in accordance with appropriate ADEQ regulations. Any contaminated soil encountered would either be remediated or disposed of in compliance with appropriate regulations. A waiver for construction near any Environmental Restoration Program (ERP) site will be obtained prior to proposed activities.	Hazardous materials and wastes would remain the same; no impact expected.
Infrastructure	Construction and demolition vehicles would generate short-term increases in on-Base traffic. Proposed construction would lead to small increases in utilities demands. Proposed projects would improve certain Base infrastructure and utilities systems; no impacts expected.	Infrastructure would remain the same. Some mission requirements would be unmet due to dilapidated and inefficient facilities, and identified utilities upgrades would not occur.

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3.0 EXISTING CONDITIONS

Section 3.0 describes the existing environmental and socioeconomic conditions potentially affected by the Proposed Action. This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action. Baseline conditions represent current conditions. The potential environmental and socioeconomic impacts of implementing the Proposed Action or its alternatives are described in Section 4.0.

In compliance with the NEPA, CEQ guidelines, and 32 CFR Part 989, et seq., the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These resources and conditions include: earth resources, water resources, biological resources, air quality, noise, land use and visual resources, socioeconomics and environmental justice, cultural resources, safety, hazardous materials and wastes, and infrastructure.

3.1 EARTH RESOURCES

3.1.1 Definition of the Resource

Earth resources include geology, soils, and topography. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink/swell potential, and erodibility all determine the suitability of the ground to support man-made structures and facilities. Topography refers to an area's surface features including its vertical relief. These resources may have scientific, historical, economic, and recreational value. The region of influence (ROI) for earth resources in this EA includes Davis-Monthan AFB.

3.1.2 Existing Conditions

3.1.2.1 GEOLOGY

Davis-Monthan AFB is located in the Tucson Basin, an intermontane trough in the Sonoran Desert, formed between the Tucson Mountains to the west, the Rincon Mountains to the east, and the Santa Catalina Mountains to the north (Davis-Monthan AFB 2004a). Troughs such as this one are a common feature in the Basin and Range province of the southwestern U.S. The Tucson Mountains are a small range composed of Tertiary intrusive and volcanic rocks bordered by faulted, folded Paleozoic and Cretaceous sedimentary rock (Chronic 1983). The Santa Catalina and Rincon Mountains are considered to be a typical southern basin and range metamorphic core complex, in which mid-Tertiary extension uplifted the rocks from a depth of approximately mid-crust to 1.5 kilometers above the valley floor (University of Colorado at Boulder 2005). The Tucson Basin itself represents a structural basin that has been depressed between mountain ranges and partially filled with alluvial deposits eroding off the surrounding mountains or brought in from upstream. At one time, the Tucson Basin was closed; however structural uplifting and faulting during the Tertiary Period allowed drainages, such as the Santa Cruz River, to develop through the Tucson Valley. This process involved numerous erosional

cycles, which resulted in a series of terraced surfaces sloping down to the present floodplain. Once these surfaces formed, small tributaries draining adjoining mountain slopes began forming their own alluvial fans on the terraces and floodplains (USACE 1993). Davis-Monthan AFB lies on this nearly flat surface of confluent alluvial fans, known as a bajada.

Most of the soils in the ROI, formed in transported parent material, primarily alluvium of mixed origin and mineralogy. Much of the alluvium comes from the nearby Rock land mapping unit, which is weathering in place. On most of the valley terraces, the soils formed in mixed material high in quartz and feldspar, and in material deposited by wind. Some of the valley terraces are made up of mixed material that is high in carbonates (Natural Resource Conservation Service [NRCS] 2003). Bedrock and eolian (material accumulated through wind erosion) material are less common but are direct sources for the alluvium and some of the secondary calcium carbonate enrichment of the soils, respectively. The alluvium in the ROI is primarily derived from granite, gneiss, rhyolite, and andesite (NRCS 1993).

3.1.2.2 SOILS

Soils at Davis-Monthan AFB are characteristic of the bajada. Area topsoils consist of silts, clays, sands, and gravels. Rock, clay and caliche material compose the bajada subsoil strata. The majority of the Base soils consist of gravel and sandy loam about 36 inches deep. These soils typically have low fertility and are potentially erodable by both water and wind. Below the sandy loam layer is typically a layer of calcareous material that is approximately 48 inches thick. Base soils are typically low to moderately permeable (ACC 2002).

A soil mapping unit represents an area that is dominated by one major kind of soil, or an area dominated by several kinds of soil (NRCS 1993). Davis-Monthan AFB has eight distinct soil mapping units (Figure 3.1-1), which are described in more detail in the following paragraphs.

Tubac gravelly loam, 1 to 8 percent slopes. This is a very deep and well-drained soil unit that is typically found on gently sloping fan terraces that are shallowly dissected by the ephemeral drainages that typify the southwest. The surface is typically covered by 25 percent gravel and 5 percent cobble. The remainder of the surface layer is generally a brown to dark brown gravelly loam about two inches thick. The subsurface layer is generally about 12-inches thick and is a loam. The upper 17 inches of the subsoil is reddish brown clay. The lower subsoil is a gravelly sandy clay loam to a depth of 60 inches of more. Permeability of this soil is slow; available water capacity is moderate; and runoff is medium. The hazard of both water and wind erosion is considered to be slight. The predominant limitation of this soil is its shrink-swell potential. If facilities are constructed on this soil, care should be taken to design foundations and footings to divert runoff away from the buildings (NRCS 1993).

Pinaleno-Stagecoach complex, 5 to 16 percent slopes. This soil unit is comprised of about 40 percent Pinaleno very, cobbly, sandy loam and about 35 percent Stagecoach very, gravelly, sandy loam. *Pinaleno soils* are typically located on crests and shoulders that have 5 to 10 percent slope. It is very deep and well-drained and is formed in mixed alluvium. The surface is typically comprised of 30 percent cobble and stones and 20 percent gravel. The surface layer, which is about two inches thick, is brown, very cobbly, sandy loam. The upper 28 inches of the

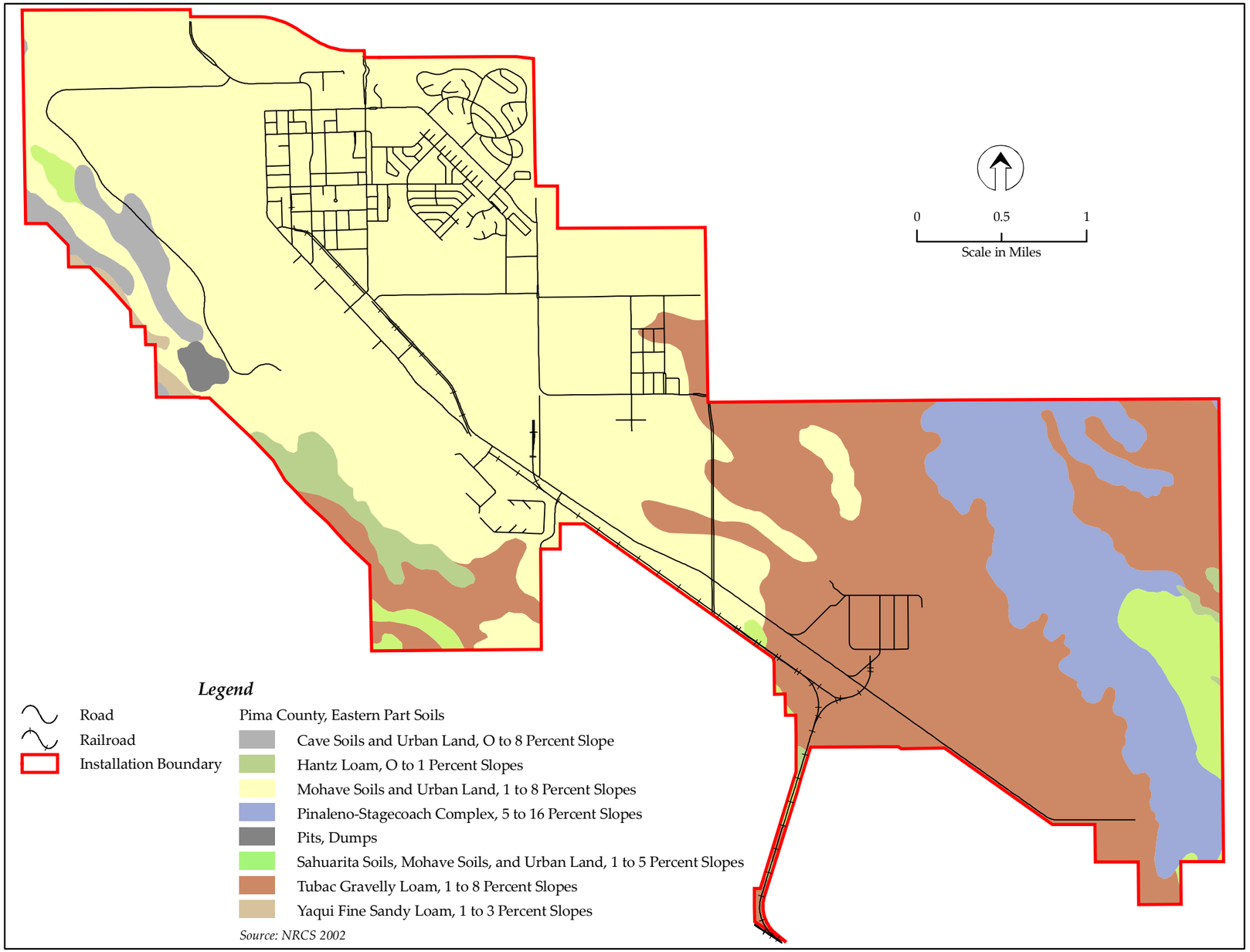


Figure 3.1-1. Soil Mapping Units at Davis-Monthan AFB, Arizona

subsoil is reddish brown and red extremely cobbly, sandy clay loam. The lower 30 inches is pink, extremely gravelly, sandy clay loam. Permeability of this soil is moderately slow; available water is low; and runoff is medium. The hazard of water erosion is slight while the hazard of wind erosion is very slight. *Stagecoach soils* are found on shoulders and backslopes that have 5 to 16 percent slopes. It is a very deep and well-drained soil that formed in gravelly mixed alluvium. The surface is typically covered by 50 to 65 percent gravel and cobble. The surface layer is light brown, very gravelly sandy loam about ten inches thick. The adjacent layer is a pinkish very gravelly loam and extremely gravelly loam approximately 30 inches thick. The substratum to a depth of 50 inches of more is light brown very gravelly loamy sand. The Stagecoach soils are calcareous throughout. Permeability of the Stagecoach soil is moderate; available water capacity is low; and runoff is medium. As with the Pinaleno soil, the hazard of water erosion is slight and the hazard of wind erosion is very slight. The primary limitation of this soil complex for development is slope and the high lime content of the Stagecoach soils (NRCS 1993).

Sahuarita soils, Mohave soils and Urban land, 1 to 5 percent slopes. This map unit is generally found on gently sloping fan terraces, and has no regular pattern in terms of its percentage of composition. The *Sahuarita soil* is very deep and well-drained, and is formed in mixed alluvium. The surface is typically covered by 35 to 55 percent gravel. The surface layer is about three inches thick and is a yellowish, very gravelly, fine, sandy loam. The subsoil is also a yellowish fine sandy loam about 25 inches thick. The adjacent layer is a buried subsoil of brown loam that is 17 inches thick and brown very gravelly sandy clay loam that is 15 inches or more thick. These soils are also calcareous throughout. Permeability of the *Sahuarita soil* is moderate to moderately slow; available water capacity is moderate; and runoff generally slow to medium. The hazard of water erosion is slight and the hazard of wind erosion is very slight. Formed in mixed alluvium also, the *Mohave soil* is also very deep and well-drained. The surface layer is about three inches thick and is a yellowish brown loam. The subsurface layer is brown sandy loam and is three inches thick. The upper five inches of the subsoil is brown sandy clay loam with the next 13 inches brown and light brown clay loam. The lower 16 inches is reddish brown sandy, clay loam and clay loam. The substratum to a depth of 60 inches of more is loam. Permeability of the *Mohave soil* is moderately slow; available water capacity is high; and runoff is slow to medium. The hazard of water erosion is slight to moderate, and the hazard of wind erosion is moderate. *Urban land* consists of areas of soil that are so altered by construction or obscured by structures and pavement that identification of the original soil is not possible. This soil mapping unit is well-suited to urban development. The primary limitations are the moderate shrink-swell character of the *Mohave soil* and dustiness in disturbed areas (NRCS 1993).

Mohave soils and Urban land, 1 to 8 percent slopes. Formed in mixed alluvium also, the *Mohave soil* is also very deep and well-drained. The surface layer is about three inches thick and is a yellowish brown loam. The subsurface layer is brown sandy loam and is three inches thick. The upper five inches of the subsoil is brown sandy clay loam with the next 13 inches brown and light brown clay loam. The lower 16 inches is reddish brown sandy, clay loam and clay loam. The substratum to a depth of 60 inches or more is loam. Permeability of the *Mohave soil* is

moderately slow; available water capacity is high; and runoff is slow to medium. The hazard of water erosion is slight to moderate, and the hazard of wind erosion is moderate. *Urban land* consists of areas of soil that are so altered by construction or obscured by structures and pavement that identification of the original soil is not possible. This soil mapping unit is well-suited to urban development. The primary limitations are the moderate shrink-swell character of the *Mohave soil* and dustiness in disturbed areas (NRCS 1993).

Hantz loam, 0 to 1 percent slopes. Formed in mixed alluvium, this very deep, well-drained soil is found in relatively level swales on alluvial fans and floodplains. The surface layer is typically brown loam about five inches thick. The subsurface layer is grayish brown clay loam and is seven inches thick. The substratum is typically a grayish brown clay that is 33 inches thick; and the next layer is brown clay that is 16 or more inches thick. This soil is calcareous throughout its profile. Permeability of the *Hantz loam* is slow; available water capacity is high; and runoff is medium. The hazard of water erosion is generally slight; however, headcutting and deposition may occur during heavy storm events. The soil is subject to periods of flooding during storm events. The hazard of wind erosion is considered to be moderate. The *Hantz soil* is poorly suited to urban development due to flooding and its high shrink-swell potential (NRCS 1993).

Cave soils and Urban land, 0 to 8 percent slopes. This map unit is generally found on nearly level to gently sloping relict fan terraces, and has no regular pattern in terms of its percentage of composition. Formed in mixed alluvium, the *Cave soil* is very shallow and shallow to a lime-cemented hardpan, and is well-drained. The surface layer is typically brown, gravelly, fine, sandy loam about four inches thick. The next layer is a pinkish white gravelly fine sandy loam that is three inches thick. Caliche, which is a white, indurated, lime hardpan is found at a depth of seven inches. Depth of the caliche ranges from 4 to 20 inches. Under the caliche, to about 50 inches, is pale brown gravelly loamy sand. These soils are also calcareous throughout the profile. Permeability of the *Cave soil* is moderate; available water capacity is very low; and runoff is medium to rapid. The hazard of both water and wind erosion is slight. *Urban land* consists of areas of soil that are so altered by construction or obscured by structures and pavement that identification of the original soil is not possible. The primary limitation of this soil type to development is the caliche, which limits excavation for building foundations (NRCS 1993).

Yaqui fine sandy loam, 1 to 3 percent slopes. Formed in mixed alluvium, this is a very deep and well-drained soil. The surface layer is typically brown fine sandy loam about four inches thick. The subsoil is brown sandy clay loam 27 inches thick. The next layer is a buried subsoil of yellowish read clay loam that is 12 inches thick over a sublayer of pink gravelly loam to 60 inches or more. These soils are calcareous throughout. Permeability of the *Yaqui soil* is moderate to 31 inches and moderately slow below this depth; available water capacity is high; and runoff is generally slow. The hazard of water erosion is slight, while hazard of wind erosion is moderately high. The primary limitations to development on this soil are flooding and wind erosion (NRCS 1993).

Pits and Dumps. This soil unit is found on hills and mountains, with slopes ranging from 0 to 100 percent. This soil unit is 40 percent open pit mines, 20 percent extremely stony waste rock

dumps, and 15 percent mine-tailing impoundments and mine support facilities. The primary limitations to development on these sites are the slope and the hazards of wind and water erosion (NRCS 1993).

3.1.2.3 TOPOGRAPHY

The terrain on Davis-Monthan AFB is predominantly flat, sloping down from the southeast to the northwest. The elevation ranges from 2,550 feet above mean sea level (MSL) on the west side of the Base, to 2,950 feet above MSL on the east side of the Base. There are two areas on Base that have any remarkable slope. One is the road cut for Kolb Road as it passes through the Base; the other is Atterbury Wash, which is located in the eastern part of the Base (Davis-Monthan AFB 2001a).

3.2 WATER RESOURCES

3.2.1 Definition of the Resource

Water resources analyzed in this EA include surface water and ground water quantity and quality. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Ground water includes the subsurface hydrologic resources of the physical environment and is an essential resource. Ground water properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Other issues relevant to water resources include the downstream water and watershed areas affected by existing and potential runoff, and hazards associated with 100-year floodplains. Floodplains are defined by EO 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Floodplain values include natural moderation of floods, water quality maintenance, ground water recharge, as well as habitat for many plant and animal species.

The ROI for water resources in this EA includes Davis-Monthan AFB and the Tucson Basin.

3.2.2 Existing Conditions

3.2.2.1 SURFACE WATER

Davis-Monthan AFB is located within the Tucson Basin, which is drained by the Santa Cruz River, which generally flows due north approximately 2 miles west of the Base. Major tributaries of the Santa Cruz River in the vicinity of the Base are the Rillito River, Julian Wash, and Pantano Wash. Pantano Wash is the nearest of these tributaries to the Base, located about 0.5 miles northeast of the Base (USACE 1996; Davis-Monthan AFB 2001a).

The climate within the ROI is characterized as warm and semi-arid. An average of approximately 11 inches of precipitation falls within the Tucson area on an annual basis, with about half of this total occurring between July and September in the form of scattered showers or frequent, isolated thunderstorms during the monsoon season. These events often result in

overflows of the typically dry washes, and sometimes lead to localized flash flooding. More gentle rains typically occur between December and March (USACE 1996).

No perennial drainages are located on the Base. Due to the small amount and infrequent nature of precipitation in the region, the local drainages are ephemeral, flowing only during and immediately following rainstorms. A delineation of jurisdictional waters of the U.S. identified 142,896 linear feet and 0.8 acres of jurisdictional waters of the U.S. at the Base (USACE 1996) (Figure 3.2-1). The main surface water feature on the Base is Atterbury Wash, which is ephemeral and is located in the eastern portion of the Base.

Surface drainage at Davis-Monthan AFB has been modified to comprise a series of ditches, channels, and culverts that discharge either directly or indirectly into the Santa Cruz River. The storm water drainage system at the Base consists of 11 drainage areas, each featuring one or more outfalls (an outfall is defined as a point source that discharges storm water to waters of the U.S.). These drainage areas divert surface runoff to either a detention basin located about one mile off Base, the Tucson Diversion Channel, a pond at Lakeside Park, or Pantano Wash via Atterbury Wash or a series of unnamed culverts, channels, or ditches. These surface waters eventually reach the Santa Cruz River (USACE 1996; Davis-Monthan AFB 2001a; Davis-Monthan AFB 2004b).

Storm water at Davis-Monthan AFB is managed in accordance with the NPDES multi-sector general permit (MSGP) AZR05A12F issued by the USEPA, which is effective through 2005 (Davis-Monthan AFB 2004b). In order to comply with the requirements of the MSGP, Davis-Monthan AFB has prepared and implemented an SWPPP that includes water quality monitoring requirements and Best Management Practices (BMPs) to minimize the potential for contaminants to reach nearby surface waters.

In December 2002, the ADEQ became the permitting authority for NPDES permits within the state, and a new permit specific to Arizona is expected to be issued in late 2004 (ADEQ 2004). When the ADEQ issues the Arizona-specific, final industrial storm water Arizona Pollutant Discharge Elimination system general permit, the Base will be required to re-submit an NOI for coverage under the new general permit (Davis-Monthan AFB 2004b).

3.2.2.2 GROUND WATER

The Base's primary water source is ground water drawn from the Tinaja Beds and the Fort Lowell Formation of the Tucson Basin aquifer. Depletion of local aquifers is a concern in the ROI as water levels have declined an estimated 50 to 100 feet due to the high level of extraction combined with low recharge rates. Ground water depletion is expected to continue for the foreseeable future due to continued urbanization of the Tucson area. Another concern with regard to local ground water is contamination, as a large plume of tri-chloroethylene in the vicinity of the Tucson International Airport, about 5 miles southwest of the Base; it is not believed that this contamination currently threatens Base water supplies (Davis-Monthan AFB 2001a; Davis-Monthan AFB 2004c).

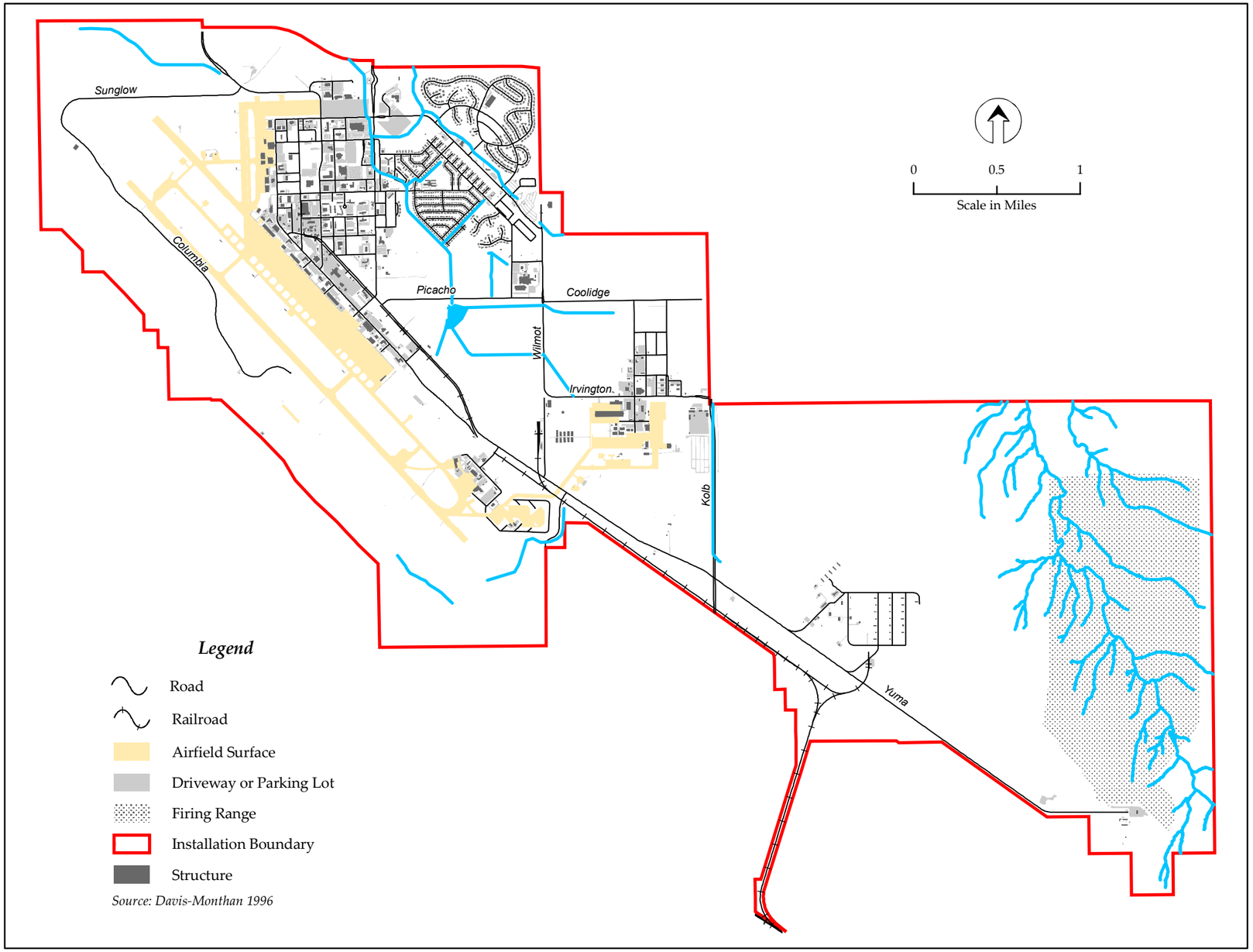


Figure 3.2-1. Waters of the United States at Davis-Monthan AFB, Arizona

3.2.2.3 FLOODPLAINS

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps covering the ROI, Davis-Monthan AFB is located in an area categorized as Zone D: "Areas in which flood hazards are undetermined" (FEMA 1999). However, a floodplain analysis of Davis-Monthan AFB completed in 1998 provides detailed flood data for the Base and Atterbury Wash, specifically. The floodplain analysis estimated that the peak discharge associated with a 100-year flood of Atterbury Wash would be 2,906 cubic feet per second (cfs), and that the lateral width of the 100-year flood would range from 69 to 1,154 feet due to the extreme variations in stream geometry (Davis-Monthan AFB 1998a).

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of the Resource

Biological resources consist of native or naturalized plants and animals, along with their habitats, including wetlands. Although the existence and preservation of biological resources are both intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic benefits to society. This section focuses on plant and animal species and vegetation types that typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute. For purposes of this assessment, sensitive biological resources are defined as those plant and animal species listed as threatened or endangered by the USFWS and species that are listed for conservation-related reasons by the state of Arizona or other entities. Three categories of protection status are included in this section including 1) federal listed threatened and endangered species, 2) state listed species, and 3) other sensitive species.

Federal Listed Threatened and Endangered Species. The ESA of 1973 provides protection to species listed under this category. Endangered species are those species that are at risk of extinction in all or a significant portion of their range. Threatened species are those that could be listed as endangered in the near future.

