

**FINAL
ENVIRONMENTAL ASSESSMENT
FOR
2012-14 CAPITAL IMPROVEMENTS PROGRAM (CIP)**

**DAVIS-MONTHAN AIR FORCE BASE
TUCSON, ARIZONA**



**United States Air Force
355th Fighter Wing**

March 2012

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FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION

2012-14 Capital Improvements Program (CIP) for Davis-Monthan Air Force Base (AFB), Tucson, Arizona

DESCRIPTION OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

The U.S. Air Force (Air Force) proposes to implement the 2012-14 CIP for Davis-Monthan AFB in Tucson, Arizona. The CIP is a plan that identifies proposed construction and demolition projects for improving the physical infrastructure and functionality of the Base. The proposed action is defined as nine representative CIP projects that include construction of new facilities, modifications to existing facilities, and demolition activities.

The no-action alternative is defined as existing conditions without implementation of the representative projects. The 355th Fighter Wing (355 FW) would continue to operate under unnecessarily inefficient conditions, which impair its ability to successfully conduct its mission and to maintain wartime readiness and training.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Earth Resources. Construction and demolition activities associated with the representative CIP projects would disturb soils, exposing them to wind and water erosion. Most projects would be implemented in previously developed areas, but stockpiled soils and temporarily exposed soils could erode during high winds and rain events, leading to air and water quality impacts. Standard construction measures would minimize the potential for soil erosion, resulting in insignificant impacts on soils. The hush house and 214th Reconnaissance Group (214 RG) headquarters facility projects would be constructed in undeveloped areas on soils that exhibit shrink/swell potential (Mohave soils), but they would be designed to ensure the new facilities are not damaged by hazardous soil conditions. None of the projects would modify the topography of the project areas. Operational impacts would be similar to current conditions.

Water Resources. The representative CIP projects would result in a net decrease in impervious surfaces from demolition activities that remove impervious surfaces (estimated 1.05-acre reduction). Runoff from the project areas would be conveyed by the storm drainage system and managed similar to current conditions. Construction and demolition activities could discharge sediment and other pollutants into surface water features or the storm drainage system and affect the water quality of

downstream drainages, but construction measures would be implemented to control runoff and minimize water quality impacts. Impacts associated with runoff and pollutant discharge would be insignificant. Operational impacts, including the use of groundwater for water supply, would be similar to current conditions.

Biological Resources. None of the representative CIP projects would affect native vegetation communities. The new dormitory and dining facility projects could require removal of landscaped cacti, but landscaping as part of project construction would involve planting native species, including cacti, around the new buildings. The hush house, 214 RG headquarters facility, and holding area munitions storage (HAMS) yard projects and components of the pavement plan could disturb burrowing owls, a special-status species, in or near the project areas, but pre-construction surveys and avoidance measures would ensure that impacts are insignificant. The 214 RG headquarters facility project could also affect loggerhead shrikes, a special-status bird species, in or near the project area, but pre-construction surveys and avoidance measures would ensure that impacts are insignificant. Operational impacts would be similar to current conditions.

Air Quality. Construction and demolition activities would generate emissions that could affect local air quality and sensitive receptors in the vicinity of the project areas. Estimated annual emissions of each project would be minimal, ranging from less than 1 ton per year to about 20 tons per year, and would not exceed the *de minimis* threshold for carbon monoxide. Regional air quality impacts are not expected because emissions are expected to dissipate within several hundred feet of the activity and would remain on the Base. Air quality impacts would be insignificant. Operational impacts would be similar to current conditions.

Noise. Construction and demolition activities would generate noise levels between about 75 and 90 decibels (A-weighted) at 50 feet from the project area and may generate groundborne vibrations during drilling or demolition. These impacts would be temporary, lasting between 1 month and 1.5 years depending on the project. The new dormitory, dining facility, Airman Leadership School, and dormitory renovation projects would expose sensitive receptors to temporary construction and demolition noise, but the activities would be scheduled during daytime hours and noise levels would attenuate outside the project areas, be masked by operational noise, or be absorbed by surrounding buildings. Noise and vibration-related impacts would be insignificant. Operational conditions would be similar to current conditions in the vicinity of most project areas and would less noise, with a potential increase in groundborne vibrations, would be expected in the vicinity of the hush house.

Land Use and Visual Resources. Construction and demolition activities would create temporary land use conflicts as a result of traffic impacts, noise disturbances, and periodic disruptions to nearby activities, but none of the projects would conflict with existing land uses in or near the project areas. These activities would also alter the visual setting during the construction period, but new facilities

(i.e., dormitory, dining facility, chiller system storage, hush house, and 214 RG headquarters facility) would be visually consistent with existing facilities, and landscaping and restored vegetation would improve the visual quality of the temporarily disturbed areas. Temporary land use and visual resources impacts would be insignificant, and long-term land use and visual setting changes would be similar to current conditions.

Socioeconomics and Environmental Justice. The representative CIP projects would require approximately \$35 million of expenditures through the end of the construction period, which would be spread out over about 3 years for the new and renovated facilities and demolition activities and about 5 years for the pavement plan. The use of construction contractors for some projects and purchasing of materials would benefit the local economy. Long-term operational costs would be comparable to current expenditures for Base operations. The dormitory renovation project would require the temporary relocation of residents in the existing dormitory for about 6 months, but no long-term impacts on populations on the Base would occur. None of the projects would disproportionately affect minority or low-income populations, nor would they pose health or safety concerns to children on the Base. Socioeconomic impacts would be insignificant.

Cultural Resources. None of the representative CIP projects would affect known eligible cultural resources. The dining facility, Airman Leadership School, and HAMS yard would involve demolition of buildings that are more than 50 years old, but these buildings are not anticipated to be eligible for listing in the National Register of Historic Places. However, the Base would comply with Section 106 of the National Historic Preservation Act and consult with the State Historic Preservation Office, as necessary, for each CIP project. The potential for inadvertent discoveries is considered low in the project areas, and all activities would comply with Base policies for inadvertent discoveries of cultural resources. Impacts on cultural resources would be insignificant.

Safety. Construction and demolition activities would involve safety risks, but these activities have a low risk of worker fatalities or other injuries because they would comply with Occupational Safety and Health Administration standards and Air Force occupational safety requirements. Some road and parking area improvements would be located in designated safety zones on the Base, but the improvements would not create unsafe conditions or hazards for persons or mission activities. None of the projects would create long-term conflicts with safety zones. Safety-related impacts would be insignificant.

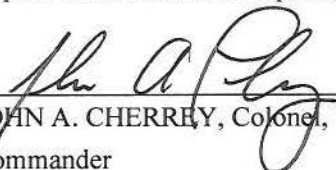
Solid and Hazardous Materials and Waste. Construction and demolition activities would involve the use of hazardous materials (e.g., fuel, solvents) and would generate approximately 6,200 tons of solid waste, which may include hazardous waste in the form of asbestos and lead-based paints. All demolition activities would involve the proper removal, handling, and disposal of solid and hazardous waste in accordance with the Base's asbestos and hazardous waste management plans. Specific


precautions and approvals for asbestos-containing materials would be adhered to during demolition activities associated with the dining facility and Airman Leadership School projects. Necessary waivers would be obtained for the chiller lines and road and parking area improvements if they would be constructed near Environmental Restoration Program sites. A waiver would also be obtained for the HAMS yard project and road and parking area improvements in closed ranges due to the potential for buried munitions. With compliance with applicable policies and procedures, impacts relating to solid and hazardous materials and waste would be insignificant.

Infrastructure. Construction and demolition activities would temporarily increase traffic on the Base in the vicinity of the project areas and at the entrance gates for projects using off-site contractors and materials. Temporary congestion would be experienced at the gates and around project areas, but traffic management measures would be implemented to notify drivers of detours and access restrictions and control traffic. The new dormitory, dining facility, and chiller system storage projects would remove parking areas to construct new facilities, but parking would still be available in nearby lots and newly constructed parking areas. The new dormitory, dining facility, chiller system, hush house, and 214 RG headquarters facility would increase the annual demand for water supply, wastewater treatment, electricity, and telecommunications services, but the existing service providers and facilities would be capable of supplying the needed services. Temporary disruptions to services may occur during utility installation, but such disruptions would be coordinated in advance. The representative projects would result in a net reduction in impervious surfaces on the Base due to demolition of some facilities and construction of new facilities. With appropriate measures and planning, impacts on infrastructure would be insignificant.

CONCLUSION

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


JOHN A. CHERREY, Colonel, USAF
Commander


Date

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EXECUTIVE SUMMARY

In accordance with the National Environmental Policy Act of 1969 (NEPA, 42 United States Code 4321-4347), Council on Environmental Quality 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 32-7061), the 355th Fighter Wing (355 FW) has prepared an Environmental Assessment (EA) to evaluate the environmental consequences of implementing a representative range of Capital Improvement Program (CIP) projects on Davis-Monthan Air Force Base (AFB or Base) in Tucson, Arizona between fiscal years 2012 and 2014.

PURPOSE AND NEED

The purpose of the 2012-14 CIP is to provide a short-range plan that identifies infrastructure and facility improvements deemed necessary to fully support the Davis-Monthan AFB mission in fiscal years 2012 through 2014. The EA is intended to provide a systematic evaluation of representative CIP projects to expedite future environmental review for other CIP projects that may be needed. Projects that are similar to the projects evaluated in the EA and that would result in similar impacts that have been determined to be insignificant can be categorically excluded from further environmental analysis under Air Force Categorical Exclusion Number A2.3.11 (32 CFR Part 989). Other projects may be evaluated in separate NEPA documents that tier off of the EA. This means that the other NEPA documents would incorporate by reference applicable information from the EA and only focus on the site-specific effects of the other projects (40 CFR 1508.28).

The purpose of the proposed action is to provide infrastructure and facility improvements that have been deemed necessary to continue to fully support and implement Davis-Monthan AFB missions. Davis-Monthan AFB needs to maintain, revitalize, expand, and demolish facilities in support of current missions, which play a predominant role in protecting and preserving the national interests of the United States of America. Existing infrastructure and facilities generally meet existing mission requirements, although some facilities and supporting infrastructure are outdated and in need of replacement or repairs. These facilities do not adequately support current and future mission requirements, are not adequately sized, or are outdated and in need of repairs or replacement.

PROPOSED ACTION AND NO-ACTION ALTERNATIVE

The proposed action is defined as nine representative CIP projects that include construction of new facilities, modifications to existing facilities, and demolition activities:

- Construction of a new 144-person dormitory;

- Construction of a new airman dining facility, including demolition of the existing dining facility;
- Construction of 6,300 linear feet of new chilled water distribution lines and a thermal storage system with 1,300 tons of storage capacity;
- Renovation and consolidation of the Airman Leadership School (building 4101);
- Construction of a power check pad (foundation and slab) and installation of a T-10 hush house;
- Construction of a 214th Reconnaissance Group (RG) headquarters facility;
- Demolition of the former holding area munitions storage (HAMS) yard;
- Renovation of an existing dormitory (building 3509); and
- Pavement of roads and parking areas at the Base.