State Listed Species. The state of Arizona maintains a list of the Wildlife of Special Concern in Arizona (WSCA) in the Arizona Heritage Data Management System, which is maintained by AZGF. The list identifies these species as those whose occurrence in Arizona is or may be in jeopardy, or has known or perceived threats or population declines, as described by the AZGFs listing of WSCA. Additionally, under the Arizona Native Plant Law (1993), the Arizona Department of Agriculture has identified plant species of particular concern throughout the state. Plants on this list are placed in one of five categories of protection: Highly Safeguarded Protected Native Plants; Salvage Restricted (collection with a permit only); Export Restricted (Export out of state prohibited); Salvage Assessed (permits required to remove live trees); and Harvest Restricted (permit required to remove plant by-products).

Other Sensitive Species. Species under this heading are those that are federal species of concern or species listed that are identified as rare or on a watch list under the Arizona Natural Heritage Program state ranking system. These are usually species of regional concern and may

or may not be adopted as state or federally threatened or endangered. At present, these species receive no legal protection under the ESA.

In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (2001), recognized the ecological and economic importance of migratory birds to this and other countries. It requires federal agencies to evaluate the effects of their actions and plans on migratory birds (with an emphasis on species of concern) in their NEPA documents. Species of concern are those identified in 1) the report "Migratory Nongame Birds of Management Concern in the United States" (USFWS 1995a), 2) priority species identified by established plans such as those prepared by Partners in Flight, or 3) listed species in 50 CFR 17.11 *Endangered and Threatened Wildlife*.

3.3.2 Existing Conditions

3.3.2.1 VEGETATION

Tucson, Arizona lies within the American Semi-desert and Desert Province, which is characterized by extensive plains, from which isolated mountains and buttes abruptly rise (Bailey 1995). Vegetation is typically sparse and the flora of this province is characteristic of the Sonoran Desert and well adapted to extremely high temperatures, high exposure to solar radiation, and low precipitation.

Davis-Monthan AFB is specifically classified into the following four vegetation subclasses (Davis-Monthan AFB 1998b; 2001a): landscaped and mowed (located primarily in the cantonment area of the base), Sonoran desertscrub, Sonoran Desert Riparian, and Semi-Desert Grassland (the latter three occur primarily occur in undeveloped areas of the base).

The Sonoran Desertscrub community is the most common community to the Sonoran Desert. There are two subdivisions of the community that are most common in the Tucson area: the Arizona Upland and the Lower Colorado Valley subdivisions. Davis-Monthan AFB is located within the boundaries of the Arizona Upland subdivision, but due to the proximity, similarity of habitat, and topography, many aspects of the Lower Colorado Valley subdivision are evident as well. The Arizona Upland Subdivision includes some of the most famous and picturesque portions of the Sonoran Desert (Davis-Monthan AFB 2001a).

The Sonoran Desert Riparian community is found at Davis-Monthan AFB primarily along Atterbury Wash and comprises a relatively small proportion of the total acreage of the Base. Because of the greater diversity and density of vegetation found in a riparian community, this community provides habitat for many species (Davis-Monthan AFB 2001a).

The Semi-Desert Grassland community is a landscape dominated by perennial grass-scrub species. It is not likely that pure stands of Semi-Desert Grasslands still exist at Davis-Monthan AFB due selective pressures in which shrubs, cacti, and other forbs have begun to replace the original grassland species. However, those areas on the installation where grasses constitute a substantial portion of cover may be remnants of this community (Davis-Monthan AFB 2001a).

The cantonment area of Davis-Monthan AFB is actively landscaped with a variety of native and nonnative grasses, shrubs and trees. The developed area comprises approximately 60 percent

of the Base. These areas consist primarily of buildings, roads, and the airfield. The remaining 40 percent of the Base is undeveloped and contains native vegetation reflecting its Sonoran desert influence. Table 3.3-1 summarizes floristic species that typically occur in each of these classes at Davis-Monthan AFB.

ARIZONA NATIVE PLANT LAW

Arizona contains more rare and unusual plants than anywhere else in the U.S. Under Arizona Native Plant Law (Arizona Revised Statutes Title 3, Chapter 7, *Arizona Native Plants*), native plants cannot be removed from any Arizona land without the permission of the landowner and a permit from the Arizona Department of Agriculture. Plants that fall under this jurisdiction include the saguaro, hedgehog cactus, pincushion cactus, and numerous others. Many of these species occur on Davis-Monthan AFB.

3.3.2.2 WILDLIFE

Wildlife typical of the American Semidesert and Desert province are typically well-adapted to extreme temperatures and low precipitation. Ungulates are largely absent from the desert, living primarily in the paloverde-cactus shrub community. Carnivores, including the desert kit fox (*Vulpes velox macrotis*) and the coyote (*Canis latrans*) are common in this province and are typically nocturnal. Other common species found in this province include the western spotted skunk (*Spilogale gracilis*), kangaroo rats (*Dipodomys* species), and pocket mice (*Perognathus* species). Desert birds include the loggerhead shrike (*Lanius ludovicianus*), Gila woodpecker (*Melanerpes uropygialis*), Gambel's quail (*Callipepla gambelii*), and the cactus wren (*Campylorhynchus brunneicapillus*). Reptiles include many species of snake and lizard (Bailey 1995).

Wildlife that occurs on Davis-Monthan AFB is typical of the Sonoran Desert. Species occurring on the Base are also generally adapted to urban environments as over half the Base is characteristic of this land classification. This developed portion of the Base (the cantonment area) contains habitats and species more typical of rural and agricultural areas where disturbance has previously occurred. Grassy and landscaped areas are often watered, attracting a wide variety of wildlife species, particularly birds. Base structures can be attractive to bats and birds as roosting and nesting areas. Davis-Monthan AFB is known to have a diverse wildlife community. There are over 120 avian species, several mammalian, reptilian, and amphibian species as well as hundreds of invertebrate species (Davis-Monthan 2001a).

A representative list of common wildlife that may occur at Davis-Monthan AFB is listed in Table 3.3-2.

Table 3.3-1. Common Vegetation Communities Likely to Occur on Davis-Monthan AFB

Community	*Latin Name*	*Common Name*
Sonoran Desert Scrub	*Larrea tridentata*	Creosote bush
	Ambrosia dumosa	White bursage
	Hymenoclea monogyra	Burrobrush
	Carnegiea gigantea	Saguaro cactus
	Opuntia fulgida and *Opuntia versicolor*	Cholla species
	Chloris spp.	Windmill grass
	Aristida spp.	Three-awns
	Bouteloua spp.	Grama grass
	Parkinsonia microphylla and *Parkinsonia aculeata*	Paloverde
	Acacia greggii	Catclaw
	Baccharis glutinosa	Seep willow
	Prosopis velutina	Velvet mesquite
	Echinocactus wislizenii	Barrel cacti
	Opuntia spp.	Cacti
Semi-Desert Grassland[1]	*Bouteloua rothrockii*	Grama grass
	Bouteloua californica	Grama grass
	Bouteloua radicosa	Grama grass
	Bouteloua parryi	Grama grass
	Bouteloua barbata	Grama grass
	Cathestecum erectum	False grama grass
	Aristida hamulosa	Three-awns grass
	Aristida wrighti	Three-awns grass
	Aristida ternipes	Three-awns grass
	Aristada aristidoides	Three-awns grass
	Heteropogon contortus	Gangle-head grass
	Chloris spp.	Windmill grass
Sonoran Desert Riparian	*Lycium brevipes*	Tomatillo
	Acacia greggii	Catclaw
	Celtis pallida	Desert hackberry
	Prosopis spp.	Mesquite
	Baccharis salicifolia	Desert broom
	Baccharis glutinosa	Seep willow
	Baccharis viminea	Mule fat
Landscaped/Mowed[2]	*Eragrostis lehmanniana*	Lehmann's lovegrass

Notes: 1. These species may occur in patchy distribution, contiguous habitat in unlikely due to modern development at Davis-Monthan AFB.

2. Species occurring in the other three classes may also occur in this class as ornamental species or patchy distribution.

Sources: Davis-Monthan AFB 1998b and 2001a

Table 3.3-2. Common Wildlife Likely to Occur on Davis-Monthan AFB

Class	*Latin Name*	*Common Name*
Mammals	*Canis latrans*	Coyote
	Lepus californicus	Black-tailed jackrabbit
	Sylvilagus audubonii	Desert cottontail
	Taxidea taxus	Badger
	Felis rufus	Bobcat
	Spilogale putorius	Spotted skunk
	Tayassu tajacu	Javelina
	Eptesicus fuscus pallidus	Big Brown Bat
	Tadarida brasiliensis mexicana	Mexican Free tail Bat
Birds	*Campylorhynchus brunneicapillus*	Cactus wren
	Toxostoma curvirostre	Curve-billed thrasher
	Callipepla gambelii	Gambel's quail
	Columbina inca	Inca dove
	Corvus corax	Raven
	Vermivora spp. and *Dendroica* spp.	Warbler species
	Bubo virginianus	Great-horned owl
	Accipiter cooperii	Cooper's hawk
	Parabuteo unicinctus	Harris' hawk
	Buteo jamaicensis	Redtail hawk
	Buteo swainsoni	Swainson's hawk
	Falco sparverius	American kestrel
	Geococcyx californianus	Greater Roadrunner
	Zonotrichia leucophyrs	White-crowned sparrow
	Passerella iliaca	Fox sparrow
	Passer domesticus	House sparrow
Reptiles	*Phrynosoma solare*	Regal horned lizard
	Sceleporus undulatus	Eastern fence lizard
	Heloderina suspectrum	Gila Monster
	Pituophis melanoleucus	Gopher snake
	Crotalus atrox	Diamondback rattlesnake

Sources: Davis-Monthan AFB 1998b and 2001a; personal communication, Lisa 2004

MIGRATORY BIRDS

Davis-Monthan AFB falls between the central and pacific flyways and within the Sonoran Desertscrub Habitat Region. There are six species listed in the Arizona Partners in Flight Conservation Plan. These species include: cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), Costa's hummingbird (*Calypte costae*), gilded flicker (*Colaptes chrysoides*), purple martin (*Progne subis*), Le Conte's thrasher (*Toxostoma lecontei*), and the rufous-winged sparrow (*Aimophila carpalis*). The cactus ferruginous pygmy-owl is listed as a priority species (Latta *et al.* 1999). Of these six species, only the rufous-wing sparrow and Costa's hummingbird have been documented on the Base (Tucson Bird Count 2004; personal communication, Lisa 2005). The other four species may occur on the Base or the surrounding areas, but their occurrence would likely be transient.

SPECIAL-STATUS SPECIES

There are currently 76 special status species listed by the AZGF for Pima County, Arizona. Of the 76 species, two species are known to occur on Base, and three species have potential to occur based on their habitat requirements. These species include the western burrowing owl, American peregrine falcon, lesser long-nosed bat, cave myotis, and the Pima pineapple cactus. No federally threatened, endangered, or proposed threatened species are known to occur on Davis-Monthan AFB (Davis-Monthan AFB 1998b; personal communication, Lisa 2004). Table 3.3-3 contains a list of special status species known to occur on, or in the nearby vicinity of (within six miles) Davis-Monthan AFB and the general habitat requirements for each species.

3.3.2.3 WETLANDS

Wetlands are protected from development under EO 11990, *Protection of Wetlands*. Guidance from the EO requires federally funded activities associated with wetlands to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural beneficial values of wetlands.

A wetland inventory for Davis-Monthan AFB was conducted in 1996. One small 0.8 acre manmade depression south of the golf course, on the south side of Picacho Street was preliminarily identified as a jurisdictional wetland; however, subsequent review and coordination with the USACE resulted in a determination that the depression lacked sufficiently strong wetland indicators to be considered jurisdictional. Therefore, based on the 1996 wetland delineation, there are no jurisdictional wetlands found on Base. Correspondence from the U.S. Army Corps of Engineers (Appendix A) has indicated that the 1996 wetland delineation is out of date and they have recommended that a supplemental delineation be prepared for future work that may involve wetlands and/or waters of the U.S.

3.4 AIR QUALITY

This section discusses air quality considerations and conditions in the area around Davis-Monthan AFB in Pima County, Arizona. It addresses air quality standards and describes current air quality conditions in the region.

Table 3.3-3. Special-Status Species Occurring On or Near Davis-Monthan AFB

Class	*Genus species*	*Common Name*	*USFWS*	*AZGF*	*General Species Habitat Requirements*	*Occurrence @ Davis-Monthan AFB based on habitat requirements*
Bird	*Athene cunicularia hypugaea*	Western burrowing owl	SC		Variable in open (may occur in human developed areas), well-drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals.	Occurs
Bird	*Falco peregrinus anatum*	American Peregrine falcon	SC	WSC	Steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.	Occurs
Mammal	*Leptonycteris curasoae yerbabuenae*	Lesser long-nosed bat	LE	WSC	Desert scrub habitat with agave and columnar cacti present as food plants.	May Occur
Mammal	*Myotis velifer*	Cave myotis	SC		Desertscrub of creosote, brittlebush, palo verde and cacti. Roost in caves, tunnels, and mineshafts and under bridges and sometimes in buildings within a few miles of water.	May Occur
Plant	*Coryphantha scheeri var. robustispina*	Pima pineapple cactus	LE		Sonoran desertscrub or semi-desert grassland communities.	Potential to Occur

SC = Species of Concern, LE = List endangered, WSC = Arizona Species of Concern.
Sources: Personal communication, Lisa 2004; personal communication, Snow 2004; AZGF 2004

3.4.1 Definition of the Resource

Federal Air Quality Standards. Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for six "criteria" pollutants: O_3, NO_2, CO, respirable particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), SO_2, and Pb. The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [$\mu g/m^3$]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Upon achieving attainment, areas are considered to be in maintenance status for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated the same as areas in attainment of the NAAQS.

In 1997, the USEPA promulgated two additional standards: an 8-hour O_3 standard (which will replace the existing 1-hour O_3 standard) and a standard for particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), which are fine particulates that have not been previously regulated. In addition, the USEPA revised the existing PM_{10} standard. Attainment designations for the 8-hour O_3 standard were promulgated in April 2004 and are effective as of June 15, 2004. Attainment designations for the $PM_{2.5}$ standard are expected in December 2004. Meanwhile, the USEPA will enforce the existing 1-hour O_3 standard for areas that are still in nonattainment of the standard.

State Air Quality Standards. Under the CAA, state and local agencies may establish ambient air quality standards (AAQS) and regulations of their own, provided that these are at least as stringent as the federal requirements. For all criteria pollutants, Arizona has adopted the NAAQS. A summary of the federal and Arizona AAQS that apply to the proposed project area is presented in Table 3.4-1.

Table 3.4-1. Arizona and Federal Ambient Air Quality Standards

Air Pollutant	*Averaging Time*	*Arizona AAQS*	FEDERAL (NAAQS)	
			Primary	*Secondary*
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	9 ppm 35 ppm	--- ---
Nitrogen Dioxide (NO_2)	AAM	0.053 ppm	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	AAM 24-hour 3-hour	0.030 ppm 0.14 ppm 0.50 ppm	0.030 ppm 0.14 ppm ---	--- --- 0.50 ppm
Particulate Matter (PM_{10})	AAM 24-hr	50 $\mu g/m^3$ 150 $\mu g/m^3$	50 $\mu g/m^3$ 150 $\mu g/m^3$	50 $\mu g/m^3$ 150 $\mu g/m^3$
Particulate Matter ($PM_{2.5}$) [1]	AAM 24-hour	--- ---	15 $\mu g/m^3$ 65 $\mu g/m^3$	15 $\mu g/m^3$ 65 $\mu g/m^3$
Ozone (O_3) [2]	1-hour 8-hour	0.12 ppm ---	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$

Notes: AAM = Annual Arithmetic Mean; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

1. The $PM_{2.5}$ standard (particulate matter with a 2.5 μm diameter or smaller) will be implemented over the next few years. USEPA plans to designate areas as being in attainment or nonattainment of the $PM_{2.5}$ standard in December 2004.
2. The 8-hour O_3 standard will replace the 1-hour standard in June 2005, one year after the effective date of USEPA's recent nonattainment designations. Meanwhile, the 1-hour O_3 standard will continue to apply to areas not attaining it.

Sources: 40 Code of Federal Regulations 50; Arizona Administrative Code R18-2.

State Implementation Plan. For non-attainment regions, the states are required to develop an SIP designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA further established the goal of PSD of air quality in all international parks; national parks which exceeded 6,000 acres; and national wilderness areas and memorial parks which exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (non-mandatory) PSD Class I areas, e.g., a national park or national wilderness area established after August 7, 1977, which exceeds 10,000 acres. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No

Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system.

Visibility. CAA Section 169A established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM_{10} and SO_2 in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

(a) cause or contribute to any new violation;

(b) increase the frequency or severity of any existing violation; or

(c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases.

Stationary Source Operating Permits. In Pima County, the Pima County Department of Environmental Quality regulates air quality and processes permit applications for stationary air pollution sources. Activity permits must be obtained for various construction, demolition, earthmoving, and land clearing activities. Title V of the CAA Amendments of 1990 requires states to issue Federal Operating Permits for major stationary sources. A major stationary source in an attainment or maintenance area is a facility (i.e., plant, base, or activity) that emits more than 25 tons per year (TPY) of volatile organic compounds (VOCs) or nitrogen oxides (NO_x), both of which are atmospheric precursors to the formation of O_3; 100 TPY of any other criteria air pollutant; 10 TPY of a hazardous air pollutant (HAP); or 25 TPY of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality (Pima County Department of Environmental Quality 2004a; Davis-Monthan AFB 2004d).

3.4.2 Existing Conditions

Regional Air Quality. Federal regulations at 40 CFR 81 delineate certain air quality control regions (AQCR), which were originally designated based on population and topographic criteria closely approximating each air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Therefore, the ROI for air quality for the Proposed Action is the Pima Intrastate AQCR (AQCR 15), which includes Pima County, Arizona (40 CFR 81.269).

Attainment Status. A review of federally published attainment status for Tucson, Arizona in 40 CFR 81.303 indicated that Davis-Monthan AFB is located within a region designated as attainment (i.e., meeting national standards) for all criteria pollutants, including CO, NO_2, SO_2, PM_{10}, O_3, and Pb. The Tucson metropolitan area was designated as attainment for CO as of July 10, 2000, and is currently covered by a 10-year maintenance plan for CO (65 FR 36353, June 8, 2000); therefore, although the county is designated attainment for CO, conformity requirements apply for CO due to its maintenance status. In 1999, Tucson violated the 24-hour PM_{10} NAAQS due to high wind natural events and an extended period of low rainfall. The Pima County Department of Environmental Quality is currently developing a Natural Events Action Plan to protect the public from airborne fine dust particles during future high wind action events (Pima Association of Governments 2004). Title 17 of the Pima County Code lists precautions that must be taken to control dust at all times, and requires that facilities apply for activity permits prior to beginning any land stripping, earthmoving, blasting, trenching, road construction, or demolition or renovation of any structure (Pima County Department of Environmental Quality 2004b).

Based on recent monitoring data, the USEPA has designated Pima County as attainment for its 8-hour ozone standard (40 CFR 81.332), effective June 15, 2004. The governor of Arizona has recommended to USEPA that the entire State be designated as attainment for USEPA's $PM_{2.5}$ standard (USEPA 2004).

PSD Class I Areas. Mandatory PSD Class I areas for the State of Arizona are listed under 40 CFR 81.403. The nearest PSD Class I area is the Saguaro National Park, the East Unit of which is 14 miles from Davis-Monthan AFB. The West Unit of Saguaro National Park is 21 miles west-northwest of the Base. Other nearby PSD class I areas include the Galiuro Wilderness, 41 miles northeast of the Base; Chiricahua National Monument, 88 miles east; the Chiricahua Wilderness, 93 miles east-southeast; the Superstition Wilderness, 95 miles north; the Sierra Ancha Wilderness, 116 miles north; the Mazatzal Wilderness, 142 miles north; the Mount Baldy Wilderness, 145 miles north-northeast; the Gila Wilderness in New Mexico, 157 miles east; and the Pine Mountain Wilderness, 159 miles north (National Park Service 2004, n.d.a, n.d.b, n.d.c) (Figure 3.4-1).

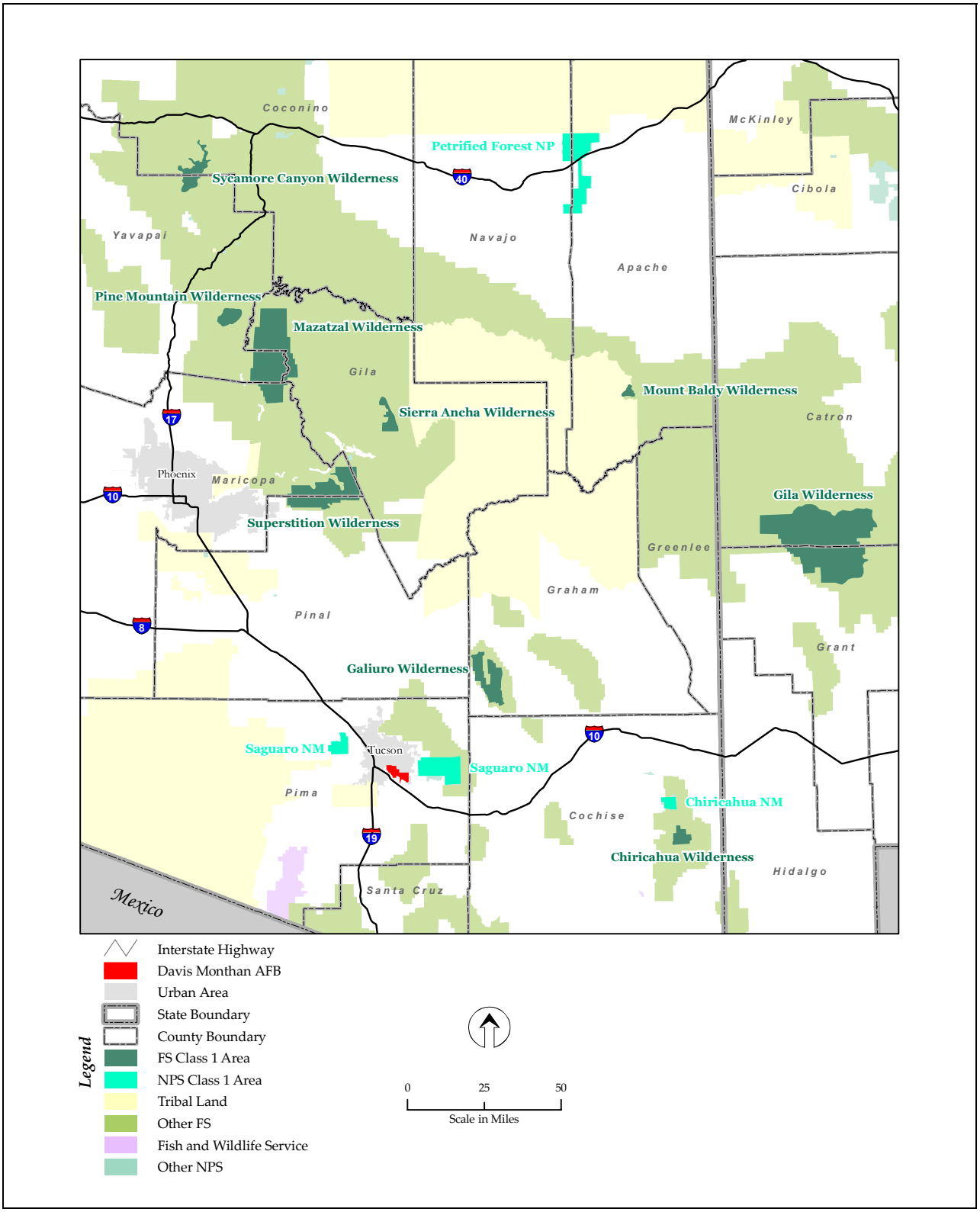


Figure 3.4-1. Prevention of Significant Deterioration (PSD) Class I Areas Near Davis-Monthan AFB, Arizona

Climate. The climate of Pima County and southeastern Arizona varies with elevation; the mountain ranges experiencing higher amounts of precipitation and lower temperatures than the low desert regions. Average maximum and minimum temperatures at Tucson Airport (elevation 2,560 feet) are 82 degrees Fahrenheit (°F) and 55°F, compared with 59°F and 34°F at the Palisades Ranger Station (elevation 8,000 feet) 40 miles away in the Coronado National Forest. Average annual precipitation is 12 inches in Tucson and 31 inches at the higher elevations. Average snowfall is slightly more than one inch per year in Tucson and 78 inches per year at the ranger station (Arizona Board of Regents 2001).

In general, the hottest period in Tucson is from May to September, with daytime temperatures often exceeding 100°F. Nighttime temperatures are typically 30 degrees cooler. Winters are mild with warm days and cool nights, occasionally falling below freezing. The majority of the rain falls during two rainy seasons: July through mid-September and December through mid-March. The summer storms are often torrential, with invariable lightning strikes and occasional flash flooding, particularly during the summer monsoon season.

Tucson experiences an average of 192 clear days and 53 rainy days per year. Temperatures above 90°F occur during an average of 143 days per year; sub-freezing temperatures are experienced an average of 18 days per year. Wind is typically from the southeast year-round, at an average speed of 8.3 miles per hour (Friends of Saguaro National Park 2004; Western Regional Climate Center 2004).