The no-action alternative is defined as existing conditions without implementation of the representative projects. The 355 FW would continue to operate under unnecessarily inefficient conditions, which impair its ability to successfully conduct its mission and to maintain wartime readiness and training. Under the no-action alternative, Davis-Monthan AFB and the 355 FW could not adequately meet future mission requirements or changes due to deteriorating facilities and would not meet the CIP development goals.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The EA identifies, describes, and evaluates the potential environmental effects associated with the proposed action and no-action alternative. Resources assessed include earth resources, water resources, biological resources, air quality, noise, land use and visual resources, socioeconomics and environmental justice, cultural resources, safety, solid and hazardous materials and wastes, and infrastructure. A summary of the impacts of the proposed action on each of these resources is provided below; Chapter 4.0 of the EA, Environmental Consequences, provides more details on the environmental consequences. The no-action alternative would result in conditions similar to those currently at the Base, as described in Chapter 3.0 of the EA, Existing Conditions.

Earth Resources. Construction and demolition activities associated with the representative CIP projects would disturb soils, exposing them to wind and water erosion. Most projects would be implemented in previously developed areas, but stockpiled soils and temporarily exposed soils could erode during high winds and rain events, leading to air and water quality impacts. Standard construction measures would minimize the potential for soil erosion, resulting in insignificant impacts on soils. The hush house and 214 RG headquarters facility projects would be constructed in undeveloped areas on soils that exhibit shrink/swell potential (Mohave soils), but they would be designed to ensure the new facilities are not damaged by hazardous soil conditions. None of the

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit		Compensation, and Liability Act
355 FW	355th Fighter Wing		
55 ECG	55th Electronic Combat Group	CFR	Code of Federal Regulations
ACC	Air Combat Command	CH ₄	methane
ACHP	Advisory Council on Historic Preservation	CIP	Capital Improvement Program
ACM	asbestos-containing material	CO	carbon monoxide
ADEQ	Arizona Department of Environmental Quality	CO ₂	carbon dioxide
AFB	Air Force Base	CWA	Clean Water Act
AFI	Air Force Instruction	dB	decibel
Air Force	United States Air Force	dBA	A-weighted
AMARG	Aerospace Maintenance and Regeneration Group	DNL	day-night average sound level
AOC	Area of Concern	DoD	Department of Defense
APZs	Accident Potential Zones	EA	Environmental Assessment
AST	aboveground storage tank	EIAP	Environmental Impact Analysis Process
AT/FP	antiterrorism/force protection	EIS	Environmental Impact Statement
AZGF	Arizona Game and Fish Department	EO	Executive Order
Base	Davis-Monthan Air Force Base	EPA	U.S. Environmental Protection Agency
BCAMP	Base Comprehensive Asset Management Plan	ERP	Environmental Restoration Program
BMPs	Best Management Practices	ESA	Endangered Species Act
CAA	Clean Air Act	FEMA	Federal Emergency Management Agency
CEQ	Council on Environmental Quality	FONSI	Finding of No Significant Impact
CERCLA	Comprehensive Environmental Response,	GHG	greenhouse gas
		HAMS	holding area munitions storage
		I-	Interstate
		kV	kilovolt
		LEED	Leadership in Energy and Environmental Design

µg/m ³	micrograms per cubic meter	ppm	parts per million
MGD	million gallons per day	PSD	Prevention of Significant Deterioration
MMRP	Military Munitions Response Program	QD	quantity-distance
NAAQS	National Ambient Air Quality Standards	RG	Reconnaissance Group
NEPA	National Environmental Policy Act	SHPO	State Historic Preservation Office
NHPA	National Historic Preservation Act	SIP	State Implementation Plan
NO ₂	nitrogen dioxide	SO ₂	sulfur dioxide
NO _x	nitrogen oxides	SO _x	sulfur oxides
NPDES	National Pollutant Discharge Elimination System	SWPPP	Storm Water Pollution Prevention Plan
NRHP	National Register of Historic Places	UFC	Unified Facilities Criteria
O ₃	ozone	U.S.	United States
Pb	lead	USACE	U.S. Army Corps of Engineers
PDEQ	Pima County Department of Environmental Quality	USC	United States Code
PM ₁₀	particulate matter less than or equal to 10 micrometers in diameter	USFWS	U.S. Fish and Wildlife Service
PM _{2.5}	particulate matter less than or equal to 2.5 micrometers in diameter) and	UST	underground storage tank
		VOCs	volatile organic compounds
		WSC	Wildlife of Special Concern in Arizona

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The host unit at Davis-Monthan Air Force Base (Davis-Monthan AFB or Base) is the 355th Fighter Wing (355 FW) assigned to the Twelfth Air Force and a member of the Air Combat Command (ACC) Major Command. The mission of the 355 FW is to develop and provide attack airpower, air surveillance and control capability, and expeditionary combat support forces ready for worldwide deployment that when ordered, fly, fight, and win America's wars. The 355 FW is composed of four Groups: the 355th Operations Group, the 355th Maintenance Group, the 355th Medical Group, and the 355th Mission Support Group. The 355 FW also serves as the host unit for other major air commands that also use Davis-Monthan AFB, including providing medical, logistical, and operational support.

Facility improvements and other activities at Davis-Monthan AFB are key to carrying out the mission of the 355 FW and for supporting the other units that use the Base. The Davis-Monthan AFB General Plan (2006) and the frequently updated Base Comprehensive Asset Management Plan (BCAMP) (November 2, 2011 version referenced in this document) provide guidance on these activities, and the Capital Improvement Program (CIP), which is updated every few years, identifies necessary facility improvements to maintain or improve Base operations. Feasibility studies are also periodically conducted to evaluate the need for facility improvements. One such study is envisioned in 2012–2013 to evaluate the ability of integrating additional chiller plants, energy storage, and controls systems to manage varied fuel supplies (natural gas, thermal storage, grid electric, distributed photovoltaic electric) and improve energy efficiency on the Base, while also managing for peak demand on a real-time basis. Chiller system storage capacity and pipelines are identified in the current CIP, and other chiller-related facilities will likely be identified in future CIPs, pending the results of the study.

The 355 FW regularly reviews the status of facilities at Davis-Monthan AFB and identifies facility modifications or additions that are needed to improve operations. The BCAMP serves as a consolidated plan that identifies the requirements, priorities, and issues associated with each of the individual activity management plans for Davis-Monthan AFB and presents a comprehensive and integrated strategy for managing the Base. Because the BCAMP identifies numerous CIP projects that are anticipated to be needed over the next several years, the 355 FW has identified a representative range of these projects to evaluate in this Environmental Assessment (EA). The proposed action is defined as nine representative CIP projects. Other projects will be evaluated for consistency with this EA, as discussed under the Purpose and Need below.

The following representative projects considered in this EA include construction of new facilities, modifications to existing facilities, and demolition activities:

- Construction of a new 144-person dormitory;
- Construction of a new airman dining facility, including demolition of the existing dining facility;
- Construction of 6,300 linear feet of new chilled water distribution lines and a thermal storage system with 1,300 tons of storage capacity;
- Renovation and consolidation of the Airman Leadership School (building 4101);
- Construction of a power check pad (foundation and slab) and installation of a T-10 hush house;
- Construction of a 214th Reconnaissance Group (RG) headquarters facility;
- Demolition of the former holding area munitions storage (HAMS) yard;
- Renovation of an existing dormitory (building 3509); and
- Pavement of roads and parking areas at the Base.

In accordance with the National Environmental Policy Act (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 (EIAP, formerly known as Air Force Instruction [AFI] 32-7061), the 355 FW has prepared this EA to evaluate the environmental consequences of implementing the above-listed projects.

1.2 BACKGROUND

Davis-Monthan AFB is located within the Tucson city limits approximately 5 miles south-southeast of downtown Tucson, Arizona (Figure 1-1 at the end of this chapter). The Base occupies approximately 10,589 acres of land, of which 5,700 acres are developed or semi-improved, 4,589 acres are undeveloped, and 300 acres are under easement to and maintained by Pima County.

The 355 FW 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. In addition, the 355 FW is also tasked with providing command, control, and communications countermeasures in support of tactical forces with its EC-130H aircraft and, employing the EC-130E aircraft, providing airborne command, control, and communications capabilities for managing tactical air operations worldwide.

In addition to the 355 FW, the Air Force Reserve and the Air National Guard are represented at Davis-Monthan AFB. Major associate units at Davis-Monthan AFB include Headquarters 12th Air Force, 55th Electronic Combat Group (55 ECG), the 563rd Rescue Group, the Aerospace Maintenance

and Regeneration Group (AMARG), and several other units and agencies such as the U.S. Customs and Border Protection. The 12th Air Force is charged with commanding, administering, and supervising tactical air forces west of the Mississippi River and operates combat-ready forces and equipment for air superiority. The 55 ECG provides combat-ready EC-130H Compass Call aircraft, crews, maintenance, and operational support to combatant commanders. The Group also plans and executes information operations, including information warfare and electronic attack, in support of its mission. The 563rd Rescue Group directs flying operations for the United States Air Force's (Air Force) only active duty rescue wing dedicated to Combat Search and Rescue. The group is responsible for training, readiness, and maintenance of one HC-130 squadron, two HH-60 squadrons, two pararescue squadrons, two maintenance squadrons, and an operations support squadron.

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

1.3 PURPOSE AND NEED

The CIP encompasses a range of project types that the 355 FW has identified as necessary to support operations at Davis-Monthan AFB. Some facilities are specialized and unique to a specific activity, such as a hush house for jet engine testing, while others are more general and support a range of uses and user groups, such as administrative buildings and dormitories. The BCAMP serves as the consolidated plan that identifies ongoing facility needs and issues with existing facilities, and the CIP identifies those projects that are ready to be implemented. The purpose of the 2012–14 CIP is to provide a short-range plan that identifies infrastructure and facility improvements deemed necessary to fully support the Davis-Monthan AFB mission in fiscal years 2012 through 2014. This EA is intended to provide a systematic evaluation of representative CIP projects to expedite future environmental review for other CIP projects that may be needed. Projects that are similar to the projects evaluated in this EA and that would result in similar impacts that have been determined to be insignificant can be categorically excluded from further environmental analysis under Air Force Categorical Exclusion Number A2.3.11 (32 CFR Part 989). Other projects may be evaluated in separate NEPA documents that tier off of this EA. Tiering allows the other NEPA documents to incorporate by reference applicable information from this EA and only focus on the site-specific effects of the other projects (40 CFR 1508.28). For those projects that are not similar to the representative CIP projects evaluated in this EA, the broader-level analysis provided in the “Overview of Impacts” sections can be used as the first level of analysis to identify key issues and potential impacts to address in the other NEPA documents.

Davis-Monthan AFB needs to maintain, revitalize, and expand facilities in support of current missions, which play a predominant role in protecting and preserving the national interests of the United States of America. Existing infrastructure and facilities generally meet existing mission requirements although some facilities and supporting infrastructure are outdated and in need of replacement or repairs. These facilities do not adequately support current and future mission requirements, are not adequately sized, or are outdated and in need of repairs or replacement.