Current Emissions. Stationary sources of air emissions at Davis-Monthan AFB include mobile sources, non-road engines, and stationary sources. Mobile sources include aircraft, highway vehicles, and off-road vehicles. Non-road engines include aerospace ground equipment, portable generators, welders, and grounds maintenance equipment. Because these mobile and non-road sources are not regulated by the state of Arizona, they are not included in the base-wide emissions inventory. Stationary sources at Davis-Monthan include jet engine test cells, fuel storage and distribution equipment, corrosion control facilities, fuel cell maintenance, solvent cleaning, abrasive blasting, boilers and heaters, emergency generators, and gasoline service stations. In the following table, particulate matter includes PM_{10} as a component of the total; NO_x includes NO_2 and other nitrogen compounds; and sulfur oxides (SO_x) includes SO_2 and other sulfur compounds. Because VOCs and NO_x are precursors to the formation of O_3 in the atmosphere, control of these pollutants is the primary method of reducing O_3 concentrations in the atmosphere. Table 3.4-2 summarizes the results of an emissions inventory for stationary sources at Davis-Monthan AFB for calendar year 2003 (Davis-Monthan 2004d).

Table 3.4-2. Baseline Emissions at Davis Monthan AFB, Calendar Year 2003

	ANNUAL EMISSIONS (TONS PER YEAR)				
	CO	***VOC***	***NO_x***	***SO_x***	***PM_{10}***
Stationary Sources	40.8	48.2	45.2	3.2	9.7

Source: Davis-Monthan AFB 2004d

Davis-Monthan AFB operates under Operating Permit #1701, which contains voluntary limits on activity emissions for all major types of HAPs on the Base. The permit allows Davis-

Monthan AFB to be categorized as a Synthetic Minor source of HAPs, and the emission thresholds in the permit allow the Base to avoid the operational constraints and emission control requirements associated with the federal Aerospace National Emission Standards for Hazardous Air Pollutants (NESHAPs). Since the permit was issued in 1998, the Base HAP emissions have been less than half of the permitted levels, leaving substantial operating flexibility under the thresholds for future changes in mission and increases in activities that may emit air pollutants (Davis-Monthan 2004d).

Regional Air Emissions. The previous section lists on-base emissions for Davis-Monthan AFB. The NEPA process, however, must also consider impacts from mobile sources and indirect emissions related to the project, some of which (for example, commuting of new employees to and from the facility) occur outside of the installation. For comparison purposes, Table 3.4-3 lists county-wide emissions for Pima County, as compiled by the USEPA in its National Emissions Inventory (NEI), which was last updated in 1999 (USEPA 2003). The 1999 NEI contains estimates of annual emissions for stationary and mobile sources of air pollutants in each country on an annual basis.

Table 3.4-3. Air Emissions Inventory Pima County, Arizona Calendar Year 1999

	POLLUTANTS (IN TONS PER YEAR)				
	CO	***SO_2***	***NO_x***	***PM_{10}***	***VOC***
Pima County, AZ					
Stationary Sources	132,218.6	4,207.3	18,853.1	30,515.4	25,207.2
Mobile Sources	141,992.1	770.0	19,641.8	565.5	14,090.9

Source: USEPA 2003.

3.5 NOISE

3.5.1 Definition of the Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along established paths (i.e., highways, railroads, and airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (i.e., a person or animal).

The physical characteristics of noise, or sound, include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the eardrum. This may be likened to the ripples in water that would be produced when a stone is dropped into it. As the acoustic energy increases, the

intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers. Sound levels are easily measured, but the variability is subjective and physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation by subjective terms such as "loudness" or "noisiness."

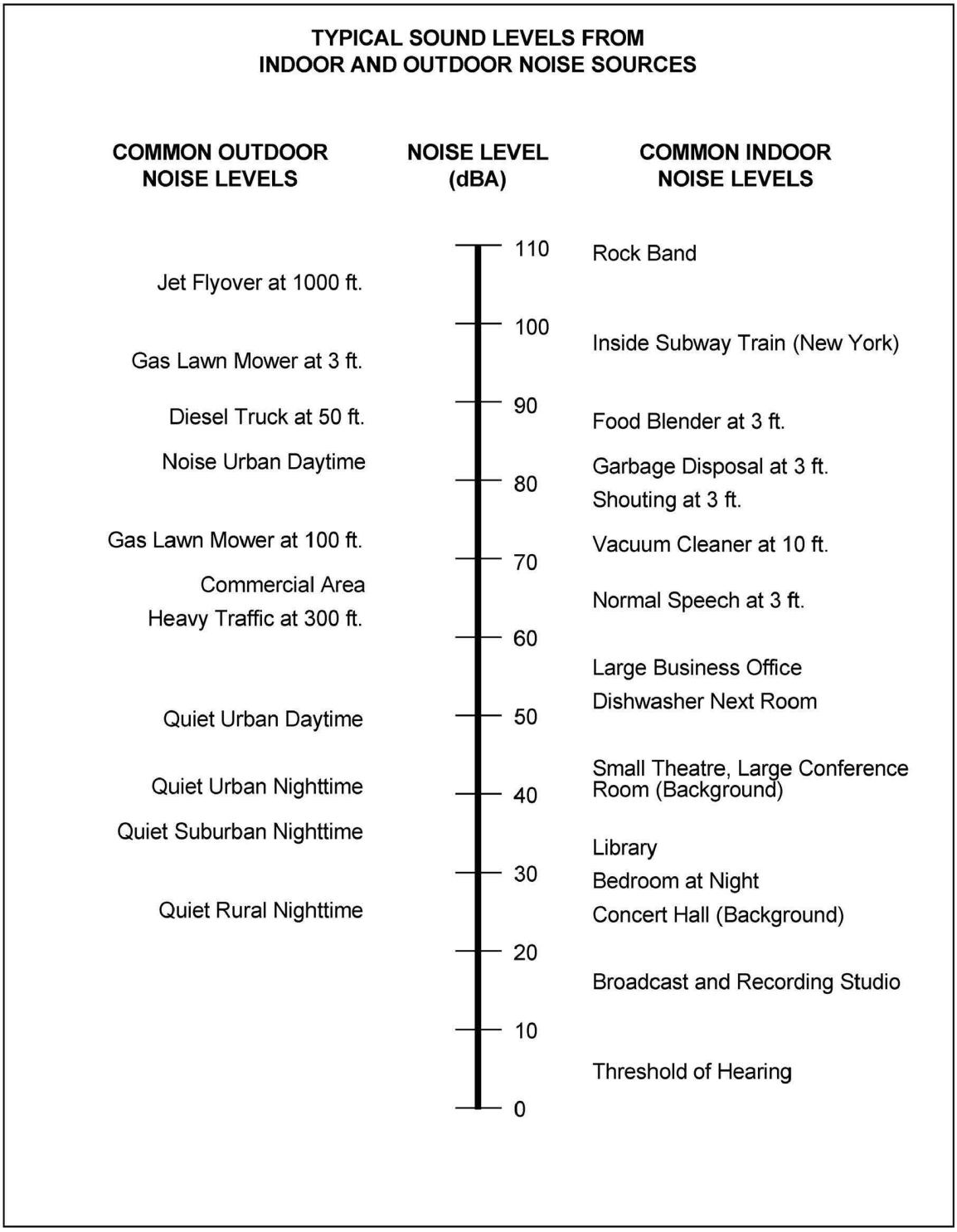
The term most often used when measuring the magnitude of sound is *sound pressure level*. Sound pressure level can vary over an extremely large range of amplitudes. It is a relative quantity, in that it is a ratio between the actual sound pressure and a fixed reference pressure, which is normally the threshold of human hearing. Table 3.5-1 presents the subjective effect of changes in sound pressure level.

Table 3.5-1. Perceived Changes in Noise as Sound Pressure Changes

Change in Sound Level (dB)	CHANGE IN POWER		*Change in Apparent Loudness*
	Decrease	*Increase*	
3	1/2	2	Just perceptible
5	1/3	3	Clearly noticeable
10	1/10	10	Half or twice as loud
20	1/100	100	Much quieter or louder

Source: American National Standards Institute (ANSI) 1986

Different sounds contain different frequencies. When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal, which emphasizes frequencies in the middle of the audible spectrum and de-emphasizes low and high frequencies in a manner corresponding to the way the human ear perceives sound. This filtering network has been established by the ANSI (ANSI 1983). The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used for many years as a measure of community noise. Figure 3.5-1 shows the typical A-weighted sound levels for various sources.



Source: Harris 1991.

Figure 3.5-1. Typical Sound Levels from Indoor and Outdoor Noise Sources

The word "metric" is used to describe a standard of measurement. As used in environmental noise analysis, there are many different types of noise metrics. Each metric has a different physical meaning or interpretation and each metric was developed by researchers attempting to represent the effects of environmental noise.

The day-night average sound level (DNL) was developed to evaluate the total daily community noise environment. DNL is the average A-weighted acoustical energy for a 24-hour period with a 10 dB upward adjustment added to the nighttime levels (10:00 p.m. to 7:00 a.m.). This adjustment is an effort to account for the increased sensitivity of most people to noise in the quiet nighttime hours. DNL has been adopted by federal agencies including the USEPA, the Federal Aviation Administration (FAA), and the Department of Housing and Urban Development as the accepted unit for quantifying human annoyance to general environmental noise.

3.5.2 Existing Conditions

Noise associated with activities at Davis-Monthan AFB is characteristic of that associated with most Air Force installations with a flying mission. During periods of no aircraft activity, noise associated with base operations results primarily from maintenance and shop activities, ground traffic movement, occasional construction, and similar sources. The resultant noise is almost entirely restricted to the Base itself and is comparable to that which might occur in adjacent community areas. Due to airfield operations, existing noise levels are typical of an urban residential area near a major airport.

Land use guidelines identified by the Federal Interagency Committee on Urban Noise (FICUN) are used to determined compatible levels of noise exposure for various types of land use surrounding airports (FICUN 1980); 65 to greater than 85 dB (DNL) noise contours are frequently used to help determine compatibility of aircraft operations with local land use. Figure 3.5-2 depicts the baseline DNL 65 to 85 dB noise contours in 5 dB increments surrounding the Davis-Monthan AFB airfield. Table 3.5-2 presents the baseline land acreage exposed to noise levels greater than 65 dB (DNL).

Table 3.5-2. Noise Contour Acreage, Baseline Conditions

Noise Contour (DNL)	*Acres*
65 – 70 dB	3,506
70 – 75 dB	1,293
75 – 80 dB	642
80+ dB	564
Total	**6,005**

Source: ACC 2002

Much of the Base administrative, industrial, and unaccompanied housing areas are within the 65 dB DNL noise level contour. Although not prohibited, residential and community areas are discouraged from being sited inside the 65 dB DNL noise contour. Sound attenuation is

required for administrative facilities exposed to the 70 dB DNL noise contour, which includes areas mostly along the flight line (Davis-Monthan AFB 2004a).

3.6 LAND USE AND VISUAL RESOURCES

3.6.1 Definition of the Resource

Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, airfield, recreational, and other developed areas. Land use is regulated by management plans, policies, and regulations determining the type and extent of land use allowable in specific areas and protection specially designated for environmentally sensitive areas.

Visual resources consist of the natural elements (e.g., vegetation, waterbodies, mountains) and the manmade structures which typically make up the viewing environment. Visual resources are reviewed to determine the compatibility of construction projects within a surrounding environment.

The ROI for land use and visual resources consists of all the lands of Davis-Monthan AFB, as well as adjacent portions of Tucson and Pima County.

3.6.2 Existing Conditions

3.6.2.1 LAND USE

Davis-Monthan AFB occupies 10,613 acres located mostly within the city limits of the City of Tucson. A small portion of the southern end of the Base is located within unincorporated Pima County. Several entities, including the City of Tucson, the State of Arizona, the federal government, as well as private landowners, have ownership of the lands comprising the Base.

There are 12 land use categories at Davis-Monthan AFB. These are listed below in Table 3.6-1 and are depicted in Figure 3.6-1. As shown in Table 3.6-1, Open Space is the most prevalent land use type on Base, followed by Industrial and Airfield uses, respectively. Although land uses within the Base are considered to be generally compatible, most of the Base's existing land use pattern was developed during and shortly after World War II, prior to the establishment of current Air Force guidelines for airfield land use patterns. As such, some anomalies and conflicts with land use patterns exist at Davis-Monthan AFB. Primary on-base conflicts are associated with airfield related uses such as structures that are located within airfield clear zones (Davis-Monthan AFB 2004a).

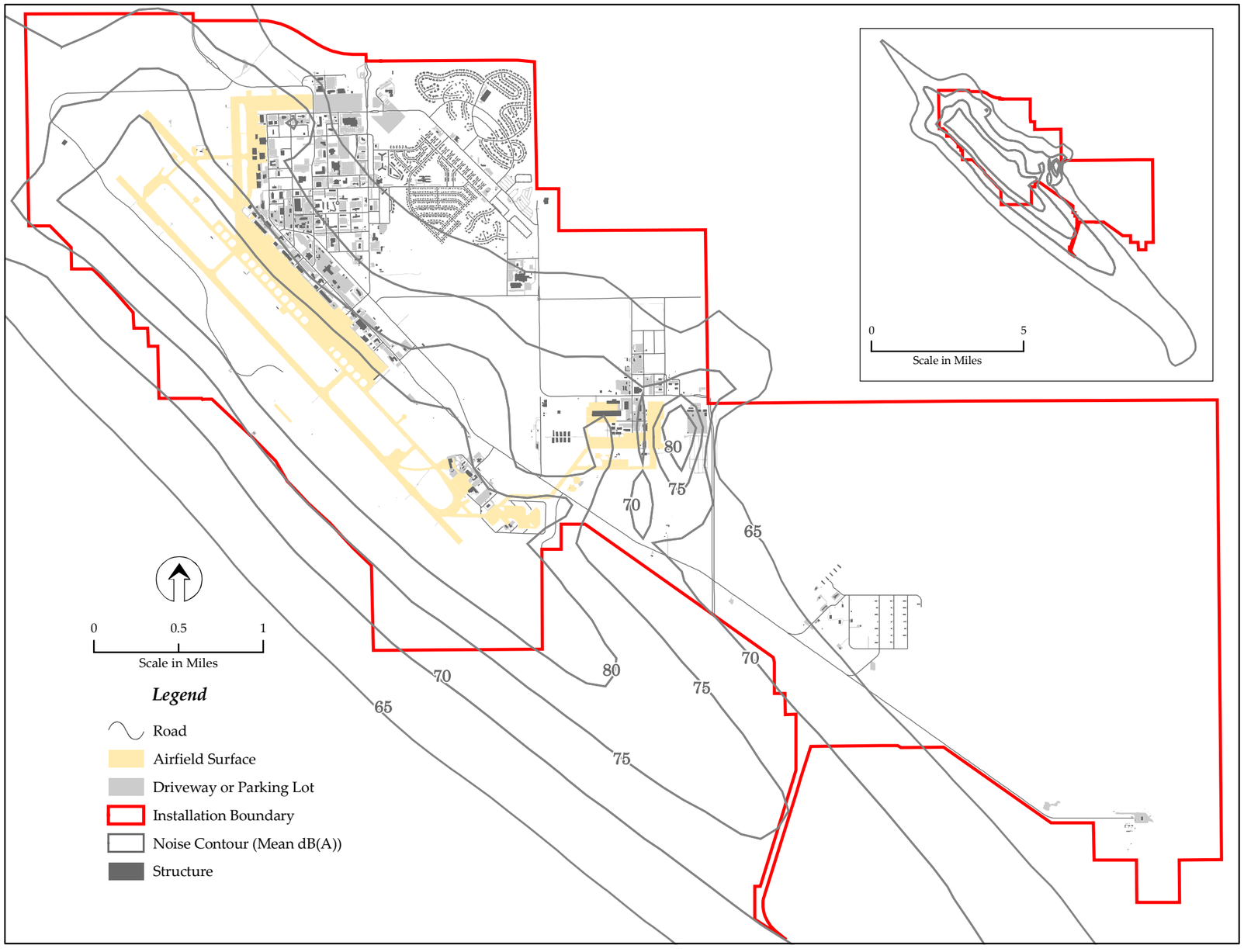


Figure 3.5-2. Existing Noise Contours at Davis-Monthan AFB, Arizona

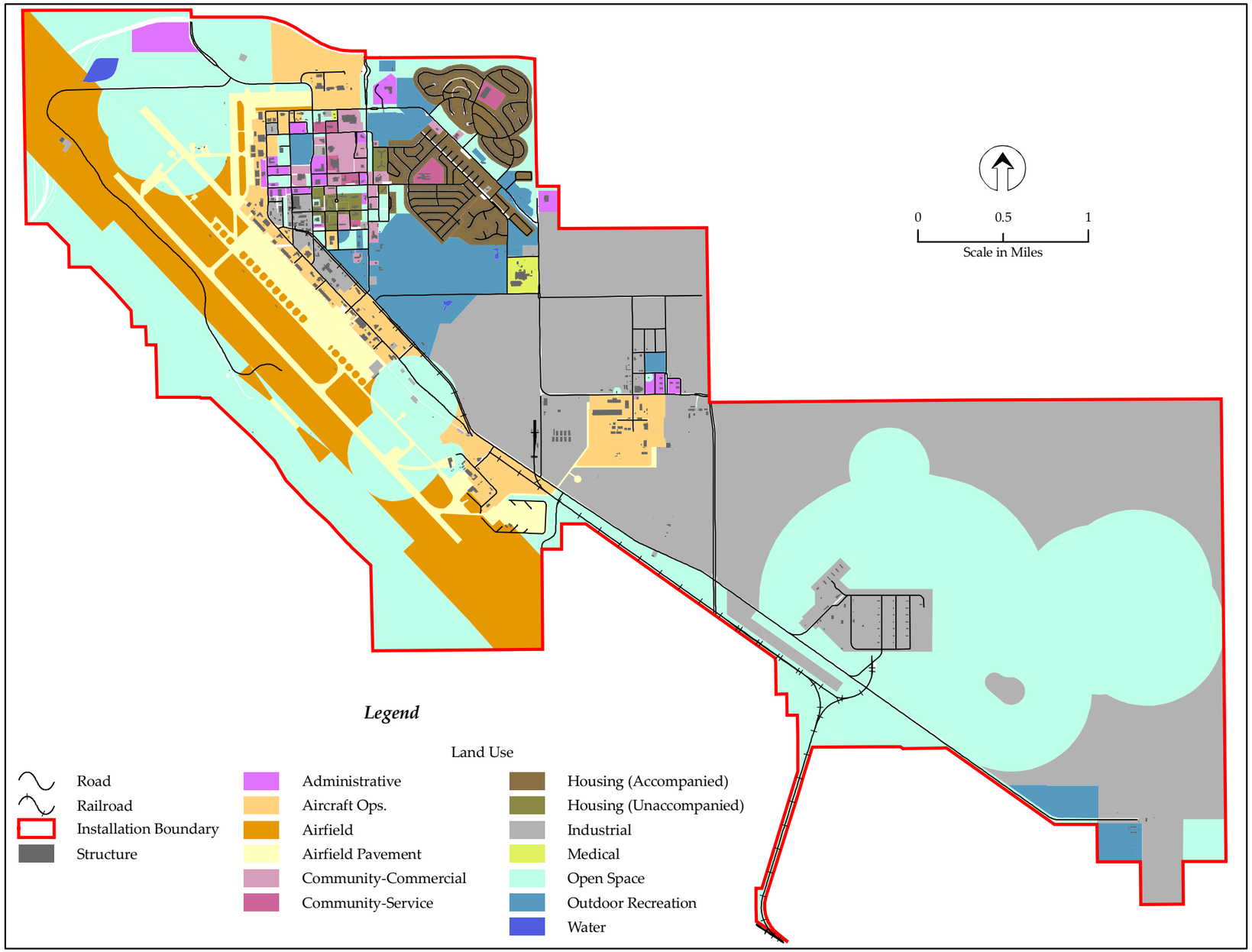


Figure 3.6-1. Land Use Categories at Davis-Monthan AFB, Arizona

Table 3.6-1. Land Use Categories at Davis-Monthan AFB

Land Use Category	*Acres*	*Example*
Airfield	1,453	Runway, overruns, taxiways, aprons
Aircraft Operations and Maintenance	444	Hangars, maintenance shops, aircrew facilities, etc.
Industrial	3,470	Supply, Civil Engineering facilities, vehicle maintenance facilities, etc.
Administrative	85	Headquarters facilities, Base support, security, etc.
Community Commercial	68	AAFES, commissary, credit union, dining hall, etc.
Community Services	31	Schools, post office, library, chapel, etc.
Medical	31	Health care center, dental clinic, veterinarian facility, etc.
Accompanied Housing	291	Family housing, temporary housing, trailer courts
Unaccompanied Housing	30	Dormitories, Visiting Officers Quarters, Visiting Airman Quarters
Outdoor Recreation	332	Golf course, swimming pool, playing fields, etc.
Open Space	4,209	Conservation areas, safety clearance zones, etc.
Water	13	Storm drainage collection ponds

Source: Davis-Monthan AFB 2004a.

Land use policies associated with the airfield at Davis-Monthan AFB include the following (Davis-Monthan AFB 2004a):

- New structures at Davis-Monthan AFB cannot be sited within the clear zone;
- Structures within 1,000 feet of the centerline of the runway (lateral clear zone) cannot be above ground level;
- Structures cannot be located within 200 feet of the centerline on taxiways;
- Structures that are not related to flight operations cannot be located within 125 feet of the edge of the aircraft parking apron.

Tucson is one of the most rapidly growing metropolitan areas in the U.S. When originally constructed, the Base was located several miles from the Tucson urbanized area. However, development associated with the city has expanded in recent decades to surround Davis-Monthan AFB on most sides, with the most highly developed areas located immediately north and west of the Base boundary. Land use adjacent to the north side of the Base is primarily suburban residential, with a mix of office, retail and business services. Land use to the east and

south of the Base comprises primarily undeveloped rangeland, along with pockets of planned mixed uses including light industrial, scientific and research, and single-family residential subdivisions. Land use to the west comprises residential, office retail, business services, and light industrial. Encroachment is a primary land use concern at the Base as 3,139 acres outside of the Base are considered to be affected by Base operations, with 471 acres considered to be incompatible with the Base's aircraft operations. The primary conflicts between Base operations and off-base land uses are safety risks related to military overflights and noise exposure (Davis-Monthan AFB 2004a; ACC 2002; Arizona Department of Commerce 2004).

In order to address land use conflicts related to the encroachment of urban development adjacent to Davis-Monthan AFB, the *Davis-Monthan Air Force Base/Tucson/Pima County Joint Land Use Study* was prepared. This study was completed as a collaborative effort between the Base and local agencies including the City of Tucson and Pima County, which have jurisdiction over land use in the vicinity of the Base. The purpose of this study is to protect the Base's ability to continue its military mission (and the associated economic benefits derived by the local community) from surrounding development, while continuing to increase economic diversity in the area surrounding the Base in a manner that is consistent with the Base's mission. Among the primary goals of this study are:

- Assess existing plans and studies to gather data and data needs, and identify areas of consistency and conflict in these documents as they relate to addressing encroachment of the Base;
- Determine which land uses are compatible, acceptable, and feasible with the constraints presented by the Base, including high-noise zones, accident potential zones, etc.
- Prepare an implementation plan to prevent urban encroachment that impacts the Base's mission (Arizona Department of Commerce 2004).

The Pima County Planning and Zoning Commission recently passed a major plan amendment to implement the Joint Land Use Study, and associated changes to zoning and planned land uses in the vicinity of the Base.

3.6.2.2 VISUAL RESOURCES

The visual character of Davis-Monthan AFB features a mixture of architectural styles and varying degrees of landscaping, with little uniformity. The varying architectural styles of buildings on Base include split-block, southwestern, and utilitarian, and the style generally depends on when the building was constructed. A common theme of building exteriors throughout the Base is sand-color paint accented with darker shades. Base landscaping ranges from areas that are highly landscaped to areas that generally lack any landscaping.

3.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.7.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with the human environment, particularly population and economic activity. Population is described by the

change in magnitude, characteristics, and distribution of people. Economic activity is typically composed of employment distribution, personal income, and business growth. Any impact on these two fundamental socioeconomic indicators can have ramifications for secondary considerations, like housing availability and public service provision.

To comply with NEPA, the planning and decision making process for actions proposed by federal agencies involves a study of other relevant environmental statutes and regulations, including EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The essential purpose of EO 12898 is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies.

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children, and to ensure that federal agency policy, programs, activities and standards address environmental risks and safety risks to children. This section identifies the distribution of children and locations where the number of children in the affected area may be proportionately high (e.g., schools, child care centers, etc.).

The ROI for socioeconomics for this analysis includes the Tucson Metropolitan Statistical Area (MSA), which is essentially Pima County. Socioeconomic data are presented for the ROI and the Tohono O'odham Reservation, where information is available. Baseline trends for this region are analyzed in comparison to those at the state and national scale. Consequently, various data in this section are presented for the ROI, county, state, and national levels. Existing conditions for environmental justice were analyzed through demographic characterization, particularly ethnicity and poverty status for the ROI.

3.7.2 Existing Conditions

3.7.2.1 POPULATION AND EMPLOYMENT

Table 3.7-1 compares the differences in population in the ROI between the 1990 Census and the 2000 Census. This comparison reveals that the state of Arizona experienced extraordinary growth, increasing forty percent over the last decade. All areas within Arizona exceeded the national average.

Table 3.7-1. Population in the ROI

Area	*1990 Census Population*	*2000 Census Population*	*Percent Change*
Tohono O'odham[1] (5, 6)	8,730	10,683	22.4
Tucson MSA (4)	666,880	843,746	26.5
Arizona (2)	3,665,228	5,130,632	40.0
United States (2)	248,709,873	281,421,906	13.2

Note: 1. In the 1990 Census, the Tohono O'odham Reservation was identified as the Papago Reservation.
Sources: U.S. Census Bureau (USCB) 1990; USCB 2000a; USCB 2001a; USCB 2001b; USCB 2001c; USCB 2001d.

According to the 2000 Census, the educational, the health, and social services industry employed the largest percent of the civilian population over 16 years of age in the U.S. (19.9), Arizona (18.0), Tucson MSA (22.5), and the Tohono O'odham Reservation (30.0). In each of these areas, commercial employees were the most common, while government employees constituted 14.6, 15.2, 18.7, and 46.9 percent of the workforce, respectively (USCB 2000b).

The military population at Davis-Monthan AFB is approximately 6,200 personnel. Davis-Monthan AFB employs slightly more than 2,000 civilian workers. Approximately 8,900 military dependents and 14,000 military retirees and survivors in the Tucson urban area continue to be supported by the Base. As the fourth largest employer in the Tucson area (Arizona Daily Star 2004), Davis-Monthan AFB has an annual regional economic impact of over $1.1 billion (Davis-Monthan AFB 2004a), which includes not only payroll and pensions, but also materials and construction expenditures.

Table 3.7-2 compares the per capita income (PCI) in the ROI with the state and the U.S. Tucson and the state of Arizona are comparable to the national mean; however, the Tohono O'odham Reservation is substantially lower than the PCI of the nation or the surrounding areas (USCB 2000a).

Table 3.7-2. Per Capita Income

Geographic area	*Per Capita Income, In Dollars, 2000*
US	21,587
Arizona	20,275
Tohono O'odham	6,998
Tucson MSA	19,785

Source: USCB 2000a.

3.7.2.2 ENVIRONMENTAL JUSTICE

In order to present a thorough environmental justice evaluation, particular attention is given to the distribution of race, poverty, and legal (under age 18) status in the ROI.

DEMOGRAPHICS

The comparative statistics for race and hispanic identification for the ROI are presented in Table 3.7-3. Tucson MSA and Arizona have over twice the proportion of the population identified as Hispanic or Latino than the nation. Persons identifying themselves as white constitute the same percentage of the population at the national, state, and metropolitan levels. However, in minority groups, both Arizona and Tucson MSA have higher proportions of "some other race" and "American Indian or Alaska Native" groups. The Tohono O'odham Reservation is an area of concentrated "American Indian or Alaska Native" persons, with over 90 percent of the population belonging to that group.

Table 3.7-3. Profile of Demographic Characteristics, Year 2000

	RACE								
	ONE RACE								
Geographic Area	*One race*	*White*	*Black or African American*	*American Indian and Alaska Native*	*Asian*	*Native Hawaiian and Other Pacific Islander*	*Some other race*	*Two or more races*	*Hispanic or Latino (of any race)*
U.S.	274,595,678	211,460,626	34,658,190	2,475,956	10,242,998	398,835	15,359,073	6,826,228	35,305,818
(%)	97.6	75.1	12.3	0.9	3.6	0.1	5.5	2.4	12.5
Arizona	4,984,106	3,873,611	158,873	255,879	92,236	6,733	596,774	146,526	1,295,617
(%)	97.1	75.5	3.1	5	1.8	0.1	11.6	2.9	25.3
Tucson MSA	816,677	633,387	25,594	27,178	17,213	1,088	112,217	27,069	247,578
(%)	96.8	75.1	3	3.2	2	0.1	13.3	3.2	29.3
Tohono O'odham	10,683	873	11	9,718	17	10	54	104	761
(%)	99	8.1	0.1	90.1	0.2	0.1	0.5	1	7.1

Note: Percent of total population (row 2) that each group represents is given in parenthesis. Only the percentages under the 'Race' heading will total 100%. Hispanic or Latino can be part of any race, and therefore the percent of Hispanic or Latino is percent of total population.

Source: USCB 2000a

POVERTY AND LEGAL STATUS

The geographic comparison areas have relatively the same percent of persons under age 18, as seen in Table 3.7-4, with the exception of the Tohono O'odham Reservation, where over a third of the population was under the age of 18 during the 2000 Census. Poverty rates for both individuals and persons under age 18 are greater than the national level (Table 3.7-5). Approximately half the population on the Tohono O'odham Reservation for both individuals and persons under age 18 are below the poverty level. Poverty in 2000 was defined as an income of $8,794 in a household of one individual, or $17,603 for a family of four (USCB n.d.). Consequently, the ROI, has higher poverty rates than the national average, but with the exception of the Tohono O'odham Reservation, is composed of comparable numbers of persons under age 18.

Table 3.7-4. Persons Under Age 18 in the ROI

Geographic area	*Percent Under Age 18, 2000*
U.S.	25.7
Arizona	26.6
Tucson MSA	24.6
Tohono O'odham Reservation and Off-Reservation Trust Land, Arizona	37.5

Source: USCB 2000c

Table 3.7-5. Individuals in Poverty in the ROI, Year 2000

Geographic area	*Percent Individuals Below Poverty Level*	*Percent Persons Under Age 18 Below Poverty Level*
US	12.4	16.6
Arizona	13.9	19.3
Tucson MSA	14.7	20.0
Tohono O'odham Reservation and Off-Reservation Trust Land, Arizona	46.4	50.6

Source: USCB 2000c

3.8 CULTURAL RESOURCES

3.8.1 Definition of the Resource

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Historic architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community.

Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the NRHP. Historic properties are evaluated for potential adverse impacts from an action, as are significant

traditional resources identified by American Indian tribes or other groups. In 1999, the DoD promulgated its *American Indian and Alaska Native Policy*, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. The Policy requires an assessment, through consultation, of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the services.

The proposal is to construct a variety of facilities at the Base, and therefore the ROI for cultural resources is Davis-Monthan AFB.

3.8.2 Existing Conditions

3.8.2.1 HISTORICAL SETTING

The Tucson Basin was likely first inhabited approximately 12,000 years ago when the climate of the American Southwest was cooler and moister than today. Many of the basins were occupied by shallow lakes and wetlands, creating an ideal habitat for birds. The area was host to mammoth, musk ox, giant beaver, mastodon, and sloth. The first human inhabitants are believed to have been big game hunters living around the edges of the wetlands who probably supplemented their diet by gathering various plants (Fagan 1991). As the climate gradually became warmer and drier, the vegetation in the Tucson Basin came to resemble the conditions of today. People continued to rely on hunting a variety of smaller game, but also used a wide range of plant resources as indicated by a marked increase in ground stone processing tools (Davis-Monthan AFB 2004e). Eventually some groups adopted the cultivation of domesticated plants and became less mobile as they relied increasingly on agriculture, particularly maize production. People developed sophisticated irrigation technologies, elaborately decorated ceramics, long distance trade, and solar calendars. They created social and political systems to manage the higher population densities associated with a successful agriculture-based economy. The Hohokam culture of the Tucson Basin had large population centers, agricultural irrigation, ball courts, and a highly developed ceramic tradition. Toward the end of the 1200s, a major drought occurred throughout the Southwest. By the mid 1400s, all major Hohokam village locations were abandoned, and areas that had seen continuous occupation for 10,000 years were vacated (Davis-Monthan AFB 2004e).

In 1690, Spanish explorers recorded contact with the Piman-speaking peoples of the Gila and Salt Rivers. Spaniards were the first Europeans to make contact with the Tohono O'odham people (formerly known as the Papago). The Jesuits under Father Eusebio Francisco Kino established a series of missions for them in what is now southern Arizona. In the early 1800s, the Tohono O'odham began moving into the Tucson Basin (Davis-Monthan AFB 2004e). Today the Tohono O'odham Nation covers more than 2.8 million acres in the Sonoran Desert, including an Industrial Park near Tucson, and San Xavier Reservation, which contains 71,095 acres just south of the City of Tucson (Intertribal Council of Arizona 2003).

The Pascua Yaqui people originally lived in southern Sonora, Mexico where they farmed and hunted. After the Mexican War of Independence in 1821, the Yaqui gradually moved northward into Arizona. The Yaqui village of Old Pascua was located on the outskirts of

Tucson. The village of New Pascua, the seat of Yaqui tribal government, was established after acquisition of reservation land in 1978 (Indian Health Service 2002).

The Tucson Presidio was established in 1775, and Tucson became part of Mexico in 1821 (City of Tucson 2004). After the war between the U.S. and Mexico in 1846, most of New Mexico and Arizona was ceded to the U.S. American military forts were established by the early 1860s to defend routes of travel through the region. Cattle ranching began after 1865, with American ranchers establishing extensive operations during the 1880s. Most settlement occurred after 1882 and the arrival of the Southern Pacific Railroad. Ranching continued in importance into the 20th century.

Tucson's aviation history began with the establishment of the nation's first municipally owned airfield in 1919 on what is now the Tucson Rodeo Grounds. Charles Lindbergh flew his *Spirit of St. Louis* to Tucson to dedicate Davis-Monthan Field in 1927 (Davis-Monthan AFB 2004f). The field was named for two World War I pilots killed in aviation accidents. Standard Airlines (now American Airlines) began air service to Tucson in 1928. A year later the Army began negotiations with the city of Tucson regarding the construction of an air base. After nearly 12 years and a series of improvements to the facility, the base was officially activated in 1941 (Davis-Monthan AFB 2004f). During World War II, Davis-Monthan served as a training location for medium and heavy bomber operations. Because of its arid climate, after World War II Davis-Monthan became the final resting place of decommissioned B-29 (Super Fortress), C-47 (Gooney Bird) among others. Today the facility contains more than 5,000 aircraft, providing a stockpile of rare parts for airframes (Davis-Monthan AFB 2004f). Davis-Monthan Field was officially renamed Davis-Monthan Air Force Base in 1948 shortly after it was placed under the jurisdiction of the Strategic Air Command (Davis-Monthan AFB 2004f).

The 162nd Fighter Wing of the Arizona ANG was established at Davis-Monthan AFB in 1975. The 162nd executes "Operation Snowbird" which affords ANG units from the northern U.S. and high elevation locations to continue training during the winter. Davis-Monthan AFB is also home to Detachment 1 of the 120th Fighter Wing of the Montana ANG (Davis-Monthan AFB 2004f).

Currently Davis-Monthan AFB occupies approximately 10,613 acres on the southeast side of the city of Tucson. The Base has 604 facilities. Realignment under the ACC in 1992 brought the 12th Air Force Headquarters from Texas (Davis-Monthan AFB 2004f). The Base supports operations of the 355 WG flying A-10, OA-10, and EC-130 aircraft. The Base is also home to the 305 RQS that flies Pavehawk helicopters and is charged with both military and non-military rescue mission responsibilities, as well as the 563rd Rescue Group, which directs flying operations for the Air Force's only active duty rescue wing dedicated to CSAR.

3.8.2.2 IDENTIFIED CULTURAL RESOURCES

The only NRHP-listed property associated with Davis-Monthan AFB is the Titan II Missile Silo site in Green Valley, Arizona, outside of the present project area (National Register Information System 2004). Once part of a 54-missile network on constant alert throughout the Cold War

Period, it is the last remaining Titan facility. The property was included on the NRHP in 1992 and was listed as a National Historic Landmark in 1994 (Davis-Monthan AFB 2004e).

Archaeological surveys at Davis-Monthan AFB began in the 1980s. A survey of 4,675 semi-improved and unimproved acres at the Base took place in 1993 (USACE 1993). The area surveyed represents approximately 45 percent of the total Base acreage and nearly 66 percent of its undeveloped areas. The survey recorded eight archaeological sites and 139 isolated artifacts (USACE 1993). Only one of the recorded sites (AZ BB:13:392) was evaluated as eligible for the NRHP. This site has been excavated completely, and its scientific potential has been exhausted (Davis-Monthan AFB 2004f). None of the sites is within the area of proposed construction.

There are 474 on-base facilities that are 50 years old or older. Of the total, 52 are general use structures. The remaining 422 are family housing units (Davis-Monthan AFB 2004e). All of these facilities are treated as eligible for inclusion in the NRHP until they are determined ineligible. Three noteworthy facilities on Base are associated with the Cold War Era. These facilities were recommended for stewardship and potential NRHP listing in the Davis-Monthan AFB Cold War Material Culture Inventory (Davis-Monthan AFB 2004e). They include a bomber/tanker alert facility, a fighter alert facility, and a ground-launched cruise missile headquarters. None are within the proposed areas of construction. Table 3.8-1 lists facilities proposed for demolition under the Proposed Action.

To date, no traditional cultural properties or other traditional resources have been identified at Davis-Monthan AFB (Davis-Monthan AFB 2004e). The Air Force has initiated contact with the nearby Tohono O'odham Nation and the Pascua Yaqui Tribe to identify any potential concerns with the project. Tribal contact letters will be included in Appendix A.

3.9 SAFETY

3.9.1 Definition of Resource

This section addresses ground safety involving activities conducted by personnel assigned to Davis-Monthan AFB. Ground safety considers issues involving day-to-day operations and maintenance activities that support unit operations. The ROI for safety in this EA includes Davis-Monthan AFB.

3.9.2 Existing Conditions

3.9.2.1 GROUND SAFETY

Day-to-day operations and maintenance activities conducted by the 355 WG are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements.

The DoD stipulates certain safety restrictions on land uses in the immediate vicinity of aviation operations around military airfields. These restrictions limit construction and certain land uses. There are 39 structures in violation of these criteria at Davis-Monthan AFB. Of these, 13 have the required waivers, 18 are authorized deviations to airfield criteria, and 9 structures are exempt from waivers (Davis-Monthan AFB 2004a).

Table 3.8-1. Architectural Resources Proposed for Demolition, Cold War Era or Earlier

Building Number	*Facility/Building*	*Proposed Action*	*National Register Status*	*Year Built*
201	Liquid Fuel Pump Station	Demolition	Not eligible	1954
203	Sanitary latrine	Demolition	Not eligible	1956
204	Liquid Fuel Pump Station	Demolition	Not eligible	1953
2409	AAFES Garden Shop	Demolition	Not eligible	1981
4102	Dormitory	Demolition	Not eligible	1953
4200	Dormitory	Demolition	Not eligible	1953
4863	Liquid Oxygen Storage	Demolition	Not eligible	1964
5000	AAFES Laundromat/Sales	Demolition	Not eligible	1958
7200	AMARC Ammo Processing Facility	Demolition	Not eligible	1968
7329	Gas Bottle Storage	Demolition	Not eligible	1982
7336	Vehicle Maintenance Facility	Demolition	Not eligible	1943
7403	AMARC Ammo Storage Facility	Demolition	Not eligible	1963
7409	Supply & Equipment Warehouse	Demolition	Not eligible	1965
7431	Material Processing Facility	Demolition	Not eligible	1976
7434	Supply & Equipment Shed	Demolition	Not eligible	1983
7435	Sanitary Latrine	Demolition	Not eligible	1974
7437	Material Processing Facility	Demolition	Not eligible	1987
7449	Non-Recoverable Support Facility	Demolition	Not eligible	1987
7507	AMARC Administrative Facility	Demolition	Not eligible	1961
7513	AMARC Administrative Facility	Demolition	Not eligible	1963
7514	AMARC, Headquarters	Demolition	Not eligible	1967
7610	Generator Building	Demolition	Not eligible	1964
7613	AMARC Administrative Facility	Demolition	Not eligible	1961
7708	AMARC Training Facility	Demolition	Not eligible	1967
7713	Health and Wellness Center	Demolition	Not eligible	1963

Source: Davis-Monthan AFB 2004e; personal communication, Lisa 2004.

The Clear Zones at Davis-Monthan AFB are within Base boundaries; however, the Accident Potential Zones I and II extend outside of the Base. Both Clear Zones have obstructions within them. The Clear Zone on the south end of the runway has 11 obstructions; while the Clear Zone on the north end has 6 obstructions. Davis-Monthan AFB is currently working to address these violations (Davis-Monthan AFB 2004a).

3.9.2.2 EXPLOSIVES SAFETY

Air Force Manual 91-201, *Explosives Safety Standards*, represents the Air Force guidelines for complying with explosives safety. This regulation, as well as AFI 91-204, identifies explosive safety mishaps involved in both explosive and chemical agents. Explosives include ammunition, propellants (solid and liquid), pyrotechnics, explosives, warheads, explosive devices, and chemical agents and associated components presenting real or potential hazards to life, property, or the environment.

Siting requirements for munitions and ammunition storage and handling facilities are based on safety and security criteria. Air Force Manual 91-201, *Explosives Safety Standards*, requires defined distances be maintained between munitions storage areas and a variety of other types of facilities. These distances, called quantity-distance (QD) arcs, are determined by the type and net explosive weight of explosive material to be stored. No inhabited facilities are allowed within the QD arcs. Each explosive material storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. The activities with QD arcs at Davis-Monthan AFB include: the munitions storage area; the explosive ordnance disposal (EOD) area; the alert hangar and apron; the arm/dearm pads on the airfield; the small arms training ranges; the AMARC EOD area; the AMARC missile dismantling pad; and the AMARC ammunition shipping/inspection/storage facilities (Davis-Monthan 2004a).

Within these QD arcs, development is either restricted or prohibited altogether in order to ensure safety of personnel and to minimize potential for damage to other facilities in the event of an accident. In addition, explosive material storage and handling facilities must be located in areas where security of the munitions can be maintained at all times. Identifying the QD arcs ensures construction does not occur within these areas. The locations of QD arcs at Davis-Monthan AFB are depicted on Figure 3.9-1.

3.9.2.3 ANTI-TERRORISM/FORCE PROTECTION

As a result of terrorist activities, the DoD and the Air Force have developed a series of AT/FP guidelines for military installations. These guidelines address a range of considerations that include access to the installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping (Unified Facilities Criteria 4 010 01, 2002). The intent of this siting and design guidance is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack.

Many military installations, such as Davis-Monthan AFB, were developed before such considerations became a critical concern. Thus, under current conditions the unit is not able to comply with all present AT/FP standards. However, as new construction occurs, it would

incorporate these standards, and as facilities are modified, AT/FP standards would be incorporated to the maximum extent practicable.

3.10 SOLID AND HAZARDOUS MATERIALS AND WASTES

3.10.1 Definition of the Resource

This section describes the affected environment associated with solid waste management; hazardous materials and wastes; storage tanks; ACMs; and the ERP sites associated with the proposed construction and demolition areas.

The terms "hazardous materials" and "hazardous waste" refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Solid Waste Disposal Act (SWDA), as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment. Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261. Petroleum products include petroleum-based fuels, oils, and their wastes. The ERP is an Air Force program to identify, characterize, and remediate environmental contamination from past activities at Air Force installations.

Issues associated with hazardous material and waste typically center around waste streams, underground storage tanks (USTs), ASTs, and the storage, transport, use, and disposal of pesticides, fuels, lubricants, and other industrial substances. When such materials are improperly used in any way, they can threaten the health and well being of wildlife species, habitats, and soil and water systems, as well as humans. This section also considers solid waste. The ROI for hazardous materials and wastes includes Davis-Monthan AFB.

3.10.2 Existing Conditions

3.10.2.1 SOLID WASTE MANAGEMENT

Municipal solid waste management and compliance at Air Force installations is established in AFI 32-7042, *Solid and Hazardous Waste Compliance*. In general, AFI 32-7042 establishes the requirements for installations to have a solid waste management program to incorporate a solid waste management plan; procedures for handling, storage, collection and disposal of solid waste; record-keeping and reporting; and pollution prevention. AFI 32-7080 *Pollution Prevention Program* addresses source reduction, resource recovery, and recycling of solid waste.

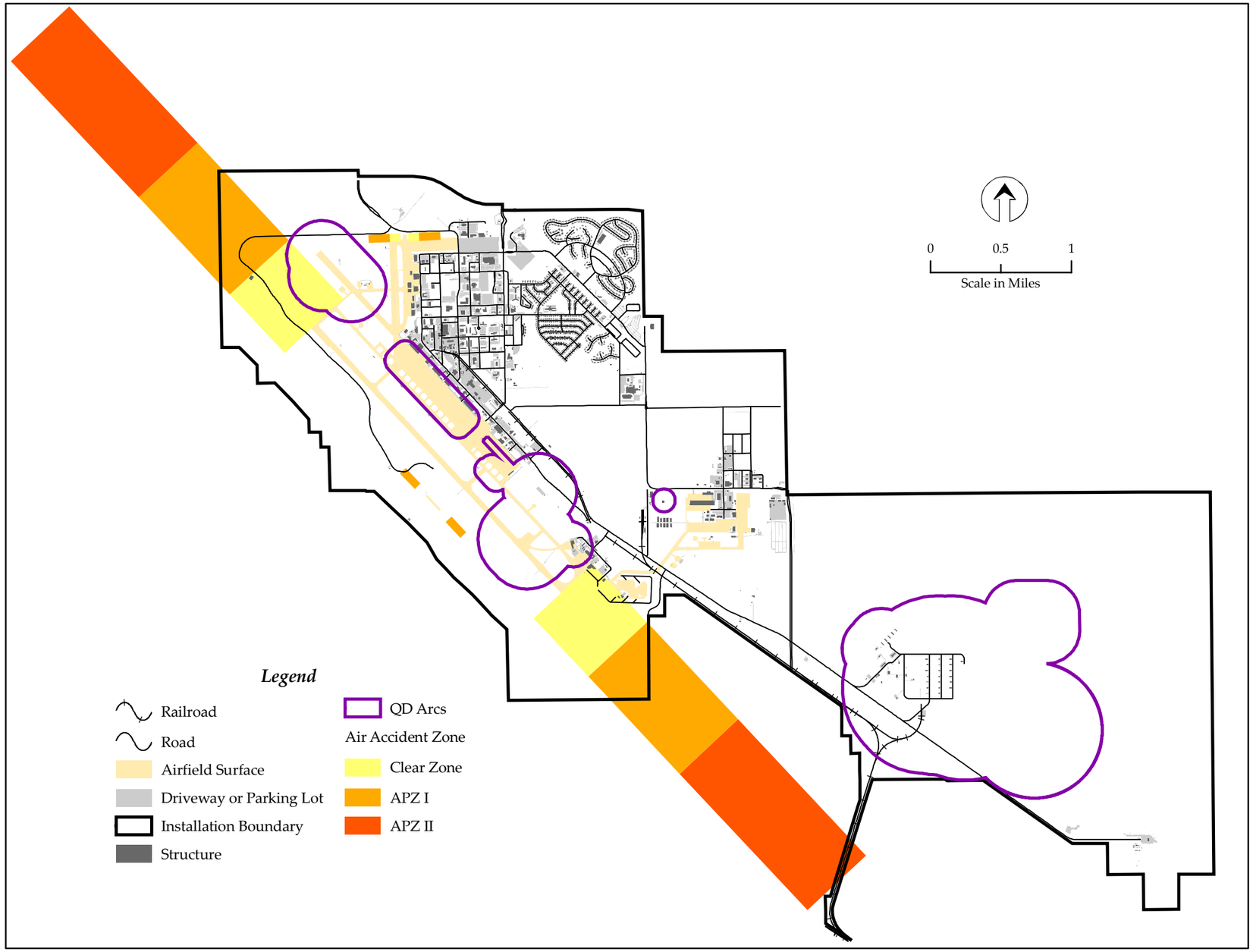


Figure 3.9-1. Safety Arcs at Davis-Monthan AFB, Arizona

Municipal solid waste generated at Military Family Housing is picked up by the City of Tucson. Solid waste generated by mission activities on Davis-Monthan AFB is removed by a licensed contractor to either the City of Tucson or Pima County Landfill (Davis-Monthan AFB 2004a). In Fiscal Year (FY) 2003, Davis-Monthan AFB generated 7,899 tons of solid waste, 62 tons of construction and demolition debris, and diverted 8 tons for recycling. Recyclables are picked up by the Arizona Training Program at 139 buildings across the Base. Several area landfills accept construction and demolition waste. The remaining useful life for the City of Tucson Landfill and the Pima County Landfill is approximately 10 to 15 years (personal communication, Jeffries 2004). The proper management and recycling or disposal of construction and demolition debris is the responsibility of construction site contractors.

3.10.2.2 HAZARDOUS MATERIALS AND WASTE

The majority of hazardous materials used by Air Force and contractor personnel at Davis-Monthan AFB are controlled in accordance with AFI 32-7086, *Hazardous Material Management*. The AFI established the requirements for the procurement, handling, storage, and issuing of hazardous materials and the redistribution/reuse of hazardous materials. The hazardous materials authorization process includes review and approval by Air Force personnel to ensure Air Force users are aware of exposure and safety risks. Base management plans further serve to ensure compliance with applicable federal, state, and local regulations.

Aircraft flight operations and maintenance, as well as installation maintenance, require the storage and use of many types of hazardous materials. These materials, such as flammable and combustible liquids, include acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, and sealants.

Davis-Monthan AFB is a large-quantity hazardous waste generator, since it generates more than 2,200 pounds of hazardous waste per month (personal communication, Shore 2004). Hazardous wastes are managed in accordance with the *Davis-Monthan AFB Hazardous Waste Management Plan* (Davis-Monthan AFB 2001b). Hazardous wastes are generated from a variety of functions on Base, including aircraft and vehicle operations and maintenance (hydraulic and lubricating oils and JP-8 jet propulsion fuels); medical and dental facilities; morale, welfare, and recreation; photographic development; and security operations. These wastes include batteries, fluorescent lamps, wastewater sludge, and various paint and other chemical process wastes. Davis-Monthan AFB recycles off-specification fuel, used oil, used antifreeze, and some types of solvents and aqueous cleaners. There are approximately 79 Hazardous Waste Satellite Accumulation Points (SAPs) located on Base; the number of which may vary with changes in operational procedures and management practices.

Wastes generated on Base and not stored in accumulation points must also be moved to the permitted, storage facilities within 90 days. Wastes generated on Base are typically moved to Defense Reutilization and Marketing Office (DRMO) (Building #7815) and managed under regulations set forth in DRMO's RCRA Part B storage permit. Approximately 73,099 pounds of hazardous wastes at Davis-Monthan AFB were disposed of in calendar year 2003.

3.10.2.3 STORAGE TANKS

There are currently 95 ASTs located at Davis-Monthan AFB, with a storage capacity of 150 to 2,800,000 gallons. These tanks are used for refueling as well as storage of fuels and used oil. There are currently 79 USTs. All storage tanks at Davis-Monthan AFB are inspected and maintained by Civil Engineering Power Production and the Liquid Fuels Section, and integrity and condition of the associated piping is verified by the users.