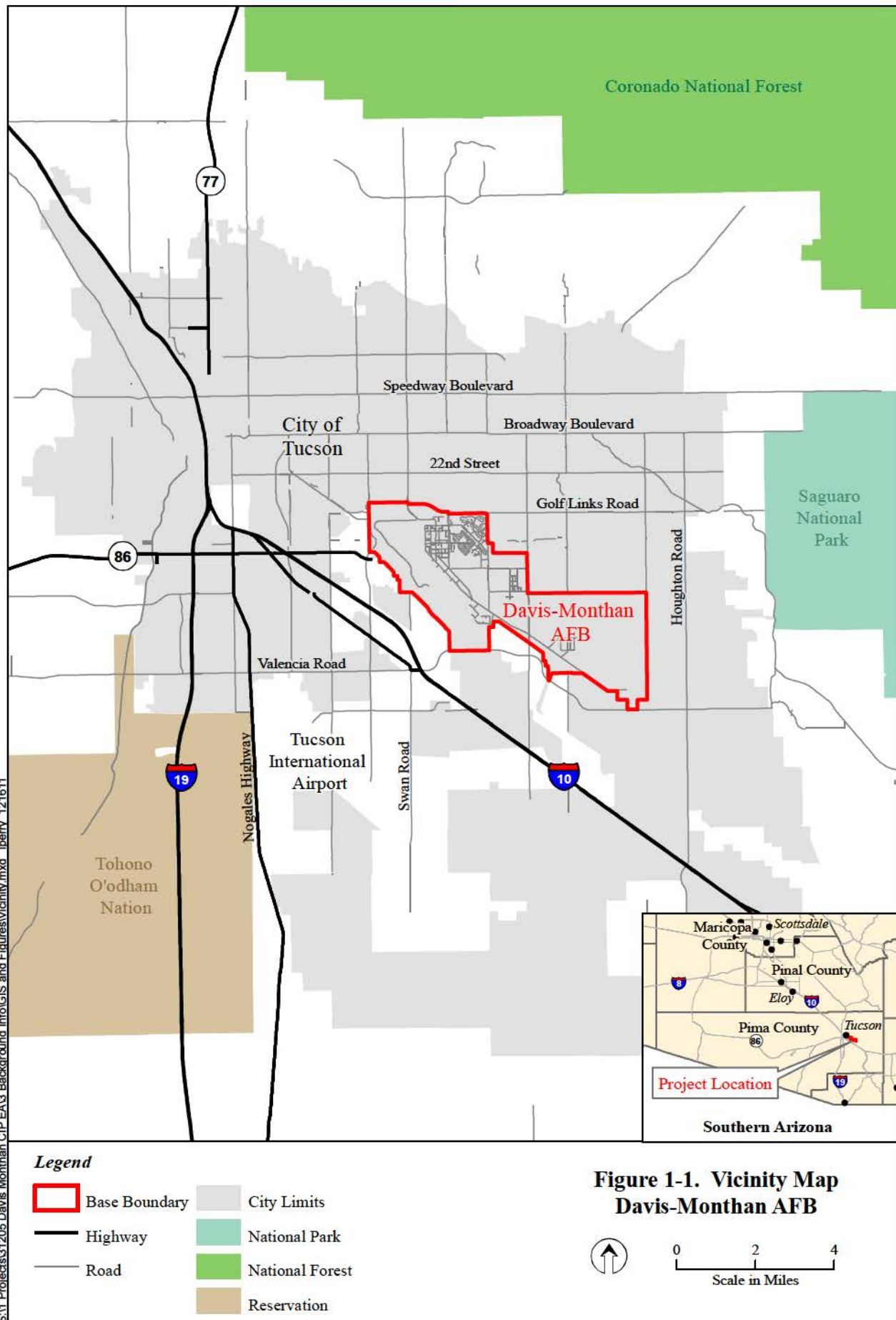
The representative projects identified as part of the proposed action are some of the higher priority projects and are considered to be the most typical types of projects that are envisioned to be needed at Davis-Monthan AFB over the next three years (2012–2014). The new and modified facilities are needed to replace outdated facilities, provide facilities that were not previously provided (as defined in Air Force Handbook 32-1084, *Facility Requirements*), and accommodate the continuously evolving missions assigned to Davis-Monthan AFB. The demolition activities would remove facilities that are no longer needed or are being or have been replaced by up-to-date facilities. Pavement improvements are needed to maintain roads and parking areas in good condition. Table 1-1 identifies the representative projects and the need for each project.

Table 1-1. Need for Each Representative Project in the 2012–14 CIP

Number	Project Number	Project Title	Need
1	To be determined	New 144-Person Dormitory	The Base has an insufficient number of on-base housing to accommodate unaccompanied enlisted personnel. The new dormitory is needed to replace sub-standard dormitories that are cited with the lowest Facility Condition Scores and not economically feasible to upgrade; their retention will not meet the requirements of or be in accordance with the 2010 Dormitory Master Plan.
2	FBNV063001	Airman Dining Facility	The existing dining facility, built in 1953, no longer meets the needs of airmen at the Base. The serving and seating areas are inadequate for peak lunch periods, leading to slow lines, hurried meals, and lower morale. The air conditioning system on the facility is increasingly unreliable, leaving the kitchen and serving areas excessively hot during the summer. The existing facility also lacks appropriate antiterrorism/force protection stand-off distances from the adjacent roadway. Renovation cannot solve the anti-terrorism deficiencies without increasing stand-off distance from the street.

Number	Project Number	Project Title	Need
3	FBNV120005	Ice Storage/Expand Central Chiller System	An expanded chiller system is needed in order to consolidate existing chiller facilities into one facility to allow redundancy, reduce energy consumption, and increase operating efficiency, which will reduce the Base's peak load and lower energy use by reducing the number of operating chillers needed during the cooling season. The two existing main chiller plants operate independently and serve different facilities, which offers no redundancy and makes it impossible to schedule plant maintenance or repair during the cooling season.
4	FBNV100018	Airman Leadership School Consolidation (building 4101)	The building needs to be renovated to prevent further deterioration, reduce future maintenance costs, and improve the building appearance, so it matches other recent building renovations. Sections of the building have already been renovated, and remaining areas have not been renovated since 1979.
5	FBNV133500	T-10 Engine Test Cell (Hush House)	The engine test cell facility (hush house) is required to certify prescribed engine performance standard for each aircraft used by AMARG in foreign military sales, including F-4s and F-16s, and the production of training drones. Without its construction, major workarounds, substantial overtime, and delayed deliveries would continue. Basic operation and mission functions would continue to degrade as a result of regenerating aircraft from storage as staff work outside in a harsh desert environment. Existing procedures create schedule interruptions due to changing weather conditions, resulting in extended flow days, additional cost, and delays to the customer. Noise resulting from jet engine testing is also a concern because of the lack of suppression.
6	FBNV100615	214 RG Headquarters Facility	Unmanned aircraft system (i.e., Predator) operations and command functions are currently performed in a temporary modular facility. The permanent Predator operations facility will not be large enough to accommodate the command functions as originally planned due to the Predator Overseas Contingency Operations surge requirement. Failure to construct a headquarters building will result in group staff working out of the operations facility, which is not large enough to accommodate the command functions.
7	FBNV110015D	Demolish HAMS Yard	The HAMS yard was relocated in 2011. The old yard is currently obsolete and is located in a future construction site. It must be demolished to create space for upcoming military construction projects.

<i>Number</i>	<i>Project Number</i>	<i>Project Title</i>	<i>Need</i>
8	FBNV080101	Dormitory Renovation (building 3509)	The project is needed to provide modern, efficient housing for dormitory residents in accordance with Air Force quality of life, force protection, and life safety standards. The current dormitory does not meet Air Force Dormitory Design Policy standards. Major systems are deteriorating rapidly and need to be replaced. The rooms are outdated and do not provide a suitable living environment for airmen. Dormitory infrastructure will continue to deteriorate, resulting in increased maintenance and repair costs and posing potential hazards to the health and safety of the occupants. Quality housing is a critical factor in the retention of airmen.
9	FBNV110300	Pavement Plan (Roads/Parking)	Roads and parking areas at the Base are in need of improvements to repair cracks and deteriorating surfaces.



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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action includes implementation of nine representative CIP projects that involve new construction, renovation, and/or demolition. Table 2-1 presents an overview of each project, and Figure 2-1 shows the locations of eight of the projects, excluding chiller lines and components of the pavement plan, which would be along roads or in parking areas on the Base. A description of the proposed facilities or activities, including available construction details, is provided after the table.

Table 2-1. Representative Projects Overview

<i>Number</i>	<i>Project Title</i>	<i>Size of Facility/Building Demolition</i>
1	New 144-Person Dormitory	Building: 42,600 square feet Demolition: 415 square feet
2	Airman Dining Facility	Building: 20,580 square feet Demolition: 15,950 square feet
3	Ice Storage/Expand Central Chiller System	Building: 2,000 square feet (storage yard), 6,300 linear feet (pipeline), 1,300-ton storage Demolition: none
4	Airman Leadership School Consolidation (building 4101)	Building: 12,080 square feet (renovation) Demolition: 14,400 square feet
5	T-10 Engine Test Cell (Hush House)	Building: 12,225 square feet Demolition: none
6	214 RG Headquarters Facility	Building: 2,200 square feet Demolition: none
7	Demolish HAMS Yard	Building: none Demolition: 45,500 square feet
8	Dormitory Renovation (building 3509)	Building: 26,500 square feet Demolition: none
9	Pavement Plan (Roads/Parking)	Pavement: 13 million square feet

2.1.1 New 144-Person Dormitory

A new 144-person dormitory would be constructed southwest of the Kachina and Eighth streets intersection at the location of an existing parking area, ramada (building 4219, 415 square feet), and former dormitory site (building 4220). The new dormitory would be a 42,600-square-foot, two-story building with a reinforced concrete foundation and floor slabs, split block masonry walls, and standing seam metal roof system. It would contain bath/kitchen/room modules, laundry rooms, storage, lounge areas, site preparation, and associated support areas. The dormitory building would be similar in appearance to other newly installed or remodeled dormitories at the Base. It would be painted a natural color to blend with other buildings and the surrounding desert environment, and landscaping around the building would be similar to other nearby buildings. Utilities for the building

would connect to existing utility lines in and adjacent to the project area. All utilities would be provided by the same providers as other dormitories at Davis-Monthan AFB.

Construction of the new dormitory would involve removing the existing parking lot and ramada (building 4219), excavating trenches 3 feet deep for pipeline installation under the footprint of the new building, backfilling the trenches, pouring concrete for the foundation, and constructing the building. These activities are expected to require approximately 1 year and would be completed by a contractor. Standard construction practices and contractor specifications identified in the construction contract would be adhered to during all construction activities. These would include Best Management Practices (BMPs) for minimizing water quality impacts, dust and emission control measures, traffic management measures, and a requirement to schedule construction during normal working hours (7 a.m. to 5 p.m.). Contractors would be required to comply with applicable provisions of the Civilian Contractor Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

Typical equipment that would be used for construction includes cranes, backhoes, forklifts, front-loaders, and other equipment. Staging for construction would be in an existing dirt lot at the southwest corner of Craycroft Road and Ironwood Road.