Three tanks are located at facility number 7337, which is in close proximity to Building 7336, AMARC Vehicle Maintenance, which is proposed for demolition (Table 3.10-1).

Table 3.10-1. Storage Tanks in the Vicinity of Proposed Construction/Demolition Activities

Tank ID	*Tank Type*	*Status*	*Size (gallons)*	*Fuel Type*
#48	UST	Active	3,000	Unleaded gasoline
#49	UST	Active	3,000	Unleaded gasoline
#50	UST	Active	3,000	Unleaded gasoline

Source: Personal Communication, Machado 2004

3.10.2.4 ASBESTOS

ACMs are those materials that contain greater than 1 percent asbestos. Friable, finely divided, and powdered wastes containing greater than 1 percent asbestos are subject to regulation. A "friable" waste is one that can be reduced to a powder or dust under hand pressure when dry. Non-friable ACMs, such as floor tiles, are considered to be non-hazardous, except during removal and/or renovation, and are not subject to regulation.

An asbestos management plan provides guidance for the identification of ACMs and the management of asbestos wastes. An asbestos facility register is maintained by Davis-Monthan Civil Engineering. The design of building alteration projects and requests for self-help projects are reviewed to determine if ACMs are present in the proposed work area. ACM wastes are removed by licensed contractors and disposed of in accordance with state and federal regulations. Additionally, it is likely that some of the buildings proposed for demolition contain lead-based paint.

3.10.2.5 ENVIRONMENTAL RESTORATION PROGRAM

The DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984. Fifty-two ERP sites and three Areas of Concern have been identified at Davis-Monthan AFB and are regulated under CERCLA. Forty-five of the ERP sites require no further action; three sites require long-term monitoring, one is in interim removal status and two sites are under long-term operational

status. The *Davis-Monthan AFB Management Action Plan* (Davis-Monthan AFB 2003) summarizes the current status of the Base environmental restoration program, and presents a comprehensive strategy for implementing actions necessary to protect human health and the environment. This strategy integrates activities under the ERP and the associated environmental compliance programs that support full restoration of the Base.

ACC policy requires that any proposed project on or near a Davis-Monthan AFB ERP site be coordinated through the Davis-Monthan ERP Manager. Construction and demolition would take place at or near several ERP sites (DP-10, LF-01, OT-31, OT-44, SS-08, SS-09, SS-28, and ST-40) (Figure 3.10-1).

ERP Site DP-10 is a chemical burial site located immediately southeast of the main Base landfill. This site is thought to have received sludges from fuel tank cleaning from 1970 to 1976. These sludges were disposed in approximately 10 trenches measuring 20 by 8 by 3 feet. A study of this site has not been completed because it is considered contiguous with the main Base landfill (LF-01) and the trenches that had previously been dug cannot be located. Davis-Monthan AFB has concluded that the Long-Term Management at LF-01 will be sufficient to determine if further action will be necessary at DP-10. No further action will be needed at this time.

ERP Site LF-01 is a landfill located approximately 2,000 feet west of the midpoint of the main runway. This landfill pit was created in the early 1940s as a borrow source for gravel aggregate used to construct the runway, then used until 1976 for disposal of wastes including household garbage, metals, cars and aircraft, paint residue, thinners and solvents, oil, fuel tank sludge, pesticides, and photo lab chemicals. This site is currently an open, 17-acre pit that is approximately 20 feet deep. Standing water can be found in several drainage ditches located around the pit. Two monitoring wells are currently located at this site. Remedial action to manage landfill gases and alter drainage at the site was completed in FY 2000. A five-year review was completed in FY 2004.

ERP Site OT-31 is one in a series of trenches located near the intersection of Kolb and Irvington Roads. The trenches contain dross, a granular ash residue from smelting operations to recover aluminum from aircraft bodies. This site is flat with some surface discoloration. A feasibility study for the site was completed in 1991; remediation action was completed in FY 1993; a Site Closeout Decision Document is in preparation; all dross was removed by excavation.

ERP Site OT-44 is located at the Vehicle Maintenance Building (#4705) in the general service motor pool area of the Base. The site is flat, paved, and enclosed by a fence. The building contains hydraulic lifts, wash bays, lubrication bays, a battery shop and oil/water separators. Leakage of hydraulic fluid from underground lifts is suspected and a dry well received water from a sink in the battery shop that may have been used to dispose of solvents. Soil sampling and associated investigations were conducted in 1994; results showed limited soil contamination by hydraulic fluid. No remedial action is planned for this site.

ERP Site SS-08 is a transformer oil spill site located adjacent to Building #4852 measuring approximately 120 by 120 feet. Approximately 100 to 500 gallons of transformer oil were spilled on this site in 1978. In 1984, four boreholes were drilled to a depth of 11 feet; no polychlorinated

biphenyls (PCBs) were detected. A remedial investigation concluded that no further action is necessary for this site.

ERP Site SS-09 is the former Civil Engineering Storage Yard located adjacent to the current yard. Oil from transformers was spilled on this site in the past; years of operation were not reported. Soil sampling and sampling of a nearby Base well showed either no or low concentrations of PCBs. Based on this data, the Base completed the remedial investigation and concluded that no further action is necessary.

ERP Site SS-28 is an asphalt emulsion spill adjacent to the southeast corner of the flightline. Approximately 100 gallons of asphalt emulsion spilled from a leaking valve in 1979 at this site. The volatile components of this spill would have evaporated and there is no migration potential through the asphalt. No further action will be taken on this site at this time.

ERP Site ST-40 is the Warrior Park UST located east of Craycroft Road near the east apron of the flightline. Leaks in a cross-feed pipe and in the fuel pump occurred in 1985 at this site. Soil surrounding the tanks was contaminated. In 1988, boreholes were drilled near the suspected location of the buried tanks. No base neutral acids or significant VOCs were detected, and Pb is below background levels. No further action is planned for this site, other than filling the tanks with sand.

3.10.2.6 MILITARY MUNITIONS RESPONSE PROGRAM (MMRP)

In recent years the management of military munitions and military ranges has come under increased regulatory and public scrutiny, as evidenced by new regulations, increased enforcement and public involvement, litigation, and range use restrictions and closures. In an effort to manage these ranges, DoD installations have begun to inventory closed, transferred, and transferring ranges to facilitate planning and implementation of associated regulations. Davis-Monthan AFB has four active ranges, three closed ranges, two transferred ranges, and one transferring range (Davis-Monthan AFB 2001c). For the purpose of this analysis, the closed ranges are those of interest because they could coincide with proposed construction and/or demolition activities. The closed ranges include (Figure 3.10-2):

- Training Areas 1 and 2. Training Area 1 (151 acres) and Training Area 2 (186 acres) are both located south of the runway. These areas were historically used in conjunction with helicopter training exercises involving military munitions. These areas were classified as closed ranges due to the established inhabited building distance (IBD) of 1,250 feet (Davis-Monthan AFB 2001c).
- Poorman Range Closed Areas. The active Poorman Ranges Area has been reduced by 2,145 acres that includes several former range buffers and firing fans (Davis-Monthan AFB 2001c).
- Wilmot National Guard Target Range. The closed portion of this range includes 1,278 acres at the southeastern end of the runway (Davis-Monthan AFB 2001c).

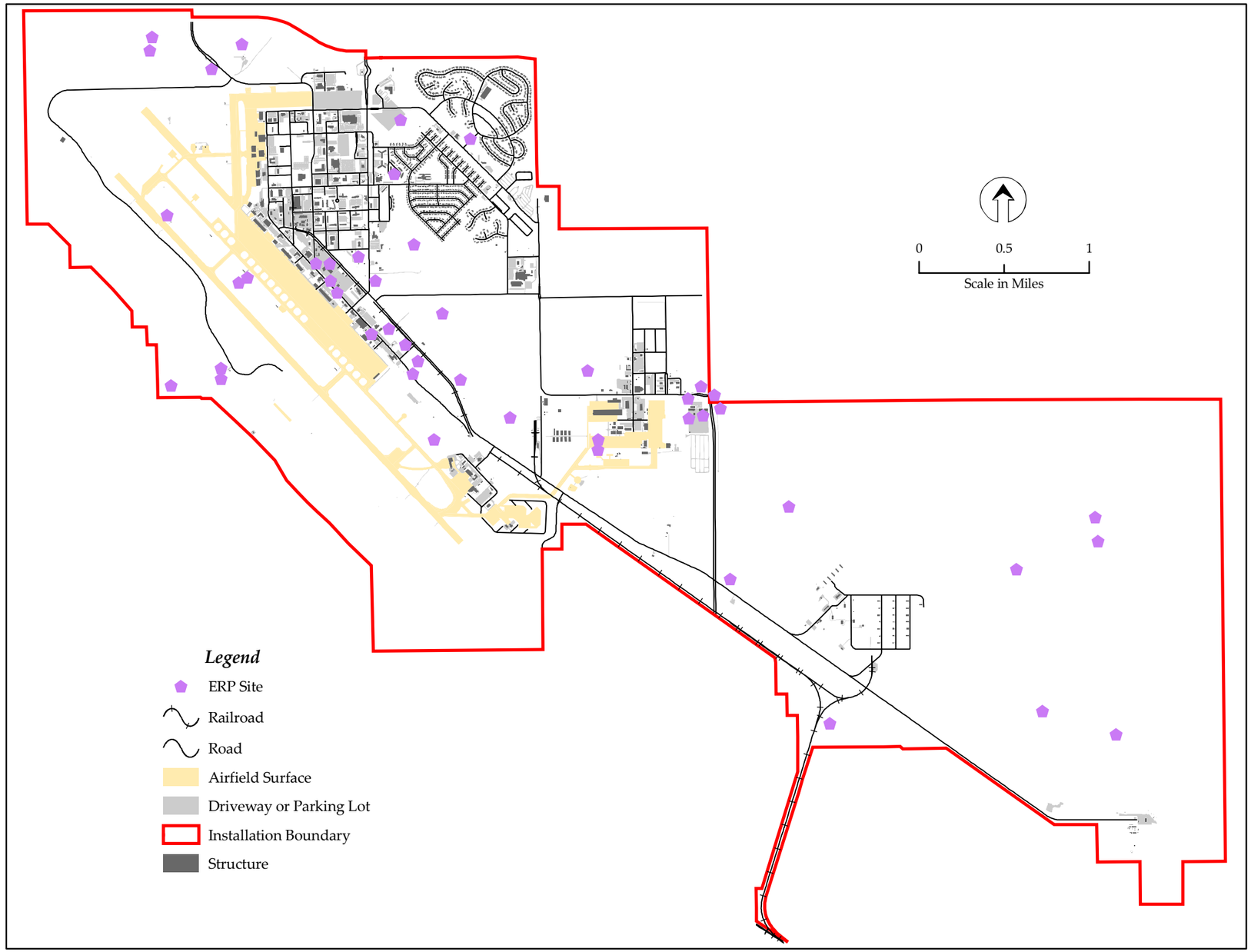


Figure 3.10-1. Environmental Restoration Program (ERP) Sites at Davis-Monthan AFB, Arizona

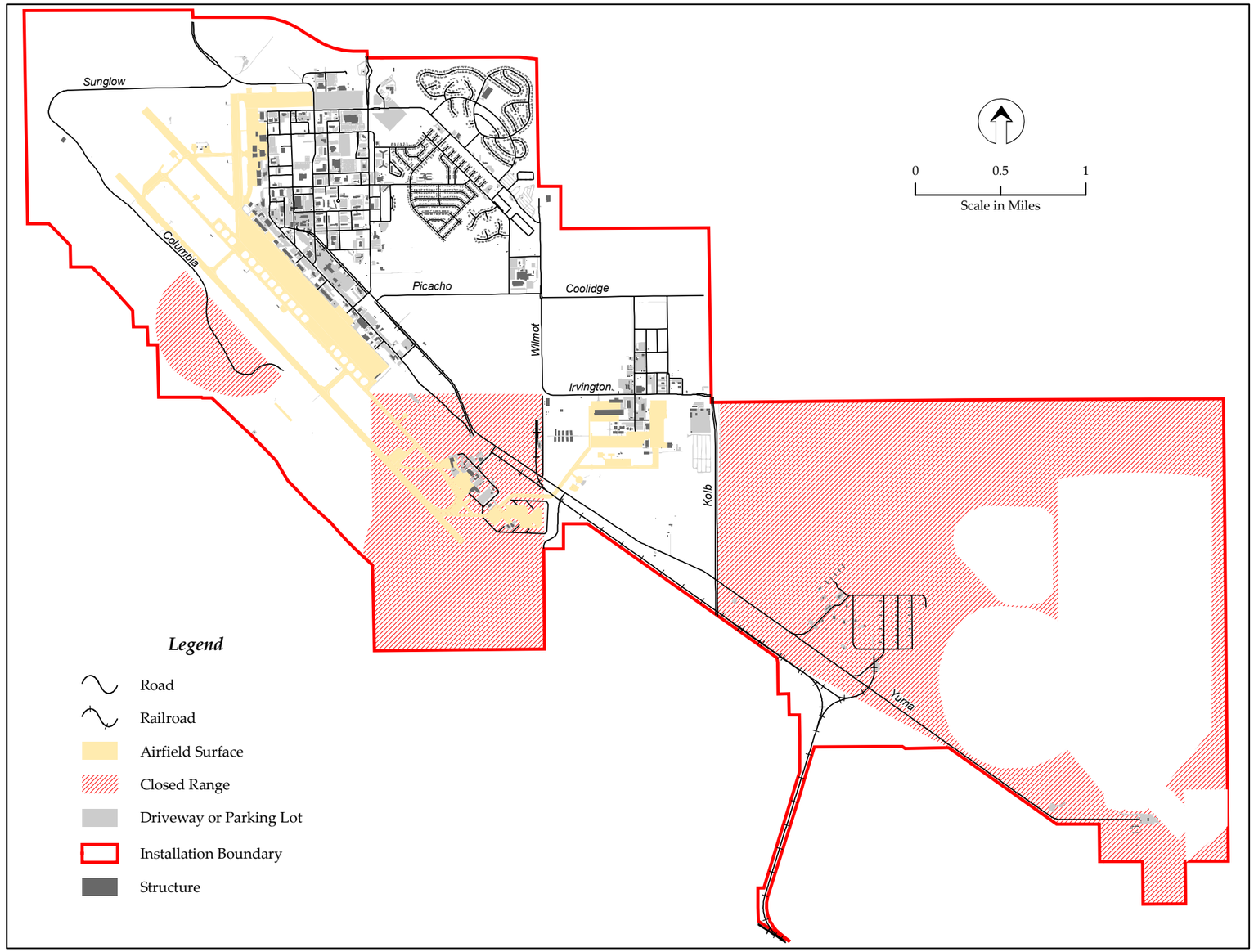


Figure 3.10-2. Closed Ranges Under the Military Munitions Response Program (MMRP) at Davis-Monthan AFB, Arizona

There is a potential for ordnance and explosive contamination in all closed range areas. Any proposed activities in these areas should be coordinated through the Civil Engineering Squadron (CES)/Environmental Restoration Element (CEVR) Point of Contact, and a waiver for construction would be required.

3.11 INFRASTRUCTURE

3.11.1 Definition of Resource

The infrastructure elements at Davis-Monthan AFB include transportation and utility systems, which service all areas of the Base. Transportation refers to roadway and street systems. Utilities include potable water, wastewater, storm drainage system, electrical system, heating and cooling systems and liquid fuels. The ROI for these resources consists of Davis-Monthan AFB.

3.11.2 Existing Conditions

3.11.2.1 TRANSPORTATION

Davis-Monthan AFB, located within the city limits of Tucson in Pima County Arizona, is in close proximity to Interstate 10 (I-10), just west of the installation and Interstate 19 (I-19) southwest of the installation. I-10 provides east-west access to Phoenix and El Paso, Texas, while I-19 connects Tucson with the Mexican border. Access to the Base includes the Main Gate Access on Craycroft Road, additional gate access off Swan, Wilmot, and Irvington Roads (see Figure 1.2-1).

There are four major primary roads on Davis Monthan AFB:

- Craycroft Road runs generally north/south through the main Base, and provides the main entry point to the Base. Wilmot Road is a short artery, which connects the Wilmot Gate at the east end of the Base and provides access to the Base hospital and AMARC.
- The intersection of Sunglow Road, 5th Street and Yuma Street, begins at the Swan Gate and runs north/south through the Base. The Yuma Street extension of these combined arteries intersects with Craycroft Road and Picacho Street. Picacho Street runs east/west and connects with the Yuma Street extension and with Wilmot Road.

The major secondary roads on the main Base area include: Quijota Road, Arizola Street, Comanche Street, Granite Street Ironwood Street, First Street, and Third Street. The AMARC Area of Davis-Monthan AFB is served by Irvington Road, the Wilmot Road extension, Coolidge Street and Wickenberg Streets.

The City of Tucson does not provide mass transit on Davis-Monthan AFB, although there are nearby bus stops, and there is no direct rail connection to the Base (Davis-Monthan AFB 2004a). There are officially designated bike paths on Base as well as two major pedestrian routes on Kachina and Sixth streets that serve the dormitory area. Additional pedestrian paths are planned for the Airman living areas.

Tucson International Airport (TIA) provides air passenger service to several cities where airline hubs provide access worldwide. TIA provides direct international flight service to Mexico. The airport is located approximately ten miles from the Main Gate at Davis-Monthan AFB and can

be reached in approximately fifteen minutes by car or by airport shuttle bus. Military passenger and military cargo are served by the Military Air Passenger Terminal Building (Building 4819) and the Air Cargo Terminal (Building 4822). Additionally, east of the Air Cargo Terminal is a cargo marshalling area for cargo handling (Davis-Monthan AFB 2004a).

Parking. Generally, parking is adequate on Davis-Monthan AFB. However, as is the case with many installations, parking at high use customer-oriented locations can be problematic. The Base Commissary parking lot experiences parking problems during peak use, especially from 1030 to 1500 daily. On military paydays and holidays the parking situation is more problematic. An additional 465 spaces are required to address this situation and the expansion of Commissary retail space. The Base is exploring alternatives to address the parking situation. Another area of concern is the Blanchard Golf Course. The current parking area is not adequate to handle the golfing patrons as well as those who visit the Eagle's Nest Restaurant for breakfast and lunch (Davis-Monthan AFB 2004a).

3.11.2.2 UTILITIES

Potable Water. Davis-Monthan AFB obtains potable water for a service population of approximately 7,400 from eight active on-base ground water wells. The Base has drilled 17 water supply wells; of which, eight are in production status with a capacity of 9.3 million gallons per day (MGD), three are non-operational wells, and six do not have sufficient flow to support production. Average daily demands for the last three years have equaled approximately 1.1 MGD, although summer time demands can increase to as much as 2.37 MGD. The Base has two separate distribution systems. The Upper Water Supply System supplies water to the AMARC area, the hospital, Palo Verde Village, the 41st and 43rd Squadron areas, and the munitions storage area. The Lower Water Supply System supplies the remaining areas on-base. Water is chlorinated at the well heads and pumped into the storage tanks. The small arms range and horse stables are separately supplied by a well and a 2,000 gallon storage tank. The Base does not have any interconnection with the City of Tucson or other water supply source (Davis-Monthan AFB 2004c).

For potable water storage the Base has four elevated storage tanks and two ground storage tanks with an approximate capacity of 1.5 million gallons. The Base also has two 500,000 gallon raw water cut-and-cover storage tanks (Davis-Monthan AFB 2004a; Davis-Monthan AFB 2004c). Cut-and-cover tanks are generally steel tanks that are submerged into the ground and covered by soil. They resemble reservoirs.

Wastewater. Pima County treats approximately one MGD of wastewater discharged from the Base into the county sanitary sewer system. Pima County functions as the sole treatment facility for all the wastewater generated by the City of Tucson as well. Its total system capacity is approximately 85 MGD, and it treats approximately 70 MGD. The sanitary sewer collection line exits the Base in the extreme northwest corner, where it crosses Golf Links Road. The Base has five lift stations, two in the AMARC area and three along the flightline. No capacity issues with the lift stations have been identified (Davis-Monthan AFB 2004a); however, there is no redundancy of the lift stations and therefore if any given lift station fails, the entire sewer line is

down. ACC has a requirement for at least double redundancy as required per Air Force regulations (personal communication, Maisch 2005).

There are various areas on Base that are not connected to the sewer system. These are served by septic systems.

Storm Drainage System. Storm water runoff on Davis-Monthan AFB is managed through a storm water system consisting of a combination of swales, culverts and pipes currently having adequate capacity to handle most flows. During the rainy season from July through September, storms can lead to flooding in portions of the Base. The Base is divided into eight drainage areas with nine outfalls that are permitted under an NPDES Multi-Sector Permit number AZR05A12F (Davis-Monthan AFB 2004b). Characteristics of these drainage areas are identified in Table 3.11-1.

Table 3.11-1. Characteristics of Outfalls and Their Drainage Areas

Drainage Area	*Estimated Drainage Area (acres)*	*Estimated Impervious Area (acres)*	*Percent Impervious*
001	1,280	384	30
002A	2,138	535	25
002B/C	390	156	40
004	2,043	41	2
005A	344	0	0
005B	98	0	0
006	2,414	0	0
007	1,164	116	10
008	74	4	5
009	529	11	2
010	572	257	45

Source: Davis-Monthan AFB 2004b

Electrical System. Davis-Monthan AFB consumes approximately 90,000 megawatt hours on an annual basis. Tucson Electric Power (TEP) provides the electric power through two 46 kilovolt (kV) lines. A substation, with the capacity to handle loads of 25 millivolt amperes, steps the power down to 13.8 kV and distributes it to eight circuits. Separate TEP lines enter the Base from the southwest to supply the control tower, Building 8030, and Navigation Aids west of the airfield (Davis-Monthan AFB 2004a; personal communication, Canez 2005).

Heating and Cooling Systems. Natural gas is used primarily for these facilities, space heating, hot water for the main Base and multi-family housing and comfort heating in multi-family housing. Southwest Gas Company provides natural gas via a commercial line entering the northwest corner of the Base. The AMARC and hospital areas are supplied separately from a line entering the Base from the south. These two separate supply systems are linked at the FAMCamp area and have a delivery capacity of 3.4 million cubic feet (MCF) per day. Maximum daily consumption during the last ten years was 2.5 MCF or approximately 74 percent of the delivery capacity (Davis-Monthan AFB 2004a).

Davis-Monthan AFB does not have a central heating and cooling system for the Base. There exist two mini-systems with two central plants. One supplies chilled air to the airmen's dormitories and some other facilities. The second provides both heat and chilled air to the hospital. Building 5101 is capable of producing about 1,200 tons of chilled air, and Building 401 provides both chilled air and heat to various portions of the Base (Davis-Monthan AFB 2004a).

Liquid Fuels System. Davis-Monthan AFB functions as a distribution center in the DoD Fuels System for all military installations in the region. It receives fuel within the Defense Fuels Region - South and distributes it to other consumers as a Defense Fuels Support Point. These other consumers in southern Arizona include Ft. Huachuca (Army), Arizona National Guard, Yuma Proving Grounds, Sky Harbor Airport (Phoenix), and Tucson Air National Guard at TIA (Davis-Monthan AFB 2004a).

Since Davis-Monthan supports a large number of flying operations, most of its fuel handling consists of JP-8. The Base receives JP-8 in two ways: via commercial pipeline and highway tanker truck. The Base receives, stores, and distributes a variety of fuels, that include JP-8 aviation fuel, DL-2 diesel fuel, and Mogas unleaded regular (Davis-Monthan AFB 2004a).

The Kinder-Morgan Pipeline routinely delivers JP-8 to one of three 67,000 barrel storage tanks. This six-inch pipeline has the capability to deliver 544,230 gallons per 24-hour period. In the event of pipeline failure, these storage tanks can receive 576,000 gallons per day via tanker truck. JP-8 can be dispensed to flightline fuel hydrants at a rate of 1,100 gallons per minute (GPM) using the pumps or 450 GPM using gravity flow in event of pump failure (Davis-Monthan AFB 2004a).

The flightline uses four locations as hot refueling pits; two of these are serviced by Pump House J-4, and two are serviced by Pump House J-3. Pump Houses J-1 and J-2 are not currently active. These four pump houses are connected by an underground pipeline. In addition, on the West Ramp, Pump House A-2 can dispense fuel; however, it is resupplied by tanker truck. On the West Ramp, Pump House A-1 is inactive (Davis-Monthan AFB 2004a).

Other features of the JP-8 fueling system include mobile units to increase the number of simultaneously-fueled aircraft during surge operations; berms and dedicated fire system for the tank farm; and a series of underground tanks at each pump house (Davis-Monthan AFB 2004a).

4.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA assesses potential environmental consequences associated with the Proposed Action and the No Action alternative. Potential impacts are addressed in the context of the scope of the Proposed Action as described in Section 2.0 and in consideration of the potentially affected environment, as characterized in Section 3.0.

4.1 EARTH RESOURCES

4.1.1 Methodology

Protection of unique geologic features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards and soil limitations are considered when evaluating impacts to earth resources. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of mitigation measures in the event that potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion.

4.1.2 Impacts

4.1.2.1 PROPOSED ACTION

Under the Proposed Action, up to approximately 21.9 acres of surface would be temporarily disturbed as a result of construction and demolition of the proposed facilities and parking areas (18.3 acres of new facilities and pavements, and 3.6 acres of demolished facilities and pavements). There would be approximately 14.7 acres of new impervious surface following completion of all the proposed construction.

The majority of the proposed construction and demolition would occur on the *Mohave soils and Urban Land* soil mapping unit; and the remainder of the proposed activities would occur on the *Tubac Gravelly Loam* mapping unit. These soil mapping units are typically used for homesites or urban development, and the primary limitation to their use as such is their shrink-swell potential. Building on these soil mapping units would require properly designed foundations and footings and would also require diverting runoff away from the buildings to help prevent potential structural damage (NRCS 1993).