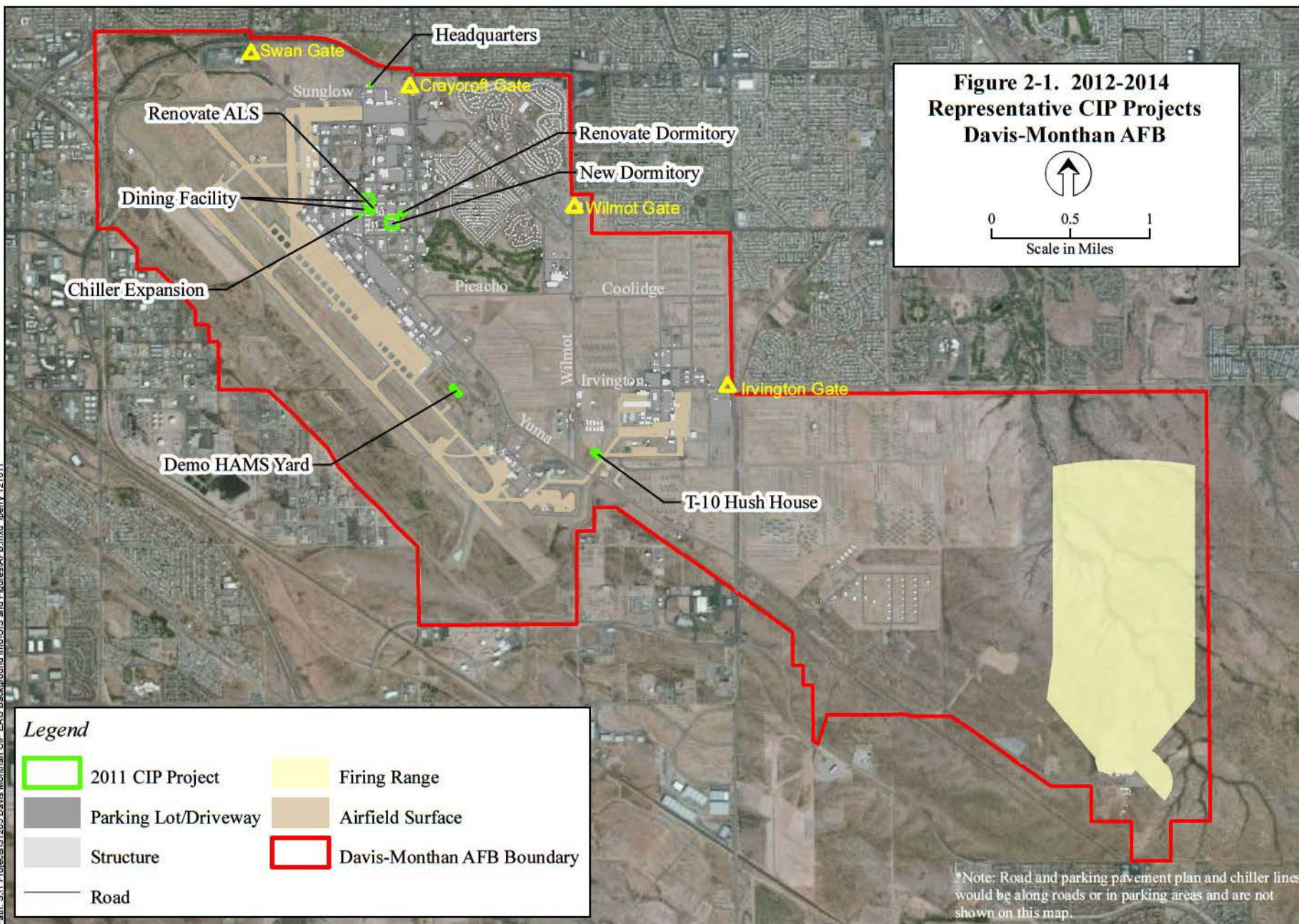
The new dormitory would provide additional living space to meet Base missions and requirements of the Dormitory Master Plan of September 2011. The design of the dormitory incorporates guidelines and requirements of the DoD Force Protection Standards for Buildings, Facility Requirements in Air Force Handbook 32-1084, the new Air Force Dormitory Design Guide, Air Force Manual 32-1071 (Volumes 1, 2, and 3), and Leadership in Energy and Environmental Design (LEED) applications.

2.1.2 Airman Dining Facility

A new airman dining facility would be constructed at Ironwood and Fifth streets just north of an existing dormitory (building 4000) in an existing parking area. The existing dining facility (building 4100, 15,950 square feet) would be demolished once the new dining facility is in place, and that area would be converted to parking or another use in the future (the specific use will be determined in the future and evaluated under separate environmental review). The new dining facility would be a 20,580-square-foot, single story, split-face block facility with a reinforced concrete foundation, floor slab, masonry walls, structural steel frame, and metal roof system. The facility would include a receipt and issue area, kitchen area, serving area, dining area, office space, cold/dry goods storage area, restroom facilities, locker areas, and mechanical room.

Utilities for the building would connect to existing utility lines in and adjacent to the project area. All utilities would be provided by the same providers as other facilities at Davis-Monthan AFB.

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Construction of the new dining facility would involve removing the existing parking lot, excavating trenches 3 feet deep for pipeline installation under the footprint of the new building, backfilling the trenches, pouring concrete for the foundation, and constructing the building. These activities are expected to require 6 months and would be completed by a contractor. Standard construction practices and contractor specifications identified in the construction contract would be adhered to during all construction activities, as described under the new dormitory above. Contractors would be required to comply with applicable provisions of the Civilian Contractor Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

Typical equipment that would be used for construction includes cranes, backhoes, forklifts, front-loaders, and other equipment. Staging for construction would be in the project area.

The new dining facility would have capacity to serve approximately 690 personnel and would improve the dining experience by providing more space and modern facilities. The design of the dining facility incorporates guidelines and requirements of the DoD Force Protection Standards for Buildings, Facility Requirements in Air Force Handbook 32-1084, Air Force Manual 32-1071 (Volumes 1, 2, and 3), and LEED applications.

2.1.3 Ice Storage/Expand Central Chiller System

A new thermal storage system would be constructed and installed at Kachina and Fifth streets adjacent to the west side of the main chiller plant (building 5101) in an existing parking area. The storage system would consist of an approximately 2,000-square-foot enclosed yard and the new thermal storage tanks. The storage tanks would have capacity to store 1,300 tons of ice and would be optimized for cost reduction. Approximately 6,300 linear feet of chilled water distribution lines, consisting of 4,150 feet of distribution mains and 2,150 feet of distribution branches, would be installed along existing roads between the storage facility and other buildings at the Base and the Personnel Recovery Area chiller plant that is under construction at Yuma and Tempe streets. The new lines would serve buildings currently cooled by independent chillers (buildings 2301, 3205, 3208, 3219, 3509, 3533, 4201, 4224, 4413, 4800, 4820, 4837, 4838, 4843, 4844, 4851, 4853, 4859, 5500, and 5600). The chilled water distribution lines would be sized to allow for future expansion of the loop and addition of new buildings. To support the expanded storage capacity and new distribution system, the pumps at the main chiller plant would be replaced with pumps capable of handling the new load and that are operated by variable frequency drives. Existing connections to the chiller loop would also be repaired to maximize the efficiency of the system.

Construction of the storage facility would involve removing the pavement in the project area, excavating trenches 3 feet deep for pipeline installation under the footprint of the storage area, backfilling the trenches, pouring concrete for the foundation, and installing storage tanks and fencing.

The distribution lines would be installed under existing roads and would require trenches up to approximately 3 feet deep within the road right-of-way. Temporary road detours or lane closures would be necessary during pipeline installation, and a portion of the parking area near the main chiller plant would be closed. Construction of the storage area and pipeline installation are expected to require approximately 1.5 years and would be completed by a contractor. Standard construction practices and contractor specifications identified in the construction contract would be adhered to during all construction activities, as described under the new dormitory above. Contractors would be required to comply with applicable provisions of the Civilian Contractor Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

Typical equipment that would be used for construction includes cranes, backhoes, forklifts, front-loaders, and other equipment. Staging for construction would be identified as more design details are known. Construction would likely be scheduled in the winter when the system is not needed to minimize disruptions to buildings currently being serviced.

The designs of the chiller system incorporate applicable Air Force and ACC high performance green building and/or Green Design and Development objectives for site design, water use, energy use reduction (per Energy Policy Act of 2005 and CFR Title 10 Part 433), building commissioning, materials selection, and indoor environmental quality; requirements of the Energy Policy Act of 2005 (Public Law 109-58) and Executive Order 13423 for continued energy reduction in the federal sector; requirements of the Facility Planning and Design Guide of the Military Handbook 1190 and Facility Requirements of the Air Force Handbook 32-1084; applicable Antiterrorism and Force Protection requirements; requirements of Air Force Manual 32-1071 (Volumes 1, 2, and 3); and LEED applications.

2.1.4 Airman Leadership School Consolidation (Building 4101)

The Airman Leadership School building (building 4101) north of Kachina Street at Sixth Street would be partially demolished and renovated to provide a more efficient and appropriately sized facility with a professional appearance for the 355 Operations Group Commander and A-10 pilots. Approximately 14,400 square feet of the 26,480-square-foot building would be demolished. The renovations in the remaining portion of the building (12,080 square feet) would include a new roofing system, paint, floors, ceiling tiles, and utility upgrades. The boiler and air handlers would be replaced with high efficiency equipment. The electrical systems would be replaced to handle the current loads and to meet current codes. The heating and air conditioning system would be replaced with new high efficiency equipment as needed. The fire detection and suppression system would also be replaced. An elevator would be added to the building. The renovations may need to be phased because the occupants will likely remain in the building during the repairs. Demolition best practices would be

implemented to ensure other areas of the building are not adversely affected. The land around the remaining portion of the building would be landscaped to control dust and erosion.

The demolition activities and renovations would be completed by Base personnel using equipment readily available on the Base, such as backhoes and front-loaders. They would take approximately 6 months to complete. Standard construction practices and environmental permit conditions would be adhered to during all construction activities, as described under the new dormitory above.

The design of the renovated Airman Leadership School building incorporates applicable Air Force and ACC high performance green building and/or Green Design and Development objectives for site design, water use, energy use reduction (per Energy Policy Act 2005 and CFR Title 10 Part 433), building commissioning, materials selection, and indoor environmental quality; requirements of the Facility Planning and Design Guide in Military Handbook 1190 and Facility Requirements in Air Force Handbook 32-1084; applicable Antiterrorism and Force Protection requirements; requirements of Air Force Manual 32-1071 (Volumes 1, 2, and 3); and LEED applications.

2.1.5 T-10 Engine Test Cell (Hush House)

A T-10 engine test cell or hush house would be constructed on the east side of Yuma Street near an existing concrete pad and taxiway to allow indoor operational checks of jet engines. It would be approximately 12,225 square feet and would be capable of housing a full size F-16/F-18 aircraft, which would maximize efficiencies and prevent any interruption of operations (e.g., poor weather). The hush house must be co-located with other engine test assets at AMARG to maintain personnel efficiencies required to meet current workload demands. A 43,000-square-foot power check pad (foundation and slab) with suppressor would be installed, and the hush house would be installed on the slab. A 7,500-square-foot apron made of concrete and asphalt would be connected to the slab for the jets to access the hush house. The hush house would require utilities (power, telecommunications, and water/wastewater) and supporting facilities to be able to run the operational checks. These utilities would connect to existing utility lines adjacent to the project area. All utilities would be provided by the same providers as other facilities at Davis-Monthan AFB.

Construction of the hush house would involve excavating trenches 3 feet deep for pipeline installation under the footprint of the new building, backfilling the trenches, pouring concrete for the foundation and slab, and constructing the building. Construction of the hush house and pad would require approximately 6 months and would be completed by a contractor. The hush house would need to be constructed in mid-2012 to be operational by the third quarter of the 2012 fiscal year. Standard construction practices and contractor specifications identified in the construction contract would be adhered to during all construction activities, as described under the new dormitory above. Contractors would be required to comply with applicable provisions of the Civilian Contractor

Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

Typical equipment that would be used for construction includes cranes, backhoes, forklifts, front-loaders, and other equipment. Staging for construction would be in previously disturbed areas in or immediately adjacent to the project area.

The design of the hush house incorporates guidelines and requirements of the DoD Force Protection Standards for Buildings, Facility Planning and Design Guide in Military Handbook 1190, Facility Requirements in Air Force Handbook 32-1084, Antiterrorism and Force Protection, Air Force Manual 32-1071 (Volumes 1, 2, and 3), and LEED applications. All work shall be in accordance with ACC and the installation Architectural Compatibility Guidelines.

2.1.6 214th Reconnaissance Group Headquarters Facility

A new 214 RG headquarters facility would be constructed north of Gafford Street adjacent to the Predator Operations facility to accommodate the Group Commander and Deputy, two executive officers, Group Superintendent, and Group Shirt. The building would be 2,200 square feet and would include electrical and mechanical work, site improvements, landscaping with irrigation, pavement, utilities, fire protection, and all necessary supporting facilities for a complete and usable facility. It would also include a video teleconferencing capable conference room with NIPR and SIPR connectivity throughout. A work area would be provided with a common area. All utilities for the facility would connect to existing utility lines adjacent to the project area. All utilities would be provided by the same providers as other Predator Operations facilities at Davis-Monthan AFB.

Construction of the new 214 RG headquarters facility would involve excavating trenches approximately 3 feet deep for pipeline installation under the footprint of the new building, backfilling the trenches, pouring concrete for the foundation, and constructing the building. These activities are expected to require approximately 1 year and would be completed by a contractor. Standard construction practices and contractor specifications identified in the construction contract would be adhered to during all construction activities, as described under the new dormitory above. Contractors would be required to comply with applicable provisions of the Civilian Contractor Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

Typical equipment that would be used for construction includes cranes, backhoes, forklifts, front-loaders, and other equipment. Staging for construction would be in or immediately adjacent to the project area in disturbed areas.

The design of the 214 RG headquarters facility incorporates applicable Air Force and ACC high performance green building and/or Green Design and Development objectives for site design, water use, energy use reduction (per Energy Policy Act 2005 and CFR Title 10 Part 433), building commissioning, materials selection, and indoor environmental quality; minimum DOD Force Protection Standards for Buildings; requirements of the Facility Planning and Design Guide in Military Handbook 1190 and Facility Requirements in Air Force Handbook 32-1084; applicable Antiterrorism and Force Protection requirements; requirements of Air Force Manual 32-1071 (Volumes 1, 2, and 3); and LEED applications. All work shall be in accordance with ACC and the installation Architectural Compatibility Guidelines. The new facility would also need to comply with the City/County storm water detention/retention ordinance.

2.1.7 Demolish Holding Area Munitions Storage Yard

The existing 200-square-foot storage facility (building 103) on the west side of Ramsgate Road and corresponding munitions holding yard, including pavement (45,300 square feet), fencing, and exterior lighting, would be demolished and properly disposed or recycled. The HAMS yard was recently relocated, and the land where the old yard is located is needed for future military construction projects. Following demolition, the area would be revegetated with a native grass seed mix.

Demolition activities would require approximately 1 month and would be implemented by Base personnel using readily available equipment at the Base, such as a backhoe and front-end loader. Standard construction practices and environmental permits would be adhered to during all construction activities.

Demolition of the HAMS yard would meet all requirements of the Facility Planning and Design Guide in Military Handbook 1190, Facility Requirements in Air Force Handbook 32-1084, Antiterrorism and Force Protection, Air Force Manual 32-1071 (Volumes 1, 2, and 3), and LEED applications.

2.1.8 Dormitory Renovation (Building 3509)

An existing dormitory (building 3509) on the northeast corner of Kachina and Eighth streets would be renovated to provide modern, efficient housing for dormitory residents in accordance with Air Force quality of life, force protection, and life safety standards. The renovations would include demolishing carpet, tile, light fixtures, wall lockers, a vanity, and a sink; repainting dorm rooms, bathrooms, railings, and doors; replacing door signs; and installing new carpet, tile, light fixtures, a vanity, and a sink. Airmen would be relocated during renovations in order for the contractor to have full access to the dorms and to do the necessary repairs.

The renovations would be completed by Base personnel using equipment readily available on the Base. They would take approximately 6 months to complete. Standard construction practices and environmental permits would be adhered to during all construction activities.

The design of the renovated dormitory incorporates requirements of the Facility Planning and Design Guide in Military Handbook 1190 and Facility Requirements in Air Force Handbook 32-1084; applicable Antiterrorism and Force Protection requirements; requirements of Air Force Manual 32-1071 (Volumes 1, 2, and 3); and LEED applications.

2.1.9 Pavement Plan (Roads/Parking)

The five-year pavement plan includes sealing of all roads and parking areas on the Base. The initial work over the first few years would focus on repairing (sealing) pavements that have been classified as “Orange” (generally poor condition) or better, and all of the pavements on the Base would at least need to be sealed during the next five years. The estimated area of roads and parking areas to be resealed is 13 million square feet or 300 acres. Roads in worse shape than Orange would require significant work to repair, mill, and repave and would be evaluated as part of a separate action.

Resealing would entail preparing the road or parking area surface by scarifying it to a minimum depth of 6 inches, compacting and grading the surface, laying aggregate base if needed, paving the area, and painting and striping as necessary. The anticipated construction equipment to reseat the roads and parking areas is one loader, two backhoes, one grader, one paver, two rollers, one scraper, and two pickup trucks hauling or towing small equipment. During road improvements, traffic control measures would be implemented, including providing signs, barricades and/or flagmen as necessary. Road or lane closures would be necessary, and appropriate detours would be identified to route drivers around the work area. All improvements would be in the same footprint as the existing roads and parking areas (i.e., no expansions or relocations are included under this action).

Pavement improvements would be completed by a construction contractor and would be accomplished in accordance with the Contract Specifications identified in the construction contract. Standard construction practices would be adhered to during all construction activities. Contractors would be required to comply with applicable provisions of the Civilian Contractor Environmental Guide, dated December 6, 2010, including obtaining and adhering to applicable environmental permits.

2.2 SELECTION CRITERIA

The 355 FW considered several selection criteria when identifying options for facility design and location and which CIP projects should be evaluated in this EA. The selection criteria are identified below with references to applicable Base studies and regulations. Potential constraints associated with the nine representative projects and these selection criteria are presented in Table 2-2 at the end of this section.

Compatible Land Use: 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 uses at Davis-Monthan AFB are regulated by the 2006 General Plan, which designates land use categories and identifies the type and extent of land use allowable in specific areas and where environmentally sensitive areas need to be protected (Davis-Monthan AFB 2006). Davis-Monthan AFB has 12 designated land use categories, and the mixture of land uses results in some anomalies and conflicts with land use patterns, primarily as a result of airfield-related uses. The representative projects would not conflict with the land uses designated in their respective areas.

Force Protection and Security Compliance: As a result of terrorist activities, the DoD and the Air Force have developed a series of antiterrorism/force protection (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 [UFC] 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. The representative projects would be constructed in accordance with UFC 4-010-01 and would help improve AT/FP measures on the Base.

Available Utilities and Infrastructure: Facility location has considered the location of existing utilities and infrastructure and/or the capacity to readily extend to the new facility.

Presence of Special Environmental Resources:

Waters of the United States (U.S.). The Clean Water Act (CWA) of 1977 (33 USC § 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. The U.S. Army Corps of Engineers and Executive Order (EO) 11990, *Protection of Wetlands*, regulate the discharge of dredged or fill material into waters of the U.S. including wetlands under Section 404 of the CWA. Waters of the U.S. include any waterbody or watercourse which has been determined to be regulated under Section 404 using the Rapanos Guidance of June 5, 2007, and may include ephemeral

washes, drainage ditches, intermittent and perennial watercourses, and wetlands. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in waters on the U.S. None of the representative projects are in or near any waters of the U.S. or wetlands.

100-year Floodplain. 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 floodplains. None of the representative projects are near Atterbury Wash, which contains the only delineated 100-year floodplain on the Base.

Environmental Restoration Program (ERP) Sites. The DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984. Fifty-three (53) ERP sites and three Areas of Concern (AOCs) have been identified at Davis-Monthan AFB and are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Davis-Monthan AFB Management Action Plan 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. Continuing efforts to comply with applicable laws and regulations ensure that present resource and waste management practices are performed in a manner that protects human health and the environment. ACC policy requires that any proposed project on or near a Davis-Monthan AFB ERP site be coordinated through the Davis-Monthan ERP Manager. None of the representative building, renovation, or demolition projects are in or near an active ERP site, but some chiller lines and road and parking area improvements may be located near active ERP sites and may require waivers.

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 as part of their MMRP. Davis-Monthan AFB has four active ranges and 11 MMRP sites. All former range areas have potential to contain ordnance and explosive contamination. Until these areas are formally cleared, any proposed activities in them should be coordinated through the Civil Engineering Squadron/Environmental Restoration Element point of contact. Training or a waiver for construction may be required. Only the HAMS yard project area is located in an MMRP site (the former Wilmot National Guard Target Range), and some road or parking area improvements may be located in MMRP sites. These facilities may require training and/or a waiver.

Historic and Archaeological Resources. Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources that are either eligible for listing to or are already listed on the National Register of Historic Places (NRHP). 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. None of the representative projects are near known historic properties or significant tribal resources.

Fire/Rescue Response Time: Facility locations should be within an acceptable distance from a fire station to meet required fire/rescue response time. All representative projects are easily accessible and would be readily served by on-Base fire stations in the event of an emergency.

No Conflicts with Safety Zones: Defense Department Explosives Safety Board 6055.9-STD and Air Force Manual 91-201 Explosives Safety Standards define distances that need to be maintained between munitions storage areas and a variety of other types of facilities. These distances, called quantity-distance (QD) arcs, restrict or prohibit development based on the type and quantity of explosive material being stored. The DoD also identifies Accident Potential Zones (APZs) as a planning tool for local planning agencies to identify where an aircraft mishap is most likely to occur. The demolition project (HAMS yard) is in a QD arc associated with the former HAMS yard, but the QD arc no longer applies because of the relocation of the yard. Some of the road improvements may fall within QD arcs and APZs; however, the improvements would not conflict with the safety zones. None of the other representative projects are in safety zones.

Adequate Land for Building and Ground Level Parking: Facility locations should be of sufficient size to accommodate proposed buildings (with required setbacks) and proposed parking needs without the need to build additional facilities, such as a multi-story garage. All representative projects have been appropriately sized for the function they would provide.