The grading of existing soil and placement of structural fill for new facilities would not substantially alter existing soil conditions at Davis-Monthan AFB because much of this land has been previously disturbed and no longer includes naturally occurring soils, as described by the Urban Land soil mapping unit. There are no special qualities associated with the soils or geologic resources at these sites.

Implementation of construction BMPs would be employed to minimize impacts associated with erosion. These BMPs would include, but not be limited to installation of silt fencing and sediment traps, application of water sprays to keep soil from becoming airborne, and revegetation of disturbed areas as soon as possible, as appropriate. Therefore, potential impacts to earth resources would be minimal, and no significant impacts would occur as a result of implementation of the Proposed Action.

4.1.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, none of the proposed construction or demolition activities would occur and there would be no new impacts to earth resources. Conditions would remain as described in Section 3.1.2.

4.2 WATER RESOURCES

4.2.1 Methodology

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users; endanger public health or safety by creating or worsening health hazards or safety conditions; or violate laws or regulations adopted to protect or manage water resources.

The ADEQ Water Division and the USACE are the regulatory agencies that govern water resources in the state of Arizona and at Davis-Monthan AFB. These agencies have adopted the USEPA's applicable environmental rules and regulations. The Clean Water Act of 1977 regulates pollutant discharges and development activities that could affect aquatic life forms or human health and safety.

4.2.2 Impacts

4.2.2.1 PROPOSED ACTION

With regard to water resources, the primary concerns associated with the Proposed Action include effects on water quality during construction and with operation of proposed facilities, impacts on surface waters, changes to surface water drainage and ground water recharge, and effects on the availability of local water supplies.

New facility construction at Davis-Monthan AFB would result in a net increase of 14.7 acres of impervious surface, which represents an increase of less than approximately one percent in impervious surface (refer to Section 4.11.2.1). This increase in impervious surface would result in a minor increase in storm water runoff at the Base. Prior to construction, the Base would be required to obtain coverage under an Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit AZG2003-001 by filing an NOI for the construction activity with ADEQ and preparing an SWPPP to manage storm water associated with the construction activity. The SWPPP must include BMPs to minimize the potential for exposed soils or other contaminants from construction activities on the Base to reach surface waters. Such BMPs would include the use of silt fences, covering of soil stockpiles, use of secondary

containment for the temporary storage of hazardous liquids, establishment of buffer areas near wetlands and intermittent streams, and revegetation of disturbed areas in a timely manner. Adherence to the requirements of the NPDES construction permit would minimize impacts to water resources during construction. The Proposed Action would also require modifications to the installation storm drainage system and updating the Base SWPPP in order to properly manage storm water. It is likely that storm water retention ponds would be required to assist in management of storm water. This would be coordinated with the 355 CES/ Environmental Quality Element (CEVQ) office.

It is not anticipated that the Proposed Action would result in any direct impacts to waters of the U.S., although some proposed construction projects would be located in close proximity to waters of the U.S. (Figure 4.2-1).

Site designs currently avoid these areas; however, if final site design of any of the proposed facilities would result in impacts to any of these waterways, then Davis-Monthan AFB would coordinate with the USACE to obtain a Section 404 permit and would prepare additional NEPA documentation, which would include a Finding of No Practicable Alternative.

BMPs provided in the SWPPP would be implemented to ensure that indirect impacts to waterways (e.g., silting, runoff) are minimized such that these impacts are insignificant. No construction would occur within the floodplain associated with Atterbury Wash.

The net increase of approximately 130,000 SF of new buildings and associated landscaping could lead to a small increase in the amount of water consumed on Base; however, given that the Proposed Action does not involve any increases in personnel or operations, and that many of the new facilities would replace old facilities and therefore would likely be more efficient, the increase in water consumption would be minimal and impacts would be less than significant. Further, adherence to the principles of the *Design Compatibility Standards, Davis-Monthan AFB* (Davis-Monthan AFB 1998c) would ensure that landscape design is based on budgeting of water use and xeriscaping (i.e., landscaping that requires little or no water) design (Davis-Monthan AFB 2004a).

4.2.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction would occur and no new impacts to water resources would result. Conditions would remain as described in Section 3.2.2.

4.3 BIOLOGICAL RESOURCES

4.3.1 Methodology

Evaluation of impacts is based upon 1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, 2) the rarity of a species or habitat regionally, 3) the sensitivity of the resource to proposed activities, and 4) the duration of the impact. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species.

4.3.2 Impacts

4.3.2.1 PROPOSED ACTION

VEGETATION

The Proposed Action would introduce approximately 15 acres of new impervious surface. This would occur in the portion (approximately 60 percent) of the Base that is identified as developed (see Section 3.3.2.1). There would be small-scale vegetation removal in the landscaped and mowed areas as a result of the Proposed Action. Post-construction activities would involve landscaping disturbed areas where appropriate. To a large extent, the areas associated with proposed construction and/or demolition are currently developed and have been previously disturbed. There are no known sensitive plant species at any of the proposed construction or demolition sites. As a result, impacts to vegetation communities and individual populations would be expected to be minor under the Proposed Action.

ARIZONA NATIVE PLANT LAW

Arizona contains more rare and unusual plants than anywhere else in the U.S. Under Arizona Native Plant Law (Arizona Revised Statutes Title 3, Chapter 7, *Arizona Native Plants*), native plants cannot be removed from any Arizona land without the permission of the landowner and a permit from the Arizona Department of Agriculture. Plants that fall under this jurisdiction include the saguaro, hedgehog cactus, pincushion cactus, and numerous others. Many of these species occur on Davis-Monthan AFB. As with other sensitive species, prior to implementation of the proposed construction and/or demolition activities, a qualified biologist would survey the site for any evidence of native plants protected under this statute. The results of this survey would be coordinated with the 355 CES/Environmental Analysis Element (CEVA) office and appropriate measures would be taken should any of these native plants be observed at the sites.

WILDLIFE

Construction and demolition activities associated with the Proposed Action could temporarily disturb wildlife in the immediate vicinity of the proposed projects. Noise levels from construction equipment would occur in the immediate vicinity of the proposed individual projects. Less mobile species and fleeing species could be impacted as a result of construction and demolition activities; however, should mortalities occur, they would likely be isolated instances and would not result in long-term impacts to populations of wildlife species. Most of the species found at the Base are well-adapted to rural or semi-urban settings. It is expected that these species would continue to utilize the project area after implementation of the Proposed Action. Therefore, the implementation of the Proposed Action would not cause significant impact to wildlife species or their associated habitat.

MIGRATORY BIRDS

There are six migratory bird species identified by the Arizona Partners in Flight Bird Conservation Plan that either occur or have potential to occur on Davis-Monthan AFB (Latta *et al.* 1999). Of the six species, only the rufous-wing sparrow and Costa's hummingbird have been documented on the Base (Tucson Bird Count 2004; personal communication, Lisa 2005).

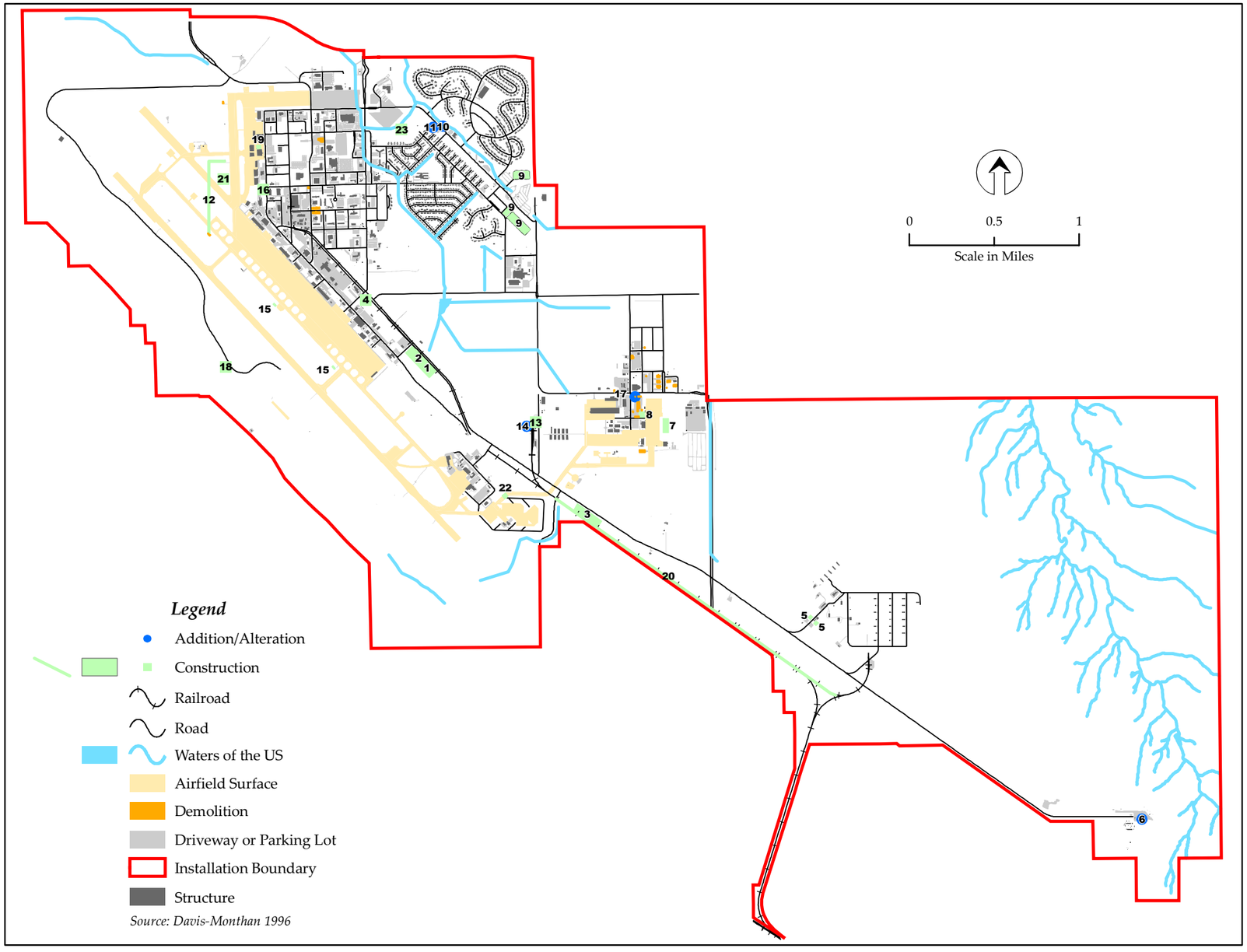


Figure 4.2-1. Proposed Construction and Demolition in Relation to Waters of the U.S. at Davis-Monthan AFB, Arizona

The other four species may occur on the Base or the surrounding areas. Their occurrence would likely be transient and residential occurrence is not likely. Therefore, impacts to migratory bird species as a result of implementation of the construction and demolition activities associated with the Proposed Action would not be expected.

SPECIAL-STATUS SPECIES

No federally-listed threatened or endangered species are known to occur on the Base. While there are some state-listed species of concern known to occur, or have the potential to occur on Base, there are no known occurrences of these species within the vicinity of the proposed construction and demolition projects. Prior to implementation of the proposed construction and/or demolition activities, a qualified biologist would survey the site for any evidence of these sensitive species. The results of this survey would be coordinated with the 355 CES/CEVA office and appropriate measures would be taken should sensitive species be observed at the sites.

The following discussion analyzes the potential for impacts to the five special status species (Table 3.3-3) identified as occurring or having the potential to occur on Base.

Western Burrowing Owl

Western burrowing owls are known to occur on Base. These species nest in ground burrows abandoned by other wildlife species (round-tailed ground squirrels). These colonial animal burrows are uncommon in the developed portions of the Base. The owl's diet is primarily arthropods, but it does consume small animals also (rodents, songbirds). While the landscaped areas on Base likely support limited arthropod, rodent, and songbird populations, the undeveloped portion of the Base could harbor more abundant populations of these species. Burrowing owls have not been identified at the specific sites for the proposed construction and demolition. Prior to implementation of any construction project where there is the potential for burrowing owls to be present, a survey of the site by a qualified biologist would be conducted. Should burrowing owls be present, AZGF protocol for managing the bird would be implemented. Therefore, there would be no impacts to the western burrowing owl as a result of the proposal.

American Peregrine falcon

The American peregrine falcon is known to occur on Base (personal communication, Lisa 2004); although the falcon's preferred habitat (cliff habitat, overlooking woodlands and riparian areas) for this species does not occur on Base. Due to the lack of preferential habitat for this species, the known occurrences of the falcon are likely transient. Therefore, the proposed action would not be likely to impact the American peregrine falcon.

Lesser Long-nosed Bat

The lesser long-nosed bat has not been documented on Base; however they are known from the Rincon Mountains, just east of the Base. The lesser long-nosed bat forages on nectar of columnar cacti at night. The bat may occur as a transient forager in areas with columnar cacti; however, Davis-Monthan AFB does not have the preferred foraging habitat for the bat.

Additionally, the bat is a nocturnal forager, and construction and demolition activities would not occur during these foraging hours. Therefore, the Proposed Action is highly unlikely to have any impact the lesser long-nosed bat.

Cave Myotis

The cave myotis could potentially roost in abandoned buildings at Davis-Monthan AFB; however, this is not likely due to absence of preferred habitat (creosote bush, brittlebush, palo verde and cacti near water) on Base. Bats are known to travel up to 40 miles from roosting sites to forage (USFWS 1995b). The cave myotis forages on insects at night and may occur on the Base as a transient forager. Prior to implementation of any demolition projects where there is the potential for cave myotis to be present, a survey of the site by a qualified biologist would be conducted. Should cave myotis be present, AZGF protocol for managing bats would be implemented. Additionally, the bat is a nocturnal forager, and construction and demolition activities would not occur during these foraging hours. Therefore, the Proposed Action would not be likely to impact the cave myotis.

Pima Pineapple Cactus

The Pima pineapple cactus occurs within the floristic community types (Sonoran Desertscrub and semi-desert grassland) that occur on Base (Section 3.3.2). During a survey for the Pima pineapple cactus in 2000, no individuals of this species were identified on Base (personal communication, Lisa 2004). The Sonoran desertscrub and semi-desert grassland habitat types primarily occur in the undeveloped portion of the Base. Therefore, it is unlikely that the cactus would be impacted as a result of the Proposed Action.

WETLANDS

According to the 1996 wetland delineation prepared for Davis-Monthan AFB, there are no delineated wetlands on Davis-Monthan AFB. In recent correspondence, the USACE has indicated that the 1996 delineation is out of date and requires updating. Based on the historical data, it is unlikely that any of the proposed construction projects would be sited on newly formed wetlands. Should any wetland indicators be observed during construction activities, work would stop and the Davis-Monthan Environmental Manager would be contacted immediately. There would be no impacts to wetlands with implementation of the Proposed Action.

4.3.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed construction and demolition projects would not be implemented and therefore, there would be no impact to vegetation, wildlife, or special status species. There are no wetlands on the Base, and therefore there would be no impacts to wetlands.

4.4 AIR QUALITY

4.4.1 Methodology

Air emissions resulting from the Proposed Action were evaluated in accordance with federal, state, and local air pollution standards and regulations. Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

The approach to the air quality analysis was to estimate the increase in emission levels due to the Proposed Action.

According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required if the Proposed Action occurs within an attainment area. Since Pima County is in maintenance status (i.e., recently achieved attainment) for CO, a conformity determination must be performed if project emissions exceed the *de minimis* threshold for CO, 100 TPY.

4.4.2 Impacts

4.4.2.1 PROPOSED ACTION

Construction Emissions. Emissions during the construction period were quantified to determine the potential impacts on regional air quality. Calculations of VOC, NO_x, CO, and PM_{10} emissions from construction, grading, and paving activities were performed using USEPA emission factors compiled in the *California Environmental Quality Air Quality Handbook* (South Coast Air Quality Management District 1993), *Calculations Methods for Criteria Air Pollution Emission Inventories* (Jagielski and O'Brien 1994), and *Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations* (O'Brien and Wade 2002). The emission factors for building construction include contributions from engine exhaust emissions (i.e., construction equipment, material handling, and workers' travel) and fugitive dust emissions (e.g., from grading activities). Demolition emissions evaluated include fugitive dust and transport of demolition debris offsite. Trenching and grading emissions include fugitive dust from ground disturbance, plus combustive emissions from heavy equipment from trench work during the entire construction period. Paving emissions include combustive emissions from bulldozers, rollers, and paving equipment, plus emissions from a dump truck hauling pavement materials to the site. Estimated emissions that would occur from construction, demolition, grading, trench work, and paving activities under the Proposed Action are presented in Table 4.4-1. The emissions shown would occur over the duration of the construction period, and would be spread over at least three calendar years (facilities construction under the Proposed Action is proposed to be distributed over the three-year period from 2005 to 2007).

Table 4.4-1. Temporary Construction Emissions – Proposed Action

Source	EMISSIONS (IN TONS)				
	CO	***VOC***	***NO_x***	***SO_x***	***PM_{10}***
Construction	14.4	4.5	66.4	< 0.1	4.7
Demolition	2.5	0.5	2.4	< 0.1	0.9
Grading/Trenching	0.8	0.2	1.0	0.1	0.6
New Pavement	2.0	0.4	4.1	0.3	0.3
TOTAL	**19.7**	**5.6**	**73.9**	**0.4**	**6.5**

Emissions generated by construction, demolition, and paving projects are temporary in nature and would end when construction is complete. The emissions from fugitive dust (PM_{10}) would be considerably less than those presented in Table 4.4-1 due to the implementation of control measures in accordance with standard construction practices. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during construction. Using efficient practices and avoiding long periods where engines are running at idle may reduce combustion emissions from construction equipment. An activity permit would be obtained from the Pima County Department of Environmental Quality, Air Quality Division under title 17 of the Pima County Code prior to any construction and/or demolition activities. Vehicular combustion emissions from construction worker commuting may be reduced by carpooling. Table 4.4-1 presents a scenario in which none of the control measures mentioned above are applied and, therefore, annual emissions would be expected to be lower than those shown in Table 4.4-1.

In general, combustive and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality in Pima County (AQCR 015). Measures would be implemented to control fugitive dust 24 hours a day, 7 days a week. The total CO emissions are well below the conformity threshold of 100 TPY. A conformity determination, therefore, is not required for this action. The temporary construction-related emissions of PM_{10} and SO_x are not expected to adversely impact the air quality or visibility in any of the PSD Class I areas in the vicinity of the Base.

To comply with 40 CFR Part 61 Subpart M, National Emissions Standards for Asbestos, a National Emissions Standards for Hazardous Air Pollutants (NESHAP) notification would be submitted at least 10 working days prior to demolition or renovation of any facility containing regulated asbestos-containing material.

Operational Emissions. Air emissions at Davis-Monthan AFB after the Proposed Action is completed are expected, for the most part, to be virtually identical to or less than current operations, as sources that are removed due to demolition of current facilities would be replaced by similar air emission sources at the new facilities. It is likely that the new equipment would be more efficient and have lower emissions than the heating equipment currently

present in the buildings. Nevertheless, the installation or modification of any air emission sources, such as gasoline stations, boiler and heaters, emergency generators, paint booths, degreasers, etc., would trigger permitting requirements with the Pima County Department of Environmental Quality and potentially a modification or additions to the Base's synthetic minor operating permit.

There are no expected increases in operational emissions as a result of the Proposed Action.

4.4.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction emissions would occur and operational emissions would be identical to current baseline presented in Section 3.4.2.

4.5 NOISE

4.5.1 Methodology

Noise impact analyses typically evaluate potential changes to existing noise environments resulting from proposed construction and demolition activities. This consists of changes in noise levels or the exposed human population, as well as noise impacts on wildlife. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels).

4.5.2 Impacts

4.5.2.1 PROPOSED ACTION

Vehicles and equipment involved in demolition, facility construction, and finishing work would generate the primary noise from the Proposed Action. The typical noise levels generated by these activities range from 75 to 89 dBA at 50 feet from the source. Assuming that noise from the heavy equipment radiates equally in all directions, the sound intensity diminishes inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), the sound pressure level decreases 6 dB with each doubling of the distance from the source. Under most conditions, reflected sound will reduce the attenuation due to distance. Therefore, doubling the distance may only result in a decrease of 4 to 5 dB (American Industrial Hygiene Association 1986). Table 4.5-1 illustrates the anticipated sound pressure levels at a distance of 50 feet for miscellaneous heavy equipment.

Table 4.5-1. Heavy Equipment Noise Levels at 50 Feet

Equipment Type[1]	*Number Used*[1]	*Generated Noise Levels, L_p (dBA)*[2]
Bulldozer	1	88
Backhoe (rubber tire)	1	80
Front Loader (rubber tire)	1	80
Dump Truck	1	75
Concrete Truck	1	75
Concrete Finisher	1	80
Crane	1	75
Flat-bed Truck (18 Wheel)	1	75
Scraper	1	89
Trenching Machine	1	85

Notes: 1. Estimated, based on typical construction scenario
Source: American Industrial Hygiene Association 1986

Construction noise would be intermittent and short-term in duration. The distance to off-base sensitive receptors in the vicinity of the short-term construction activities would be greater than 1,000 feet. Assuming a maximum noise level of 89 dBA measured 50 feet from the source, the distances from each of the project areas to off-base sensitive receptors would be sufficient to allow noise levels to naturally attenuate to levels within existing conditions at the installation. An example calculation for the predicted noise level measured 1,000 feet from the source, is presented as follows:

$$A = 20 \log_{10}\left(\frac{d_1}{d_2}\right) = 20 \log_{10}\left(\frac{1{,}000}{50}\right) = 26.0 \text{ dBA}$$

$$\text{Predicted Noise Level} = L_{max} - A = 89.0 - 26.0 = 62.0 \text{ dBA}$$

Construction activities would be expected to occur between 7:30 a.m. and 4:30 p.m. In addition, as calculated previously, noise levels at residences in the vicinity of the construction activities would be less than 65 dBA. Minor annoyances to on-base sensitive receptors in the vicinity of the demolition and construction activities associated with exposures to noise exceeding 65 dBA would be of short duration. Furthermore, no changes in aircraft operations are anticipated from implementation of the Proposed Action. Additionally, existing noise levels from existing aircraft operations in the vicinity of the proposed projects would be much louder than most noise generated from demolition and construction activities. The location of the proposed projects in relation to existing noise levels at Davis-Monthan AFB is presented in Figure 4.5-1.

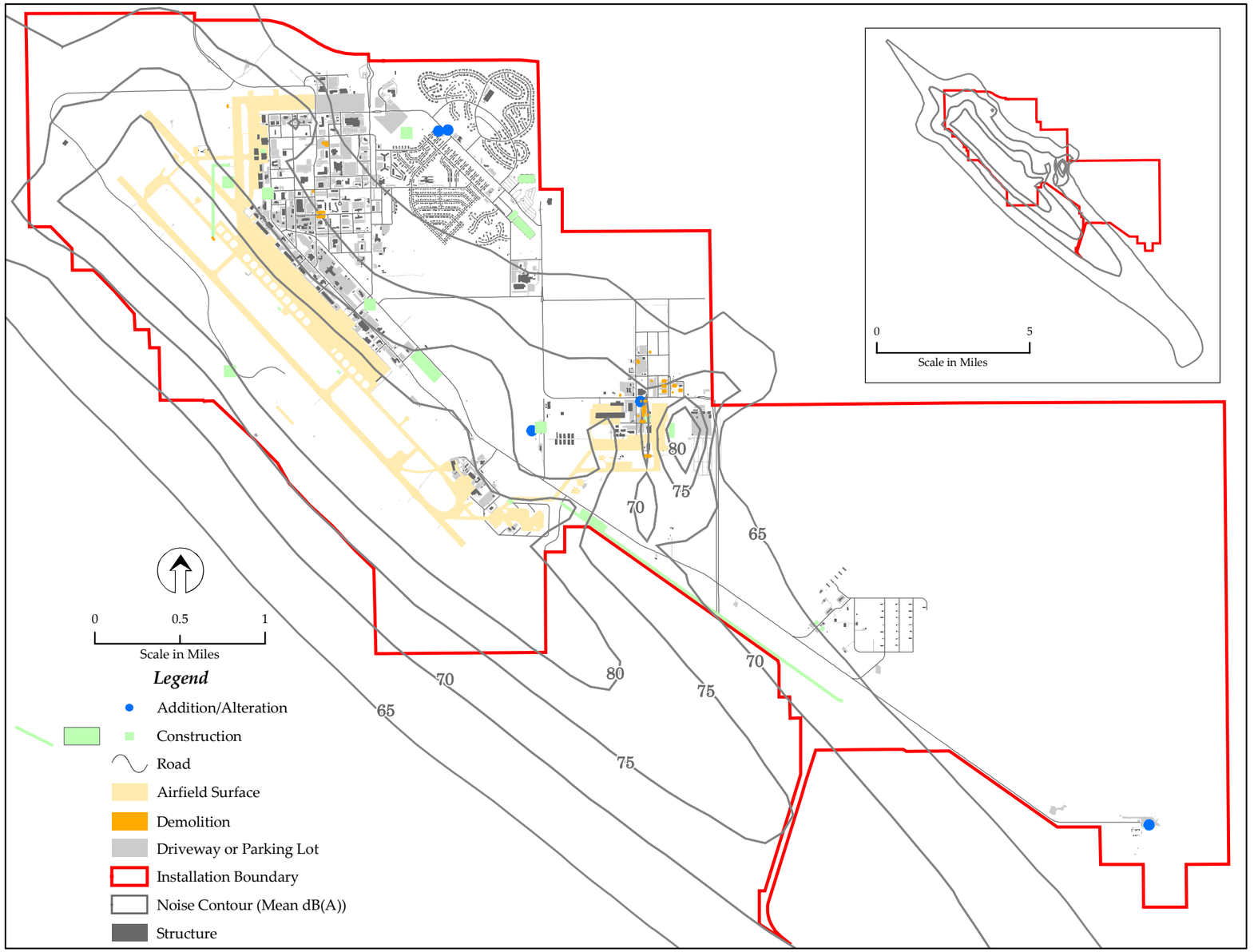


Figure 4.5-1. Proposed Construction and Demolition in Relation to Existing Noise Contours at Davis-Monthan AFB, Arizona

In general, construction noise would be intermittent and short-term in duration, and no long-term (recurring) noise impacts would result from implementation of the Proposed Action.