Table 2-2. Selection Criteria for 2012–14 CIP Projects

<i>Number</i>	<i>Project Title</i>	<i>Compatible Land Use</i>	<i>Force Protection and Security</i>	<i>Available Utilities/ Infrastructure</i>	<i>Special Environmental Resources</i>	<i>Fire/Rescue Response</i>	<i>Safety Zones</i>	<i>Adequate Land</i>
1	New 144-Person Dormitory	✓	✓	✓	✓	✓	✓	✓
2	Airman Dining Facility	✓	✓	✓	✓	✓	✓	✓
3	Ice Storage/Expand Central Chiller System	✓	✓	✓	✗	✓	✓	✓
4	Airman Leadership School Consolidation (building 4101)	✓	✓	✓	✓	✓	✓	✓
5	T-10 Engine Test Cell (Hush House)	✓	✓	✓	✓	✓	✓	✓
6	214 RG Headquarters Facility	✓	✓	✓	✓	✓	✓	✓
7	Demolish HAMS Yard	✓	✓	n/a	✗	✓	✗	✓
8	Dormitory Renovation (building 3509)	✓	✓	✓	✓	✓	✓	✓
9	Pavement Plan (Roads/Parking)	✓	✓	n/a	✗	n/a	✗	✓

Notes: ✓ indicates that the project has no constraints associated with the selection criteria

✗ indicates that the project may have constraints associated with the selection criteria

2.3 NO-ACTION ALTERNATIVE

Under the no-action alternative, the 355 FW would maintain and continue using the existing facilities at Davis-Monthan AFB, and none of the representative projects or other CIP projects would be implemented during 2012 to 2013. In general, the no-action alternative would require that the 355 FW continue to operate under unnecessarily inefficient conditions. These deficiencies would increasingly impair the 355 FW's ability to successfully conduct their mission and to maintain wartime readiness and training. Davis-Monthan AFB and the 355 FW could not adequately meet future mission requirements or changes due to deteriorating facilities and would not meet the CIP development goals. The following consequences would take place:

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

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

A variation of the representative projects was considered to show a reduced level of development. Such an alternative was not carried forward because the intent of this EA is to evaluate a representative range of typical projects and expedite future environmental reviews of similar projects resulting in similar effects. Each project would also be implemented independently, depending on authorized funding, so it is possible that one or more of the representative projects may not be implemented if funding does not become available. The analysis in this EA, however, still encompasses the representative types of projects to allow for future authorizations.

An alternative site for the T-10 Engine Test Cell (hush house) adjacent to Taxiway Echo, approximately 525 feet to the southwest of the preferred alternative, has previously been considered for the project. This alternative will not be carried forward to minimize potential noise and vibration-related impacts to building 254 (EC-130 Squad Operations facility) and to ensure consistency with the Air Force Hush House Site Planning Bulletin (HQ AFLC/DEP and HQ USAF/LEEVX, October 1987; reprinted by HQ AFCEE/DGP, December 1993).

2.5 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The EIAP is used to evaluate a proposal's potential environmental consequences 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 consequences of the proposed action and 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 nine representative CIP projects at Davis-Monthan AFB. The following resources are analyzed in this EA: earth resources, water resources, biological resources, air quality, noise, land use and visual resources, socioeconomics and environmental justice, cultural resources, safety, hazardous materials and waste management, and infrastructure. Chapter 3.0 describes the affected environment or existing conditions for these resources, and Chapter 4.0 addresses the potential environmental consequences of implementing the proposed action and No-Action Alternative.

2.5.1 Public and Agency Involvement

EO 12372, *Intergovernmental Review of Federal Programs*, requires notifications to other agencies that may have relevant information regarding resources in the project area prior to making any detailed statement of potential environmental consequences. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (known as the IICEP process), Davis-Monthan AFB has notified concerned federal, state, tribal, and local agencies about the proposed projects and preparation of the EA and allowed them sufficient time to provide input on the proposed action and EA. A letter was sent on September 7, 2011, soliciting input on the proposed projects and potential issues to address in the EA. Letters were received from the Pima County Department of Environmental Quality, Arizona Department of Environmental Quality (Air Quality and Water Quality Divisions), and Pima Association of Governments. A distribution list and copies of the comment letters are included in Appendix A. All relevant comments have been addressed in the appropriate section(s) of this EA.

Davis-Monthan AFB posted a notice on its website on January 18, 2012, and published a newspaper advertisement in the *Desert Lightning News* on January 20, 2012, announcing the availability of the Draft EA. The Draft EA was available for a 30-day public and agency review period to facilitate public involvement during the NEPA process. Davis-Monthan AFB will provide notice of the availability of the Final EA, and an electronic copy of the Final EA will be available on the website.

Table 2-3 summarizes the comments received on the Draft EA. Copies of the comment letters received during the review period and a copy of a sample transmittal letter are included in Appendix A. No comments were received on the Draft EA that required substantial revisions to the document.

Table 2-3. Summary of Public Comments Received on Draft EA

<i>Commenter</i>	<i>Date</i>	<i>Summary of Comments</i>	<i>Response to Comments</i>
Arizona Department of Environmental Quality, Diane L. Arnst, Manager, Air Quality Planning Section	January 27, 2012	<ul style="list-style-type: none"> ▪ Consider disturbance of asbestos and particulate matter during construction ▪ Provide notification of demolition ▪ Implement measures to reduce particulate matter disturbance ▪ Comply with rules for reducing dust 	A discussion of potential asbestos impacts relating to air quality, including notification and permit requirements, and dust-related air quality impacts is provided in Section 4.4.1; a discussion of asbestos removal requirements is provided in Section 4.10.1; a list of permits is included in Table 2-5.

<i>Commenter</i>	<i>Date</i>	<i>Summary of Comments</i>	<i>Response to Comments</i>
Town of Marana, T VanHook, Community Development Director	January 27, 2012	No comments provided on the document	Letter acknowledged
Pima County Department of Environmental Quality, Anna Martin, Air Compliance Inspector	February 8, 2012	<ul style="list-style-type: none"> ▪ A fugitive dust activity permit may be required ▪ A permit from Arizona Department of Environmental Quality may be required for storm water discharges ▪ An activity permit may be required for asbestos removal 	A discussion of air quality impacts and permit requirements is provided in Section 4.4.1; a discussion of water quality impacts is provided in Section 4.2.1; a list of permits is included in Table 2-5.
Arizona Department of Environmental Quality, Wendy LeStarge, Environmental Rules Specialist, Water Quality Division	February 13, 2012	Document addresses all impacts related to water quality	Letter acknowledged
State Historic Preservation Office, Ann Howard	February 16, 2012	Separate documentation needed for Section 106 consultation	The Base's intent is to coordinate with the State Historic Preservation Officer on a case-by-case basis when the projects identified in the EA move into their initial planning and design phases, in lieu of using the NEPA document submittal for the consultation.
Arizona Game and Fish Department	February 21, 2012	Document addresses all impacts related to sensitive biological resources and provides appropriate avoidance measures to minimize impacts	Letter acknowledged

2.5.2 Regulatory Compliance

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). 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 in 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 an EA to address the environmental issues related to the proposed action. The Air Force implementing procedures for NEPA are contained in 32 CFR Part 989 et seq., *Environmental Impact Analysis Process*.

Biological Resources Regulatory Requirements

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. 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. 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.

The state of Arizona maintains a list of the Wildlife of Special Concern in Arizona (WSC) in the Arizona Heritage Data Management System, which is maintained by Arizona Game and Fish Department (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. Additionally, under the Arizona Native Plant Law (Arizona Revised Statutes Title 3, Chapter 7, *Arizona Native Plants*), 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). Native plants cannot be removed from any Arizona land without the permission of the landowner and a permit from the Arizona Department of Agriculture. Other sensitive species are those that are federal species of concern or that are identified as rare or on a watch list under the Arizona Natural Heritage Program state ranking system.

EO 13112, *Invasive Species*, directs federal agencies to use relevant programs and authorities to:

- prevent the introduction of invasive species;
- detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
- monitor invasive species populations accurately and reliably;
- provide for restoration of native species and habitat conditions in ecosystems that have been invaded;
- conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species;
- promote public education on invasive species and the means to address them; and
- not authorize, fund, or carry out actions that the agency believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

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” prepared by the U.S. Fish and Wildlife Service, 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.

Water Resources Regulatory Requirements

The CWA of 1977 (33 USC § 1251 *et seq.*) regulates pollutant discharges that could affect aquatic life forms or human health and safety. The USACE regulates the discharge of dredged or fill material into waters of the U.S. including wetlands under Section 404 of the CWA. Waters of the U.S. include any water body or water course that has been determined to be regulated under Section 404 using the Rapanos Guidance of June 5, 2007, and may include ephemeral washes, drainage ditches, intermittent and perennial water courses, and wetlands. Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate, or if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. The State of Arizona has the legal authority to implement and enforce the provisions of the CWA while the U.S. Environmental Protection Agency (EPA) retains oversight responsibilities.

Under the CWA, it is illegal to discharge pollutants from a point source into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit. As of December 2002, the EPA authorized Arizona to operate the NPDES Permit Program. This program is referred to as the AZPDES Permit Program. The EPA has the authority to set standards for the quality of wastewater discharges. The goal of the CWA Section 402 is the “restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters.” The State has issued a *General Permit for Discharges from Construction Activities*, which requires the submittal of a Notice of Intent at least two days before the start of construction, preparation of a Storm Water Pollution Prevention Plan (SWPPP), and submittal of a Notice of Termination after completion of a construction project.

Storm water discharge from industrial activities at Davis-Monthan AFB is managed in accordance with the NPDES *General Permit for Stormwater Discharges Associated with Industrial Activity from Non-Mining Facilities* (AZMSG2010-002) issued by the EPA. This permit became effective on February 1, 2011, and expires on January 31, 2016; it updates the previous 2000 Multi-Sector General Permit for the state. Davis-Monthan AFB prepared a SWPPP to identify water quality monitoring requirements and BMPs that will minimize the potential for contaminants to reach nearby surface waters (Davis-Monthan AFB 2007). For activities on the Base that fall under the General Permit, Davis-Monthan AFB or its contractor is required to submit a Notice of Intent to the Arizona Department of Environmental Quality (ADEQ) and implement appropriate BMPs to minimize discharge of pollutants into water bodies.

EO 11990, *Protection of Wetlands*, requires federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies are directed to consider the effects of their actions on the survival and quality of 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.

Air Quality Regulatory Requirements

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the EPA 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 seven criteria pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter less than or equal to 10 micrometers in diameter (PM₁₀), particulate matter less than or equal to 2.5 micrometers in diameter (PM_{2.5}), and lead (Pb). Because volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are precursors to the formation of O₃ in the atmosphere, control of

these pollutants is the primary method of reducing O₃ concentrations in the atmosphere. The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) 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. State and local agencies may establish ambient air quality standards and regulations of their own, provided that these are at least as stringent as the federal requirements. Arizona has adopted the NAAQS for all criteria pollutants. Table 2-4 depicts the NAAQS for the criteria pollutants.

Table 2-4. Air Quality Standards

<i>Air Pollutant</i>	<i>Averaging Time</i>	<i>Primary NAAQS</i>	<i>Secondary NAAQS</i>
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	n/a n/a
Nitrogen Dioxide (NO ₂)	AAM	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO ₂)	AAM 24-hour 3-hour	0.030 ppm 0.140 ppm n/a	n/a n/a 0.500 ppm
Particulate Matter (PM ₁₀) ¹	AAM 24-hr	n/a 150 $\mu\text{g}/\text{m}^3$	n/a 150 $\mu\text{g}/\text{m}^3$
Particulate Matter (PM _{2.5}) ²	AAM 24-hour	15 $\mu\text{g}/\text{m}^3$ 35 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$ 35 $\mu\text{g}/\text{m}^3$
Ozone (O ₃)	8-hour	0.080 ppm	0.080 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	1.5 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$

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

¹ In 2006, the federal annual PM₁₀ standard of 50 $\mu\text{g}/\text{m}^3$ was revoked; Arizona Administrative Code 17.08 has kept the 50 $\mu\text{g}/\text{m}^3$ for PM₁₀ standard.

² In 2006, the PM_{2.5} standard for the 24-hour averaging time was changed from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$.

Sources: 40 CFR 50; Arizona Administrative Code Chapter 17.08.

Attainment Status. Based on measured ambient criteria pollutant data, the EPA 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 from a nonattainment designation, areas are then considered to be a “maintenance” area 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 EPA 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.

State Implementation Plan (SIP). The CAA also requires that each state prepare a SIP for maintaining and improving air quality and eliminating violations of the NAAQS in nonattainment areas. 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.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA established the goal of PSD of air quality in all international parks, national parks that exceed 6,000 acres, and national wilderness areas and memorial parks that exceed 5,000 acres, if these areas had been established by August 7, 1977. These areas are defined as mandatory Class I areas, while all other attainment or unclassifiable areas are 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 that 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 designated. The PSD requirements affect construction of new major stationary sources in the designated areas and provide a pre-construction permitting system. Davis-Monthan AFB is not in a Class I or II area, but is within 15 miles of a Class I area (Saguaro National Park West is about 4 miles east, refer to Figure 1-1).

Visibility. CAA Section 169(a) 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 EPA 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 PM₁₀ and SO₂ 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:

- cause or contribute to any new violation;
- increase the frequency or severity of any existing violation; or

- 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, earth-moving, 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 Pima County is a facility (i.e., plant, base, or activity) that emits more than 100 tons per year of any criteria air pollutant, 10 tons per year of a hazardous air pollutant, or 25 tons per year of any combination of hazardous air pollutants (Pima County Code Title 17, Section 17.04.340(A)(128)).

Arizona EO 2005-02, Climate Change Advisory Group. A Climate Change Advisory Group was established in Arizona by EO 2005-02 to develop recommendations to reduce greenhouse gas (GHG) emissions, produce an inventory of GHG emissions and their sources, and prepare a Climate Change Action Plan. The Climate Change Action Plan was completed in 2006 (Arizona Climate Change Advisory Group 2006). The plan incorporates results of the GHG inventory and provides recommendations for reducing emissions in the state.

Fugitive Dust. Section 17.12.470.A of Title 17 of the Pima County Code requires a fugitive dust activity permit for activities that “conduct, cause, suffer, allow land stripping, earthmoving, blasting, trenching or road construction” Section 17.12.470.B states that a single activity permit is required for land stripping or earthmoving activities affecting more than 1 acre of land, for trenching activities that involve more than 300 feet of trenching, and road construction activities that involve more than 50 feet of road. Other applicable rules of the Arizona Administrative Code may also apply to the projects, such as R18-2-605 for Roadways and Streets, R18-2-606 for Material Handling, R18-2-607 for Storage Piles, and R18-2-804 for Roadway and Site Cleaning Machinery.

Cultural Resources Regulatory Requirements

The National Historic Preservation Act (NHPA) of 1966 (16 USC § 470) established the 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 (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.

In the *American Indian and Alaska Native 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.

Other Regulatory Requirements

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. An overview of other applicable regulations is provided below.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was established to ensure the fair treatment and meaningful involvement with respect to the development, implementation, and enforcement of environmental laws, regulations, 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.

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.

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 (UFC 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, and some facilities at the Base are not compatible with the current AT/FP standards. However, as new construction takes place or facilities are modified, the design will need to incorporate these standards.

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.

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.

The National Emission Standard for Asbestos (40 CFR, Part 61, Subpart M, Section 61.145(a)) requires that the owner or operator of a project scheduled for renovation or demolition thoroughly inspect the facility for the presence of asbestos. Furthermore, an activity permit may be required from the Pima County Department of Environmental Quality (PDEQ) if asbestos is present, and further standards may apply based on the findings of the asbestos inspection. Notification to ADEQ is also required for demolition activities, and a permit from ADEQ may be required.

2.6 PERMIT REQUIREMENTS

The EA has been prepared in compliance with NEPA, other federal statutes such as the CAA and the CWA, and applicable state statutes and regulations. A list of Davis-Monthan AFB permits has been compiled and reviewed during the preparation of this EA. Table 2-5 summarizes potentially applicable federal, state, and local permits and the potential for requirements to modify 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. Potential Permit Requirements

<i>Permit</i>	<i>Resource</i>	<i>Action Needed</i>
Synthetic Minor Permit	Air	No change to existing permit expected; equipment (i.e., generators) may require air permit modification or amendment.
Operating Permit #1701	Air	No change to existing permit expected; equipment (i.e., generators) may require air permit modification or amendment.
Activity Permit from Pima County 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	Storm Water	The Storm Water Pollution Prevention Plan 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 with the ADEQ to obtain coverage under this permit.
Davis-Monthan AFB Disposal Permit	Hazardous Waste	No change to existing permit expected.
Asbestos Activity Permit	Hazardous Materials	Notification to ADEQ would be needed for demolition projects, and a permit may be required.
Pima County Asbestos Removal Disposal Permit	Hazardous Materials	A new permit from PDEQ may be needed for demolition projects.
Pima County Lead Base Paint Removal Disposal Permit	Hazardous Materials	A new permit from PDEQ would be needed for applicable projects.
Native Plant Preservation Plan	Biology	A plan would be needed for projects disturbing native vegetation.
Pima County Drainage (Sewer) and Water (Plumbing) Fixture Unit connection fees as applicable	Infrastructure	Applicable fees would need to be paid for new sewer connections.

2.7 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-6 summarizes the environmental consequences of the proposed action and no-action alternative based on the analysis presented in Chapter 4.0, Environmental Consequences, of this EA. No significant impacts were identified.

Table 2-6. Summary of Environmental Consequences

<i>Resource Topic</i>	<i>Proposed Action</i>		<i>No-Action</i>
	<i>Impacts</i>	<i>Avoidance/Minimization Measures</i>	
Earth Resources	<ul style="list-style-type: none"> ▪ Ground disturbance would expose soils to wind and water erosion. ▪ New facilities in undeveloped areas could be damaged from shrink/swell hazard of soils. 	<ul style="list-style-type: none"> ▪ Implement BMPs and comply with SWPPP for construction activities. ▪ Consider soil hazards in final project design. 	<ul style="list-style-type: none"> ▪ No change in soil, geologic, or topographic conditions from existing setting.
Water Resources	<ul style="list-style-type: none"> ▪ Projects would decrease impervious surface area at Base. ▪ Construction/demolition activities could discharge sediment and pollutants into surface waters or storm drainage system. ▪ Groundwater withdrawal would be similar to current conditions. 	<ul style="list-style-type: none"> ▪ Implement BMPs and comply with SWPPP for construction activities. 	<ul style="list-style-type: none"> ▪ No change in runoff, water quality, or groundwater conditions from existing setting.
Biological Resources	<ul style="list-style-type: none"> ▪ Projects in less developed areas could disturb burrowing owls or loggerhead shrikes. ▪ Some projects may remove protected cacti. ▪ No native vegetation communities would be affected. 	<ul style="list-style-type: none"> ▪ Conduct pre-construction surveys for owls and shrikes and implement protection measures for active nests/burrows. ▪ Include cacti in landscaping plans. 	<ul style="list-style-type: none"> ▪ No change in biological conditions from existing setting.

Resource Topic	Proposed Action		No-Action
	Impacts	Avoidance/Minimization Measures	
Air Quality	<ul style="list-style-type: none"> Construction/demolition activities would emit pollutants, including GHGs, and expose nearby sensitive receptors. Construction/demolition activities would emit CO₂, but less than <i>de minimis</i> thresholds. Operational emissions would be less than existing conditions. 	<ul style="list-style-type: none"> Implement emission control measures and comply with air quality permits. 	<ul style="list-style-type: none"> No change in air quality from existing setting.
Noise	<ul style="list-style-type: none"> Construction/demolition activities would increase noise levels around project areas (75 to about 90 dBA at 50 feet) and expose sensitive receptors. Vibrations may be felt in project vicinities. Operational noise would be similar to existing conditions, except hush house would decrease noise from jet engine testing, with a potential increase in vibrations. 	<ul style="list-style-type: none"> Schedule activities during daytime hours (7 a.m. to 5 p.m.). 	<ul style="list-style-type: none"> No change in noise from existing setting. Continued adverse effects from jet engine testing.
Land Use and Visual Resources	<ul style="list-style-type: none"> Construction disturbance would create temporary land use conflicts and visual impacts. New facilities and demolition projects would change visual setting. No long-term land use conflicts anticipated. 	<ul style="list-style-type: none"> Design facilities to be visually similar to existing facilities. Landscape or revegetate disturbed areas and around new facilities. 	<ul style="list-style-type: none"> No change in land use or visual setting from existing setting.

Resource Topic	Proposed Action		No-Action
	Impacts	Avoidance/Minimization Measures	
Socioeconomics and Environmental Justice	<ul style="list-style-type: none"> Projects would require approximately \$35 million of expenditures through the end of the construction period. Dormitory renovations would require temporary relocation of residents. No disproportionate impacts on low-income or minority populations or safety concerns for children. 	<ul style="list-style-type: none"> Schedule projects over several years to spread out expenditures. Coordinate and provide for relocation of residents. Restrict access to project areas during construction and demolition activities. 	<ul style="list-style-type: none"> No change in economic or social conditions from existing setting. Some operations would continue to be inefficient.
Cultural Resources	<ul style="list-style-type: none"> No known, eligible resources would be affected. Ground disturbing activities have low potential to expose or damage buried cultural resources or human remains. 	<ul style="list-style-type: none"> Comply with Base policies for inadvertent discoveries of cultural resources. 	<ul style="list-style-type: none"> No change in cultural resources from existing setting.
Safety	<ul style="list-style-type: none"> Construction/demolition activities could expose workers to health and safety risks. Projects would improve overall safety conditions at the Base. Pavement plan may be implemented in safety zones. 	<ul style="list-style-type: none"> Comply with Base policies and federal guidelines for safety during construction and demolition. Adhere to safety requirements in safety zones. 	<ul style="list-style-type: none"> No change in safety zones or conditions from existing setting.