4.5.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, proposed construction and demolition projects would not occur. Noise levels would remain as described in Section 4.5.2.

4.6 LAND USE AND VISUAL RESOURCES

4.6.1 Methodology

The methodology to assess impacts on individual land uses requires identifying those uses, as well as affected land use planning and control policies and regulations and determining the degree to which they would be affected by the proposal. Similarly, visual impacts are assessed by determining how, and to what extent, the Proposed Actions would alter the overall visual character of the area.

4.6.2 Impacts

4.6.2.1 PROPOSED ACTION

It is not anticipated that implementation of the Proposed Action would result in any significant impacts to either on-base or off-base land uses. The proposal would not result in any changes to Base operations, personnel levels, or land use. In fact, elements of the Proposed Action are intended to correct existing minor land use issues and improve the functionality of the Base through the implementation of construction projects associated with the WINDO and Base Master Plan. The proposed construction projects are the result of a coordinated land use planning process, and take into account facility siting issues such as adjacent land uses (both on and off the Base), the noise environment, and airfield safety criteria.

Based on an assessment of land use compatibility associated with the Base general plan, existing land uses on the Base are considered to be generally compatible, with only minor issues (Davis-Monthan AFB 2004a). Two of the proposed projects involve relocating facilities that are currently located in areas that create an incompatible land use situation. The existing heli-pad is in violation of the airfield clearance criteria, and the new site for this facility would eliminate this issue. Also, the existing recycling facility is not compatible with adjacent facility uses; however, the new facility would be constructed in an area that is compatible with this industrial use.

It is not anticipated that any of the proposed projects would result in incompatible land use issues with adjacent, off-base land uses. Most of the proposed facilities are located well inside the Base boundary and therefore would have no effect on the off-base environment. The proposed Recycle Facility would be sited in an area along the southern boundary of the Base with adjacent existing and planned land use in this area designated as industrial; therefore, it is not anticipated that this facility would impact off-base land use (Arizona Department of Commerce 2004). No other facilities are considered to have the potential to impact off-base land uses. In general the Proposed Action would result in minor positive impacts to land use on-base.

With regard to visual resources, the Base would implement architectural and engineering principles provided in its Design Compatibility Standards for the construction of new buildings. These standards would seek to create a military installation that is architecturally compatible, with design features that lead to visual harmony. Landscaping would follow the principles of the *Design Compatibility Standards, Davis-Monthan AFB* (Davis-Monthan AFB 1998c) to create a landscape that enhances the visual setting of the Base. Any exterior coverings used for new facilities would be in an "earth tone" and consistent with the existing landscaping and natural environment in the area. Overall, the Proposed Action would result in a minor, positive impact to visual resources.

4.6.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan AFB would maintain its existing facilities and would not build the proposed new facilities, as described in Chapter 2.0. Continued use and maintenance of the existing degraded and inefficient facilities and infrastructure would require the 355 WG to continue to operate under unnecessarily inefficient conditions.

4.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.7.1 Methodology

In order to assess the potential socioeconomic and environmental justice impacts of the Proposed Action, employment, race, ethnicity, poverty status and age characteristics of populations in the ROI were analyzed, as presented in Section 3.7.2. Potential socioeconomic impacts are assessed in terms of the direct effects of the proposal on the local economy and related effects on population and socioeconomic attributes. With regard to environmental justice issues, community and county figures are compared to regional and state demographics to determine proportional differences

4.7.2 Impacts

4.7.2.1 PROPOSED ACTION

Under the Proposed Action, the 355 WG would implement construction and demolition projects associated with their WINDO as described in Section 2.1. The total socioeconomic impacts of the proposed construction and demolition projects would amount to an estimated expenditure of $61 million over the entire construction period (three years). The average annual expenditure would therefore be comparable to what was spent in FY 2002 (approximately $38 million), when other ongoing construction projects are considered. These potential impacts would be temporary and spread out over the course of the time period. No permanent or long-lasting socioeconomic impacts are anticipated as a result of implementation of the Proposed Action. Minor temporary benefits may occur as workers from the surrounding area may be employed to implement the Proposed Action.

The Proposed Action is not expected to create significantly adverse environmental or health impacts. Consequently, no disproportionately high and adverse human health or environmental impacts to minority and/or low-income populations have been identified. In addition, there are no known environmental health or safety risks associated with the Proposed

Action that may disproportionately affect children. The construction areas would be restricted, to effectively bar any person, including children, from unauthorized access.

4.7.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the 355 WG would maintain their existing facilities. Proposed construction and demolition projects would not be implemented. Failure to implement the proposed improvements would not generate any of the construction-related employment or earnings impacts associated with the Proposed Action. Implementation of the No Action Alternative would not result in any significant adverse socioeconomic or environmental justice impacts.

4.8 CULTURAL RESOURCES

4.8.1 Methodology

A number of Federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups.

Under Federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have been identified as important to Native Americans as outlined in the AIRFA and EO 13007, *Indian Sacred Sites*. DoD *American Indian and Alaska Native Policy* (1999) provides guidance for interacting and working with federally-recognized American Indian governments. DoD policy requires that installations provide timely notice to, and consult with, tribal governments prior to taking any actions that may have the potential to significantly affect protected tribal resources, tribal rights, or American Indian lands.

Analysis of potential impacts to cultural resources considers direct impacts that may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts generally result from increased use of an area.

4.8.2 Impacts

4.8.2.1 PROPOSED ACTION

Impacts to cultural resources are not expected under the Proposed Action. Archaeological surveys of the Base, including the proposed construction areas, have identified eight archaeological resources considered *ineligible* for the NRHP. None of these resources is within,

or near, the proposed construction and/or demolitions areas. Impacts to architectural resources are similarly not anticipated. Of the 28 structures proposed for demolition, five are 50 years old or older. Two of the structures (Buildings 4102 and 4200) are dormitories constructed in 1953, two are liquid fuel pump stations (210 and 204), and one is a vehicle maintenance facility (7336) constructed in 1943. The dormitories have experienced many alterations in the years since construction and retain little or no historic integrity and are considered ineligible to the NRHP (personal communication, Lisa 2004). Although the liquid fuel pump stations are still in use, they are unsafe according to current safety standards and require removal. The World War II-era temporary structure (Building 7336) qualifies under the Programmatic Agreement between the DoD and the ACHP allowing for the disposal of World War II structures that were not intended to be permanent (personal communication, Lisa 2004). Twenty of the structures proposed for demolition are from the Cold War Era. Cold War Era structures and facilities at Davis-Monthan AFB were inventoried in 1994 and evaluated for NRHP eligibility (Davis-Monthan AFB 2004e). Four sites (two alert facilities, one training facility, and one missile complex) were evaluated as eligible to the NRHP. None of these facilities are associated with the proposed facilities.

Impacts to traditional resources are not expected under the Proposed Action. Traditional resources have not been identified to date at the Base. The Air Force has initiated contact with the nearby Tohono O'odham Nation and the Pascua Yaqui Tribe to identify any potential concerns associated with the proposed activities. Tribal contact letters are included in Appendix A.

Compliance with Section 106 of the NHPA, including SHPO and American Indian consultation would be completed for the project area prior to implementation of the proposed activities. Contact with the Arizona SHPO has been initiated for this action (refer to Appendix A). In the event of inadvertent discoveries of cultural resources during construction or demolition, all activities at that location would be halted until the find is evaluated by a qualified professional archaeologist in compliance with the Davis-Monthan AFB Integrated Cultural Resources Management Plan and Federal regulation.

4.8.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, WINDO construction projects would not take place as proposed. Impacts to cultural resources are not expected under this alternative. Resources would continue to be managed in compliance with Federal law and Air Force regulation, and conditions would remain as described in Section 4.8.2.

4.9 SAFETY

4.9.1 Methodology

Impacts are assessed according to the potential to increase or decrease safety risks to personnel, the public, and property. Proposal-related activities are considered to determine if additional or unique safety risks are associated with their undertaking. If any proposal-related activity indicated a major variance from existing conditions, it would be considered a safety impact.

4.9.2 Impacts

4.9.2.1 PROPOSED ACTION

All proposed construction under the Proposed Action would be compatible with existing land uses at each proposed site. Portions of some projects are located within munitions QD arcs. Specifically, projects associated with the Construction of Roads and Parking Lots at Site 5, Construction of the CATM Jogging Trail, Construction of Desert Lightning City, Expansion of the Communications Infrastructure, and Construction of the Transfer Line to the Pump House would be located within existing QD arcs. None of these construction activities or proposed facilities is in conflict with the existing QD arcs seeing as there would be no inhabited buildings within these areas. The locations of the projects in conjunction with QD arcs are presented in Figure 4.9-1.

Coordination would be required between the construction contractors and the Base prior to the implementation of construction activities. No explosives would be used or handled during construction activities. Therefore, no additional risk is expected from the Proposed Action. In addition, there would be no significant impact to ground safety as a result of construction and demolition activities. All activities and workers at the construction site would comply with Occupational Safety and Health Administration (OSHA) standards and requirements, and would be required to conduct construction activities in a manner that would not pose any risks to personnel at or near the construction site.

The proposed projects would include measures to enhance and correct AT/FP shortfalls as part of the facility designs. These improvements would correct deficiencies identified at Davis-Monthan AFB and there would be a positive benefit from implementation of the Proposed Action.

Finally, aircraft operations and maintenance activities which would be subject to OSHA regulations are not components of the Proposed Action. Overall, the Proposed Action would not impact ground safety.

4.9.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, construction and demolition of the proposed projects would not occur. Management of safety programs would continue under existing Davis-Monthan AFB programs and there would be no environmental impacts as a result of implementation of the No Action alternative.

4.10 SOLID AND HAZARDOUS MATERIALS AND WASTES

4.10.1 Methodology

This section addresses the potential impacts caused by hazardous materials and waste management practices and the impacts of existing contaminated sites on reuse options.

The qualitative and quantitative assessment of impacts from hazardous materials and solid waste management focuses on how and to what degree the alternatives affect hazardous materials usage and management, hazardous waste generation and management, and waste

disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that could not be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts that may be caused by hazardous materials and wastes. The following criteria were used to identify potential impacts:

- Generation of 100 kilograms (or more) of hazardous waste or 1 kilogram (or more) of an acutely hazardous waste in a calendar month, resulting in increased regulatory requirements.
- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.
- Manufacturing, use, or storage of a compound that requires notifying the pertinent regulatory agency according to Emergency Planning and Community Right-to-Know Act.
- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

4.10.2 Impacts

4.10.2.1 PROPOSED ACTION

SOLID WASTE MANAGEMENT

Construction of the 23 proposed facilities and demolition of the 27 facilities identified in Section 2.1 would generate solid wastes consisting of concrete, brick, wood, structural steel, glass, and miscellaneous metal building components. These materials would be generated during a three-year period from FY 2005 through FY 2007.

The total amount of construction and demolition waste generated is estimated to be approximately 64,457 cubic yards. Demolition contractors would be directed to mulch or recycle materials to the maximum extent possible, thereby reducing the amount of demolition debris disposed in landfills. Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes, such as the City of Tucson and the Pima County Landfill. The proper management and recycling or disposal of construction and demolition debris would be the responsibility of construction site contractors. The amount of waste generated by the Proposed Action would not have a significant impact to the operating life of the landfill. No environmental impacts to solid waste management would be expected from the implementation of the Proposed Action.

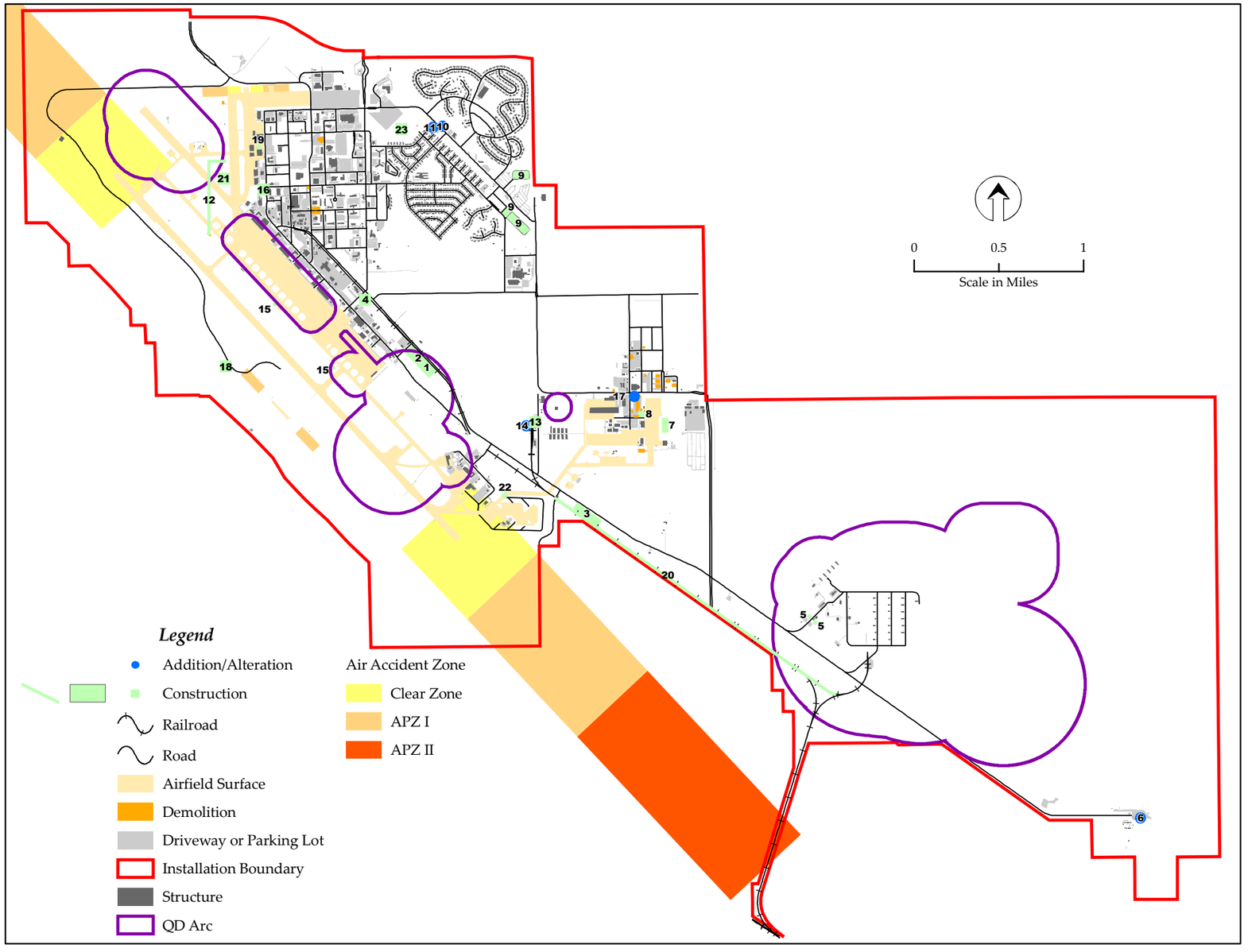


Figure 4.9-1. Proposed Construction and Demolition in Relation to Existing Safety Arcs at Davis-Monthan AFB, Arizona

HAZARDOUS MATERIALS AND WASTE

Construction and demolition of the proposed facilities may require the use of hazardous materials by contractor personnel. In accordance with the Base's Hazardous Materials Pharmacy procedure, copies of Material Safety Data Sheets for each hazardous material used must be provided to the Base and maintained on the construction site. Project contractors would comply with federal, state, and local environmental laws and would employ affirmative procurement practices when economically and technically feasible.

All hazardous materials and construction debris generated by the proposed projects would be handled, stored and disposed of in accordance with federal state and local regulations and laws. Permits for handling and disposal of hazardous materials are the responsibility of the contractor conducting the work.

Contractor personnel may generate hazardous waste during construction. Storage and disposal of these wastes would be the responsibility of the site contractor. Generation of appreciable amounts of hazardous wastes from projects included in under the Proposed Action is not anticipated. However, initial accumulation points encountered in buildings scheduled for demolition would be relocated to the new locations associated with hazardous waste generation. Any soil suspected of contamination, as discovered during the construction or demolition process, would be tested and if found to be contaminated, would be remediated or disposed of in accordance with proper regulations.

In the event of fuel spillage during construction, the contractor would be responsible for its containment, clean up and related disposal costs. The contractor would have sufficient spill supplies readily available on the pumping vehicle and/or at the site to contain any spillage. In the event of a contractor related release, the contractor would call 911 and then immediately notify the 355 CES/MILCON Programming Element (CECB) office and take appropriate actions to correct its cause and prevent future occurrences.

STORAGE TANKS

It is unlikely that the three storage tanks identified in Section 3.11.2 would be impacted by demolition of facility number 7336; however, should it appear that demolition activities could disturb these tanks, the tanks would be drained, cleaned and prepared for disposal off site; or re-located for use at a new facility on Base; or drained, capped and filled with sand.

ASBESTOS

If ACMs or lead-based paint are found in or near the demolition areas, then the following Federal and State regulations must be followed.

- *Asbestos Removal and Disposal.* Upon classification as friable or non-friable, all waste ACM would be disposed of in accordance with the Arizona Solid Waste Management Regulations (CAA of 1970, Title 40 NESHAP Regulation), and transported in accordance with USEPA regulations that govern transportation of hazardous materials (EPA530-F-96-032 *et seq.*). All waste ACM will be transported to the Tangerine Landfill, which is located at 10220 West Tangerine Road and operated by Pima County.

- *Lead-Based Paint Removal and Disposal.* The proposed activities would comply with the U.S. Department of Labor, OSHA regulations, and with the USEPA regulations addressing Lead; Management and Disposal of Lead-Based Paint Debris (40 CFR Part 257, 258 and 745).

ENVIRONMENTAL RESTORATION PROGRAM

Construction and demolition associated with the Proposed Action would occur on or near ERP (DP-10, LF-01, OT-31, OT-44, SS-08, SS-09, SS-28, and ST-40) (Figure 4.10-1). Two sites are undergoing current remediation (DP-10 and LF-01); and the remaining sites have all received No Further Action (NFA) findings (OT-31, OT-44, SS-08, SS-28, and ST-40). The Base ERP office, would request an ACC waiver to construct on or near any of the active ERP sites. Any soil suspected of contamination, as discovered during the development processes, would be tested and if found to be contaminated, would either be remediated or disposed of in accordance with ADEQ regulations. Disposal of contaminated soil would be funded by this construction and demolition project.

MILITARY MUNITIONS RESPONSE PROGRAM (MMRP)

There are seven proposed construction projects and one proposed demolition project that would occur in the area of closed ranges (Figure 4.10-2). This is not a particularly unusual occurrence, and to facilitate these activities in a safe manner, a waiver would be requested for these activities in the closed ranges. This waiver would be coordinated through the 355 CES/CEVR office, and would outline procedures to be taken to safeguard workers in the event that munitions are unearthed (personal communication, Oden 2005).

4.10.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, proposed construction and/or demolition of the facilities would not occur. Management of solid waste, hazardous wastes, or materials would continue under existing Davis-Monthan AFB programs and there would be no environmental consequences to these resources.

4.11 INFRASTRUCTURE

4.11.1 Methodology

Level of service is the primary transportation and utility service issue. Criteria for evaluating impacts to transportation and utility service include potential for disruption and/ or permanent degradation of the resource.

4.11.2 Impacts

4.11.2.1 PROPOSED ACTION

Transportation. Implementation of the Proposed Action would not alter traffic circulation on the Base. Haul routes related to demolition and construction have not been established, but would be routed to avoid Base housing areas, and other noise-sensitive areas as much as practicable. Truck traffic could lead to the degradation of road surfaces over an extended

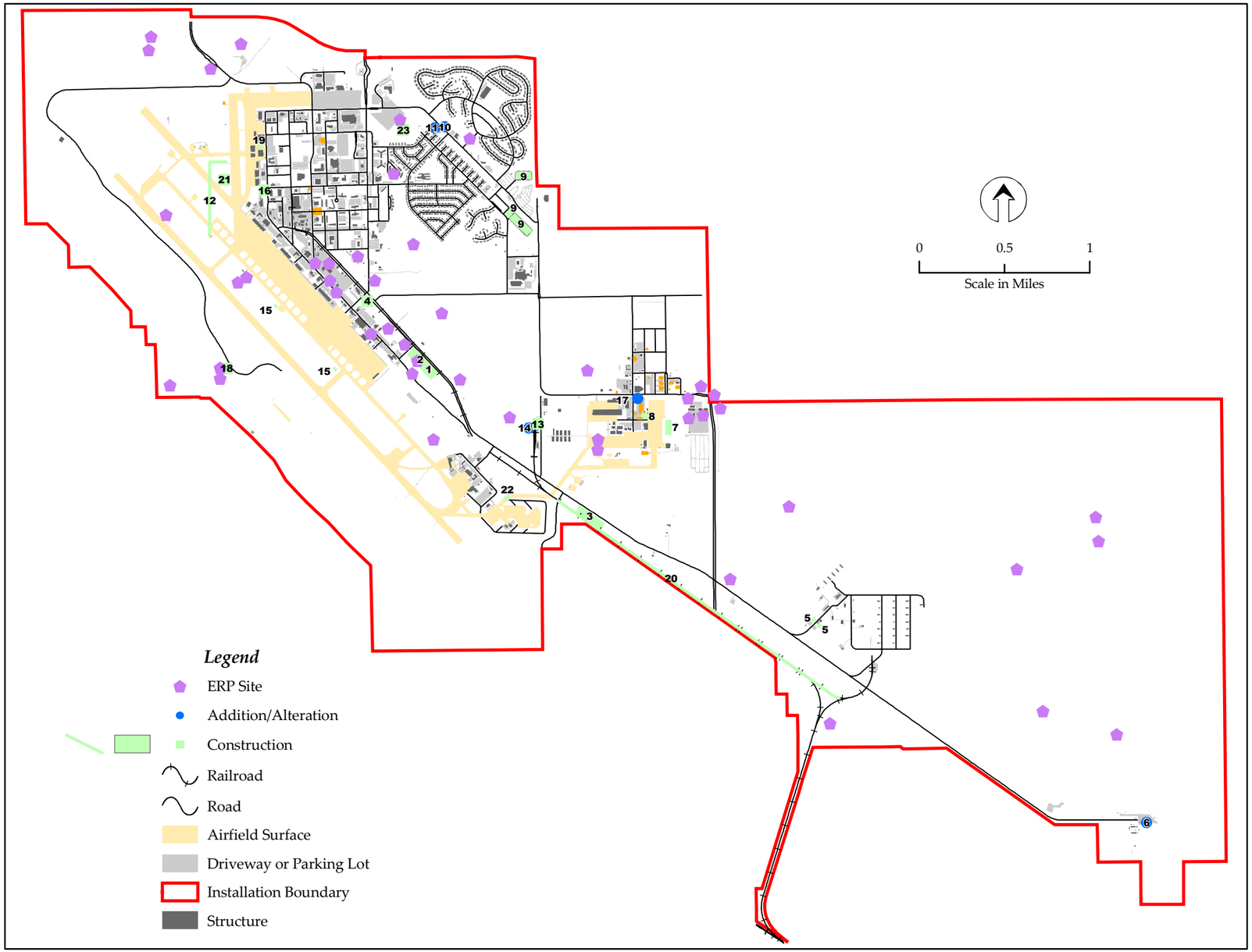


Figure 4.10-1. Proposed Construction and Demolition in Relation to Environmental Restoration Program (ERP) Sites at Davis-Monthan AFB, Arizona

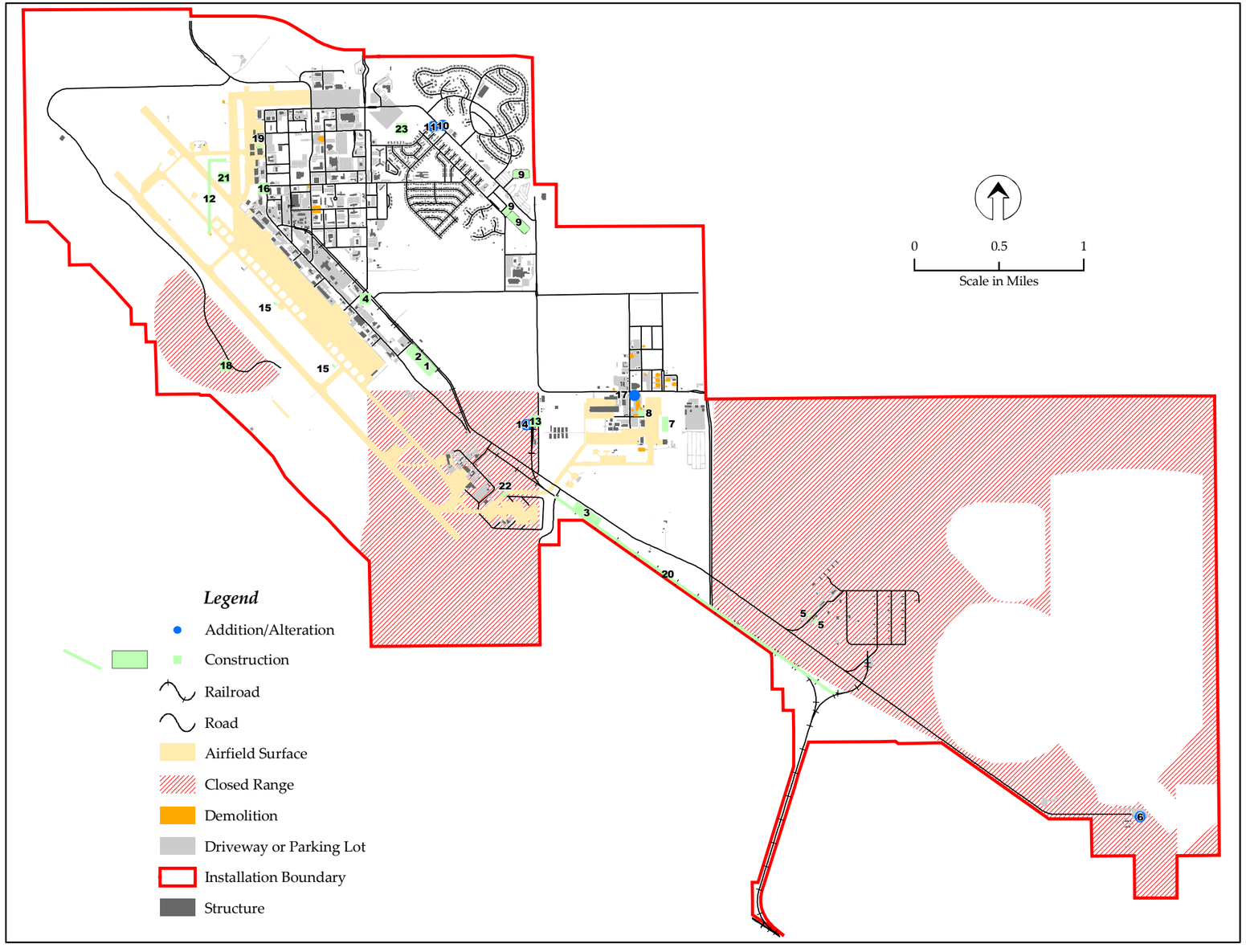


Figure 4.10-2. Proposed Construction and Demolition in Relation to Closed Ranges Under the Military Munitions Response Program (MMRP) at Davis-Monthan AFB, Arizona

period of use. Construction truck traffic and construction workers commuting to the project sites would generate minor increases in vehicle trips per day on Base roadways and increase congestion at the gates. At project sites, temporary lane closures may be necessary during demolition and construction activities. Appropriate signage and detour to maintain access would be provided.

These impacts would be short-term and temporary, occurring only for the duration of the construction period.

Potable Water. With the implementation of the Proposed Action, 23 projects would be constructed and 28 structures (144,000 SF of buildings) would be demolished. Of the 23 construction projects, 13 projects involve the construction of infrastructure that would not increase annual potable water requirements. The remaining 11 projects would add approximately 264,000 SF of buildings to the Base; however, no increase in Base population has been identified. Current average annual potable water requirements are 1.1 MGD, with summertime demands reaching 2.37 MGD. Capacity of the existing well system is 9.3 MGD, which is capable of meeting short term requirements and no adverse impacts are anticipated. The Base has identified the need to monitor regional ground water use and take steps to conserve supplies through the use of recycled effluent (Davis-Monthan AFB 2004a).

Wastewater. Under the Proposed Action, a slight increase in wastewater flows is anticipated as a result of the increase in facility space. Current wastewater flows are approximately 50 percent of the capacity of the existing sewer system that delivers wastewater to the Pima County treatment facilities and no adverse impacts are anticipated to wastewater facilities.

Storm Drainage System. Construction of new building space and other surfaces (roads, parking lots, and concrete pads) would add 14.73 acres of additional impervious surfaces to Davis-Monthan AFB (including the decrease due to demolition of existing facilities). As identified in Table 4.11-1, the largest increase in impervious surface would be in the Base's drainage areas 001 and 002A by respectively 6.3 and 4.3 acres in an area that is 3,418 acres. As each project is designed and constructed, the potential effects of the additional impervious surface and storm water discharge would be evaluated in order to reduce the overall effect on the existing storm water system. With an increase in impervious surface of less than one percent, no substantial impacts are expected to the storm drainage system as a result of implementation of the Proposed Action.

Electrical System. Under the Proposed Action, a slight increase in electrical use is anticipated as a result of the overall increase in facility space. New facility construction would employ energy-conserving equipment to reduce impacts to the existing electrical infrastructure and therefore no significant impacts are expected. With demands on the existing substation reaching over 85 percent in FY 1995, Davis–Monthan AFB initiated a series of projects to reduce demands by replacing equipment with more energy conserving devices and by shifting demands to natural gas-driven equipment (Davis-Monthan AFB 2004a). Recent demands have dropped over a one megawatt to 18.8 megawatt.

Heating and Cooling Systems. With the implementation of the Proposed Action, a slight increase in heating and cooling demands would be met through the existing capacity in the natural gas system. No adverse impacts are anticipated to this utility.

Table 4.11-1. Characteristics of Outfalls and Their Drainage Areas After Proposed Action

Drainage Area[1]	*Estimated Drainage Area*[1]	*Current Impervious Area*[1]	*Future Impervious Surface*	*Current Percent Impervious*[1]	*Future Percent Impervious*
001	1,280	384	390.3	30	30.5
002A	2,138	535	539.3	25	25.2
002B/C	390	156	156	40	40
004	2,043	41	43.6	2	2.1
005A	344	0	0	0	0
005B	98	0	0	0	0
006	2,414	0	<0.1	0	0
007	1,264	116	117.2	10	10.1
008	74	4	4	5	5
009	529	11	11.2	2	2
010	572	257	257	45	45

Notes: [1]Source Davis-Monthan AFB 2004b

Liquid Fuels System. With the implementation of the Proposed Action three projects would be constructed to improve the fuel handling capability of Davis-Monthan AFB. As a result, impacts to liquid fuels are anticipated to be minor, but positive.

4.11.2.2 NO ACTION ALTERNATIVE

Transportation. Under the No Action Alternative, no facility construction or demolition would occur. Future mission requirements would go unmet and operations would continue, in some cases from dilapidated and inefficient facilities.

Utilities. Under the No Action alternative, infrastructure upgrades associated with the Proposed Action would not be constructed and deficiencies in the systems could reduce wartime readiness and training. Conditions would remain as described in Section 3.11.2.

5.0 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE IMPACTS

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the ROI. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

Davis-Monthan AFB updates facilities on a continual basis, as necessary. While it is not practical to catalog all minor projects that could occur over the short-term, a list of the major projects in the ROI have been analyzed for the potential to create cumulative environmental impacts. Planning efforts in the ROI include the actions described within this EA, as well as others that are either ongoing or planned over the short-term. Additional projects within the ROI are discussed below.

5.1.1 Past, Present, and Reasonably Foreseeable Actions

Recently completed, on-going, and proposed actions (in addition to those that are a component of this EA) at Davis-Monthan AFB include the following:

Recently Completed Projects:

- Headquarters Interim Facility and Parking Lot for 563 RQG and 563 Operations Support Squadron (OSS) (Building #3250).
- Headquarters Facility for 563 Maintenance Squadron (MXS).
- Headquarters Facility for 79 RQS, Addition to Building # 4851.
- Headquarters Facility for 55 RQS, Addition to Building #4853.

On-Going Projects:

- Hangar and Administrative Offices for the 563 MXS. This will be a 2-bay hangar and associated shops for maintenance of the HH-60 aircraft. The hangar will be approximately 26,000 SF.
- 55 RQS New Facility
- Mobility Readiness Spares Package Warehouse Facility. This will be a new facility for storing spare parts for CSAR-associated aircraft. The facility will be approximately 12,000 SF.

Planned Projects for the Foreseeable Future:

- Permanent Headquarters Facility for the 563 RQG and 563 OSS.
- Bentsen Tank Storage Facility Expansion for the 563 MXS. This would include the storage of four HC-130 removable fuel tanks and would be an expansion to the building of approximately 4,000 SF.
- Expansion of Building 4853 for the 79 RQS, (pending relocation of 55 RQS into new facility).
- 48 RQS New Storage Facility.
- 48 RQS New Headquarters Facility.
- Privatization of Military Family Housing. This project would include the demolition of 936 family housing units, renovation of 123 housing units, and construction of 609 new housing units.

The projects listed above, as well as the projects analyzed within this EA, have all been coordinated through the Base Community Planner, and have all been incorporated into the Base Master Plan. The projects listed above have either already gone through the NEPA process, or are currently undergoing NEPA analysis (ACC 2002).

As an active military installation, Davis-Monthan AFB undergoes changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances, and as such, requires new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repairs on a continual basis. Although such known construction and upgrades are a part of the analysis contained in this EA, some future requirements cannot be predicted. As those requirements surface, future NEPA analysis will be conducted, as necessary.

The goals of the WINDO analyzed in this EA are to document the known projects required at Davis-Monthan AFB over the next three years in support of their mission; provide an environmental analysis of these projects; and prepare to implement the appropriate facility improvements as funds become available. It is quite likely that during the course of the next three years, additional projects not included in this analysis may be required. The nature of the military today is that missions are very dynamic and planners at the Base level must be proactive in addressing potential impacts associated with these changes. One of the primary purposes of preparing this EA is to streamline the NEPA process, where appropriate, by preparing a comprehensive document (herein) that will support future tiering of environmental analyses and application of categorical exclusions. Should additional projects be required, a checklist has been provided that should facilitate tiering and/or application of categorical exclusions. If the Base planner can ensure that the following conditions are met, then it would likely be appropriate to use the existing EA for application of a categorical exclusion:

- Wetlands and/or waters of the U.S. would not be impacted.
- Federally and/or state listed species of concern, and/or migratory birds would not be impacted.

- ERP sites would not be impacted.
- Historic properties, sites, Native American traditional resources would not be impacted.
- No unapproved facilities would be located within QD arcs.
- NPDES permit would be updated, as necessary.
- Federal and/or State Ambient Air Quality Standards would not be exceeded.
- There would be no adverse impacts to disadvantaged and/or youth populations.

Should the categorical exclusion not be appropriate, then the existing EA would be used for tiering purposes.

5.1.2 Analysis of Cumulative Impacts

Earth Resources. In addition to the 21.9 acres of surface disturbance over the course of the three-year construction program associated with the WINDO, an additional amount of surface disturbance could result from recently completed, on-going, and future construction at Davis-Monthan AFB. The grading of existing soil and placement of structural fill for new facilities would not substantially alter existing soil conditions at the Base, because to a large extent, the construction described above is planned for along the flightline, where surface disturbance has previously occurred. BMPs would be used to limit soil movement, stabilize runoff, and control sedimentation. Cumulative impacts to earth resources are expected to be minimal.

Water Resources. In addition to a net increase of 14.7 acres of impervious surface at Davis-Monthan AFB as a result of the three-year construction program associated with the WINDO, an additional amount of impervious surface would be added as a result of the projects described in Section 5.1.1. To a large extent, the construction described above is planned for along the flightline, which is largely impervious surface already. The Base is updating their SWPPP to include these projects and has obtained or will obtain, as appropriate, coverage under Construction General Permit AZG2003-001 for storm water. Adherence to the requirements of the permit would include implementation of BMPs to minimize the potential for exposed soils or other contaminants from construction activities to reach nearby surface waters. Cumulative impacts to water resources are expected to be minimal.

Biological Resources. In general, the Proposed Action and the projects listed in Section 5.1.1 are at sites that are highly altered by man. There are no sensitive plant species known to occur on Base, and animal species that would be found in specific project areas are well adapted to the human environment. The Base will coordinate with AZGF regarding burrowing owls and cave myotis, should there be a need. Cumulative impacts to biological resources are expected to be minimal.

Air Quality. In general, combustive and fugitive dust emissions from proposed WINDO construction activities, as well as those activities described in Section 5.1.1, would produce localized, elevated air pollutant concentrations that would occur for a short duration and would not result in any long-term impacts on the air quality of Pima County (AQCR 015). Cumulative impacts to air quality in the County are expected to be minimal.

Noise. Construction noise emanating off-site as a result of the Proposed Action and the activities described in Section 5.1.1 would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. The acoustic environment on and near Davis-Monthan AFB is expected to remain relatively unchanged from existing conditions. Cumulative impacts from noise are expected to be minimal.

Land Use/Visual Resources. The proposed construction projects associated with the WINDO as well as those described in Section 5.1.1 are expected to enhance Base planning and compatibility of functions on Base. Some existing incompatibilities would be corrected. Land use off-base is not expected to be impacted. Visual resources are generally not expected to be impacted. Cumulative impacts to land use and visual resources are expected to be minimal.

Socioeconomics/Environmental Justice. There are no long-term changes in Base population and/or employment as a result of implementation of the WINDO or the projects described in Section 5.1.1. Additionally, these projects are not expected to create adverse environmental or health effects, and therefore no disproportionately high or adverse impacts to minority, low-income, or youth populations are expected. Cumulative impacts to socioeconomics and environmental justice are expected to be minimal.

Cultural Resources. Activities associated with the WINDO and the projects described in Section 5.1.1 are not expected to impact archaeological or traditional resources. All facility demolitions and modifications have been coordinated with the Base Cultural Resource Manager and the SHPO, and have been determined to be ineligible for inclusion in the NRHP. Impacts to traditional cultural resources are not expected. Cumulative impacts to cultural resources are expected to be minimal.

Safety. Implementation of the Proposed Action and the activities described in Section 5.1.1 do involve ground activities that may expose workers performing the required site preparation, grading, and building construction to some risk. Strict adherence to all applicable occupational safety requirements would minimize the relatively low risk associated with these construction activities. All projects have been sited outside any QD arcs, as appropriate. Additionally, the proposed projects would include measures to enhance and correct AT/FP shortfalls as part of the facility designs. Cumulative impacts to safety are expected to be minimal.

Hazardous Materials and Waste Management. The proposed construction and demolition projects associated with the WINDO as well as those described in Section 5.1.1 would generate construction and demolition waste that would be recycled and/or taken to the local landfill, as appropriate. There are no capacity issues with the existing landfills. Hazardous materials and wastes would be handled, stored and disposed of in accordance with applicable regulations. Any ACM, lead-based paint, or contaminated soils associated with ERP sites would be removed and disposed of per applicable regulations. Cumulative impacts to hazardous materials and waste management are expected to be minimal.

Infrastructure. The proposed construction and demolition projects associated with the WINDO as well as those described in Section 5.1.1 would result in some temporary interruption of utility services and minor hindrance of transportation and circulation during construction activities.

These impacts would be temporary, occurring only for the duration of the construction period. In general, infrastructure at Davis-Monthan AFB would improve under these actions, as there would be some upgrades to existing and extensions to non-existent utilities. Cumulative impacts to infrastructure are expected to be minimal.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA CEQ regulations require environmental analyses to identify "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of non-renewable resources.

The Proposed Action would not have irreversible impacts because future options for using this site would remain possible. The vast majority of Davis-Monthan AFB is undeveloped, and the Proposed Action would only lead to a slight increase in the amount of newly developed land. The site could be used for alternative uses in the future, ranging from natural open space to urban development. No loss of future options would occur.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, materials and funds, and the conversion of some lands from an undeveloped condition through the construction of buildings and facilities. Irretrievable impacts would occur as a result of construction, facility operation and maintenance activities. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential.

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8.0 LIST OF PREPARERS

Kate Bartz, Project Manager, SAIC
M.S., Landscape Architecture & Environmental Planning, 1994
B.S., Environmental Studies, 1987
Years of Experience: 18

Tyrone Corn, Staff Archaeologist, SAIC
B.S., Anthropology, 1997
Years of Experience: 9

Karen Daniels, Quality Assurance, SAIC
M.S. Fisheries, 1977; M. Applied Statistics, 1977
B.S. Biology, 1975
Years of Experience: 24

David Dean, Environmental Scientist, SAIC
B.S., Biology, 2001
Years of Experience: 4

David Dischner, Sr. Environmental Planner
CHMM, 1998
B.A., Urban Affairs, 1974
Years of Experience: 30

Claudia Druss, Senior Archaeologist
M.A., Anthropology, 1980
B.A., Fine Arts, 1976
Years of Experience: 24

Kimberly Freeman, Document Production Manager, SAIC
Years of Experience: 18

Heather Gordon, Environmental Analyst (GIS), SAIC
B.A., Environmental Studies and Planning, 1996
Years of Experience: 7

Carlos Jallo, Environmental Planner, SAIC
B.A., Environment, Economics, Politics, 1994
Years of Experience: 10

David Lingner, Senior Scientist, SAIC
Ph.D., Chemistry, 1985
B.S., Chemistry and Mathematics, 1978
Years of Experience: 23

Kathleen Sherwood, Environmental Specialist, SAIC
A.D., Liberal Arts, in progress.
Years of Experience: 2

Kent Wells, Environmental Scientist, SAIC
B.S., Geology
M.S., Industrial Hygiene
Years of Experience: 17

APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTA PLANNING (IICEP)

Davis-Monthan AFB IICEP Distribution List

United States Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, CA, 94105
(415) 947-8000
(866) EPAWEST

The Honorable Janet Napolitano
Governor of Arizona
1700 West Washington
Phoenix, Arizona 85007
Telephone 602-542-4331
Fax 602-542-1381

Arizona Department of Agriculture
1688 West Adams
Phoenix, AZ 85007
(602) 542-4373

ADEQ Southern Regional Office
Attn: Assistant Director, David Esposito
400 W. Congress, Suite 433
Tucson, AZ 85701
Phone: (520) 628-6733
Toll free: (888) 271-9302
Fax: (520) 628-6745

Natural Resources Conservation Service
Tucson Service Center
4650 N Highway Drive
Tucson, AZ 85705-1914
(520) 887-4505 ext 4
(520) 888-1467 fax

Arizona Water Protection Fund
C/O Department of Water Resources
Attn: Rodney Held
500 North Third Street
Phoenix, AZ 85004
(602) 417—2200 Ext. 7012
(602) 417-2423

Arizona Department of Water Resources
Tucson Active Management Area (AMA)
400 West Congress, Suite 518
Tucson, AZ 85701
(520) 770-3800
(520) 628-6759

Arizona Attorney General
Terry Goddard
Office of the Attorney General
Department of Law
1275 West Washington Street
Phoenix, AZ 85007
Phone: 602-542-5025
Fax: 602-542-4085

U.S. Bureau Of Reclamation
Phoenix Area Office (PXAO)
2222 W. Dunlap Ave. Suite 100
Phoenix Arizona, 85021
602-216-3999

US Army Corps of Engineers
Attn: Ms. Marjory Blaine
U.S. Army Corps of Engineers
Regulatory Branch, Tucson Project Office
5205 E. Comanche Street
Tucson, AZ 85707

Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634
Phone: 520-383-2028
FAX: 520-383-3379

Pascua Yaqui Tribe
7474 S. Camino De Oeste
Tucson, AZ 85746
P: 520/883-5000
F: 520/883-5014

Scott Richardson
U.S. Fish and Wildlife Service
201 N. Bonita Ave., Suite 141
Tucson AZ 85745
(520) 670-6150, ext 242
scott_richardson@fws.gov

Tim Snow (Non-Game Species and Bats)
Arizona Game and Fish Department
555 N. Greasewood Road
Tucson AZ 85745
(520) 628-5376, ext 449
tsnow@gf.state.az.us

Michael Ingraldi
Non-Game Wildlife Biologist
Arizona Game and Fish Department
2221 Greenway Road
Phoenix AZ 85023
(928) 532-5625

Pima Association of Governments
Andy Gunning
Matt Matthewson
177 N. Church Avenue, #405
Tucson, AZ 85701

Pima County Planning
Dan Signor
201 N. Stone
Tucson, AZ 85701

City of South Tucson Planning
Walker Smith
1601 South Sixth Avenue
Tucson, AZ 85713

City of Tucson Dept of Urban Planning and Design
Roger Howlett
MacArthur Building
345 E. Toole
Tucson, Arizona 85701

Town of Oro Valley Planning and Zoning
Bob Conant
Development Services Center
11000 N. La Canada Drive
Oro Valley, Arizona 85737
520.229.4800

Town of Marana Planning
Lisa Duncan
Town of Marana
Development Services Center
3696 W. Orange Grove Road
Tucson, AZ 85741

Town of Sahuarita Planning
John Neunuebal
725-1 West Via Rancho Sahuarita
Sahuarita, AZ 85629

U of A Planning
David Duffy
University of Arizona
Department of Campus & Facilities Planning
P.O. Box 210300
Tucson, AZ 85721-0300

Pima Department of Environmental Quality
150 W. Congress Street
Tucson, AZ 85701-1332
Phone (520) 740-3340
FAX (520) 882-7709

SAMPLE IICEP LETTER

February 11, 2005

Dear

The 355th Wing of Davis-Monthan Air Force Base (AFB) has prepared a draft Environmental Assessment (EA) for the proposed construction and demolition projects associated with their three-year Wing Infrastructure and Development Outlook (WINDO). The draft EA is provided for your review and comment (Attachment 1).

The environmental analysis for the Proposed Action is being conducted by the U.S. Air Force in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached draft EA, and solicit your comments concerning the proposal and any potential environmental consequences of the action. Please provide any comments you may have by March 14, 2005.

Any questions concerning the proposal should be directed to our consultant, Science Applications International Corporation (SAIC). The point of contact at SAIC is Ms. Kate L. Bartz. She can be reached at (520) 326-0951. Please forward your written comments to Ms. Bartz, in care of SAIC, 2617 East 7th Street, Tucson, Arizona, 85716, or fax to Ms. Bartz at (520) 322-3521, or email to Kate.L.Bartz@SAIC.com. Thank you for your assistance.

Sincerely,

Kate L. Bartz
Project Manager, SAIC

Attachment:
1. Draft EA/FONSI for Environmental Assessment for Wing Infrastructure and Development Outlook (WINDO)

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
TUCSON PROJECT OFFICE
5205 EAST COMANCHE STREET
TUCSON, ARIZONA 85707

February 15, 2005

REPLY TO

Office of the Chief
Regulatory Branch

Ms. Kate L. Bartz
SAIC
2617 E. 7th Street
Tucson, Arizona 85716

File Number: 2005-00765-MB

Dear Ms. Bartz:

This is in response to the letter dated February 11, 2005 from Mr. John Thompson regarding draft environmental assessment for the 355th Wing's proposed Infrastructure and Development Outlook, Davis Monthan AFB, Pima County, Arizona.

Thank you for the opportunity to comment on this document. We note our Phoenix office verified the jurisdictional delineation referred to in the document in 1996. Our delineations expire after 5 years; therefore, the delineation is no longer valid for this project and a new delineation will be required prior to work near any watercourses. This is particularly important considering court decisions within the last few years that may have changed our jurisdiction. In addition, the Corps has also developed Guidelines with the U.S. Fish and Wildlife Service (FWS) to address impacts to the cactus ferruginous pygmy-owl. Any impacts to waters of the U.S. on Davis Monthan AFB will likely require the Corps to consult with the FWS in accordance with the Guidelines regardless of the lack of pygmy-owls within the proposed project area.

Thank you for participating in our regulatory program. If you have questions, please contact me at (520) 584-1684.

Sincerely,

Marjorie E. Blaine
Senior Project Manager
Arizona Section, Regulatory Branch

DEPARTMENT OF ENVIRONMENTAL QUALITY
150 West Congress Street
Tucson, Arizona 85701-1317

Ursula Kramer
Director

(520) 740-3340
FAX (520) 882-7709

February 17, 2005

Mr. John E. Thompson, P.E., R.L.S., GS-13
Chief, Environmental Quality Flight
Davis-Monthan Air Force Base
Tucson, AZ 85707-4927

RE: Wing Infrastructure and Development Outlook (WINDO) at Davis-Monthan Air Force Base, Arizona

Dear Mr. Thompson:

Thank you for the opportunity to comment and offer suggestions regarding the planned project for Wing Infrastructure and Development Outlook at Davis-Monthan AFB, Arizona. The project activities that Pima County Environmental Quality (PDEQ), permits and enforces are:

1. Air Quality Activity Operating Permit

Pima County Code (P.C.C.) Title 17 requires Air Quality Activity Operating Permits for Road Construction, Trenching and Landclearing/Earthmoving over threshold amounts. A permit must be obtained prior to starting the activity.

2. Fugitive Emissions

Measures must be in place to control fugitive dust generated at the project. Dust control is required twenty-four hours a day, seven days a week. Effective January 3, 2003, the PDEQ Natural Events Action Plan became effective. The rule includes a 20% opacity standard.

Pima County Code, Title 17 that applies to your project:

17.16 Emission Limiting Standards
Article II. Visible Emission Standard
Article V. Emissions from New and Existing Portable Sources

3. Asbestos/NESHAP (National Emissions Standards for Hazardous Air Pollutants)

If your project requires demolition or renovation of a NESHAP Facility, you will be required to comply with Title 40, Part 61, Subpart M, of the Code of Federal Regulations National Emissions Standards for Asbestos. You will be required to submit a NESHAP Notification at least ten days prior to starting demolition or renovation and obtain a PDESD Asbestos Removal/Demolition Permit.

4. Arizona Pollutant Discharge Elimination System

Based on the scope of proposed activity, coverage under the Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit may be necessary. This is a requirement if the area disturbed is one acre or greater. A Notice of Intent must be submitted to ADEQ.

Pima County Code Title 17 is available for your reference on our WEBSITE at: WWW.DEQ.PIMA.GOV. If you have questions regarding permits and compliance, you may contact Business Assistance, at (520) 740-3340. Once again, thank you for the opportunity to comment.

Sincerely,

Ursula Kramer

Ursula Kramer
Director

UK/KL/vlb

ACRONYMS AND ABBREVIATIONS

TEP	Tucson Electric Power
TIA	Tucson International Airport
TPY	tons per year
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound
WINDO	Wing Infrastructure Development Outlook
WSCA	Wildlife of Special Concern in Arizona
µg/m3	micrograms per cubic meter