<i>Resource Topic</i>	<i>Proposed Action</i>		<i>No-Action</i>
	<i>Impacts</i>	<i>Avoidance/Minimization Measures</i>	
Solid and Hazardous Materials and Waste	<ul style="list-style-type: none"> ▪ Projects would generate approximately 6,200 tons of solid waste. ▪ Dining facility and Airman Leadership School projects would involve removal of ACM during demolition activities. ▪ No hazardous sites would be affected, but some projects would be near ERP sites or in closed ranges. 	<ul style="list-style-type: none"> ▪ Recycle or properly dispose of waste generated by projects. ▪ Implement safety measures for ACM removal and comply with Base policies and asbestos removal permit. ▪ Obtain waivers for activities near active ERP sites or in closed ranges. 	<ul style="list-style-type: none"> ▪ No change in solid or hazardous waste generation or hazardous material use from existing setting.
Infrastructure	<ul style="list-style-type: none"> ▪ Construction traffic would cause localized congestion and delays. ▪ Projects would not change operational traffic. ▪ Parking would continue to be available and adequate for Base operations. ▪ Projects would require slight increase in utility system demand, but within service provider capabilities. ▪ Utility line installation may require temporary disruption to services. 	<ul style="list-style-type: none"> ▪ Implement traffic management measures during construction and demolition activities. ▪ Provide notification in the event of service disruptions. 	<ul style="list-style-type: none"> ▪ No change in traffic conditions or utility demands from existing setting.

3.0 EXISTING CONDITIONS

This chapter describes the existing environmental and socioeconomic conditions at Davis-Monthan AFB (regional) and in the vicinity of each project area (local). This information serves as a baseline to compare changes likely to result from implementation of the proposed action. The potential environmental and socioeconomic impacts of implementing the proposed action or the no-action alternative are described in Chapter 4.0.

The local project areas described in this chapter include (see Figure 2-1 for location map):

- New dormitory project area: approximately 3.5 acres at the southwest corner of Eighth and Kachina streets
- Dining facility project area: approximately 2.2 acres at the southeast corner of Fifth and Ironwood streets and the existing dining facility (building 4100) to the south
- Chiller system project area: approximately 0.1 acre at the northwest corner of Fifth and Kachina streets; 6,300 linear feet (pipelines) along existing roads between the chiller storage system and buildings to be served
- Airman Leadership School project area: existing building 4101 between Fifth, Seventh, Kachina, and Ironwood streets
- Hush house project area: approximately 1.2 acres north of Yuma Street, east of Wilmot Road
- 214 RG headquarters facility project area: approximately 0.1 acre on north side of Gafford Way
- HAMS yard project area: approximately 1.3 acres on southwest side of Phoenix Street, near airfield surface
- Dormitory renovation project area: existing building 3509 on north side of Kachina Street between Seventh Street and Craycroft Road
- Pavement plan project area: roads and parking areas throughout Davis-Monthan AFB

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, et seq., the description of the affected environment (existing conditions) focuses on 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, solid and hazardous materials and wastes, and infrastructure.

3.1 EARTH RESOURCES

Earth resources include geology, soils, and topography. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. Soils are unconsolidated materials formed from the underlying bedrock or other parent material and play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink/swell potential, and erodibility determine the suitability of the ground to support man-made structures and facilities. Topography refers to the surface features of an area including its vertical relief. These resources may have scientific, historical, economic, and recreational value.

3.1.1 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 (Houser et al. 2004). The Sonoran Desert is part of the Basin and Range province, a region characterized by deep alluvial deposits transported from adjacent mountains, with relatively young deposits found in present-day drainageways and much older deposits located on valley floors and terraces. The Tucson Mountains are a small range composed of Tertiary intrusive and volcanic rocks bordered by faulted and 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 mile above the valley floor (University of Colorado at Boulder 1999). The Tucson Basin 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 drainages.

Evidence of intense periods of volcanism can be found throughout the Basin and Range province as a result of high-angle normal faulting dating to approximately 13 million years ago, which continued until approximately 5 million years ago. Isolated outcrops of granite more than 1 billion years old are evident throughout the province, but most of the andesite and basaltic flows were formed in the last 50 million years. The oldest rocks in the Tucson Basin are the metavolcanic Pinal Schist, formed approximately 1.7 billion years ago (U.S. Geological Survey 2003). Some basaltic flows occurred as early as 4 million years ago and as late as 65 million years ago (Natural Resources Conservation Service 2006). 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 (Altschul and Lindsay 1993). 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. Davis-Monthan AFB lies on a nearly flat surface of confluent alluvial fans known as a bajada.

3.1.2 Soils

Soils in the Tucson Basin were primarily formed from alluvium with mixed material high in quartz and feldspar and deposited by wind (Natural Resources Conservation Service 2003). Bedrock and eolian (material accumulated through wind erosion) materials are less common, but are direct sources of alluvium and calcium carbonate enrichment in the soils. Soils at Davis-Monthan AFB are characteristic of the bajada and are primarily Aridisols and Entisols. Topsoils consist of silts, clays, sands, and gravels, and the subsoil strata is dominated by rock, clay, and caliche material. The majority of the soils consist of gravel and sandy loam about 36 inches deep. These soils typically have low fertility and are potentially erodible by both water and wind. Below the sandy loam layer is typically a layer of calcareous material that is approximately 48 inches thick. Most Base soils have moderately slow permeability.

Davis-Monthan AFB has eight distinct soil mapping units (Figure 3-1). All of the project areas are on the *Mohave soils and Urban land, 1 to 8 percent slopes* map unit, and some roads extend onto the *Tubac gravelly loam, 1 to 8 percent slopes* and *Cave soils and Urban land, 0 to 8 percent slopes* map units. The remaining soil mapping units are in outlying areas of the Base that are primarily open space. A soil mapping unit represents an area that is dominated by one major kind of soil, and a map unit complex represents an area that is dominated by several kinds of soils. Each soil map unit has minor soils associated with it that may have different properties and limitations that can only be delineated by an on-site inspection. The properties and limitations of the mapping units are presented in this section to provide an indication of the conditions and limitations found at Davis-Monthan AFB. Information on soil mapping units was derived from the Soil Survey of Pima County, Arizona, Eastern Part (Natural Resources Conservation Service 2003). Descriptions of the eight soil mapping units present on the Base are provided below.

Cave soils and Urban land, 0 to 8 percent slopes. Cave soils and urban land are generally found on nearly level to gently sloping relict fan terraces and have no regular pattern in terms of percentage of composition. Formed in mixed alluvium, Cave soils are very shallow and well drained to a lime-cemented hardpan (Caliche) found at a depth of 7 inches. The surface layer is typically brown, gravelly, fine sandy loam about 4 inches thick. The next layer is a pinkish white, gravelly, fine sandy loam that is 3 inches thick. Depth to the caliche layer, which is a white, indurated, lime hardpan, ranges from 4 to 20 inches. A pale brown gravelly loamy sand is under the caliche layer to about 50 inches. These soils are also calcareous throughout the profile. Permeability of the Cave soils is moderate, available water capacity is very low, and runoff is medium to rapid. The hazard of both

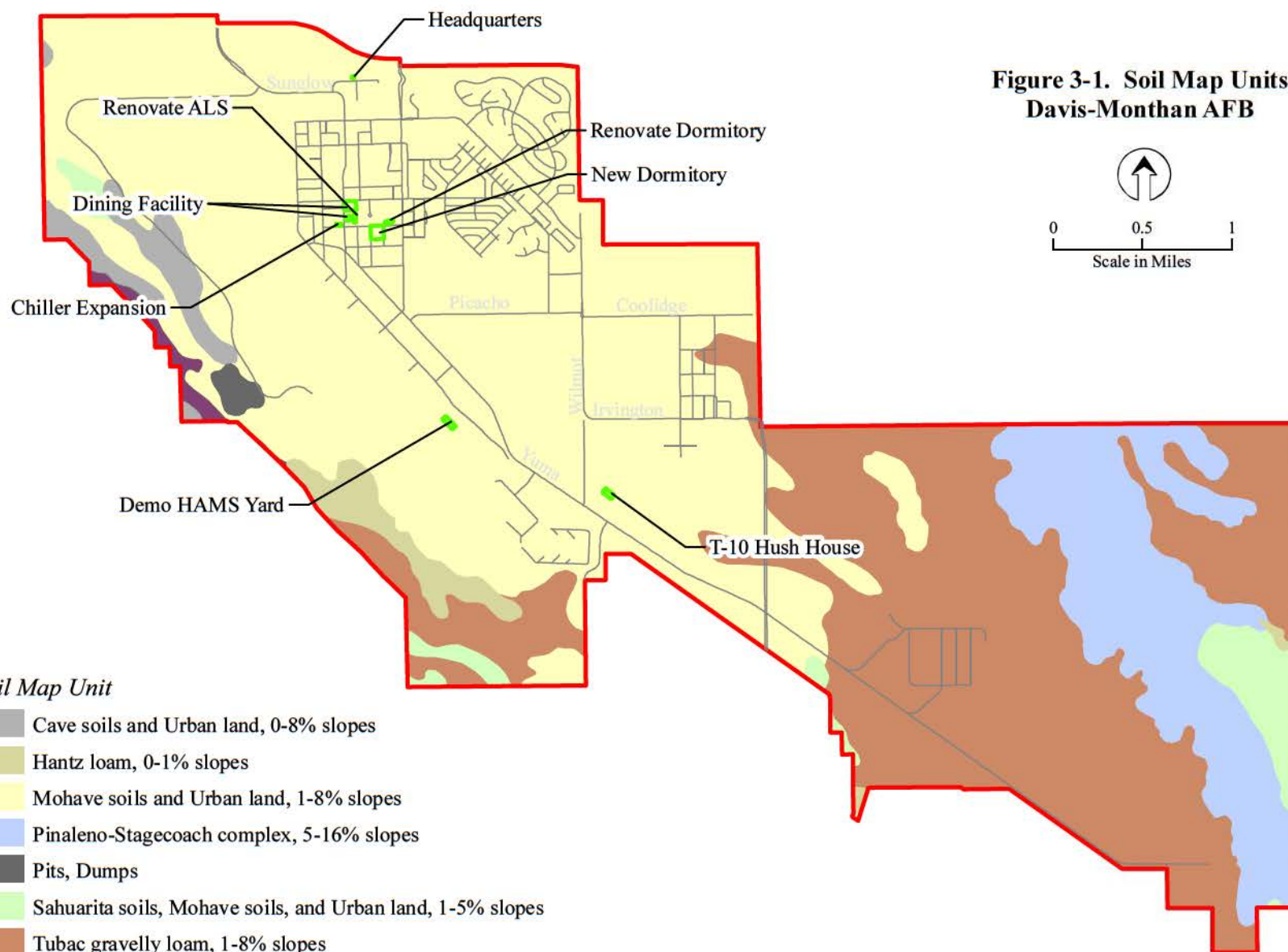
water and wind erosion is slight. The primary limitation of this soil type to development is the relatively shallow depth to caliche, which limits excavation for building foundations.

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. In these areas, however, the underlying and interspersed soils retain many of the characteristics of the original soils associated with the map unit. This unit is well suited for development.

Hantz loam, 0 to 1 percent slopes. Formed in mixed alluvium, Hantz loam is a very deep, well-drained soil found in relatively level swales on alluvial fans and floodplains. The surface layer is typically brown loam about 5 inches thick. The subsurface layer is grayish brown clay loam and is 7 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.

Mohave soils and Urban land, 1 to 8 percent slopes. Mohave soils are found on broad, gently sloping fan terraces shallowly dissected by ephemeral drainageways. They are formed in mixed alluvium and are very deep and well drained. The surface layer is about 3 inches thick and is a yellowish brown loam. The 3-inch-thick subsurface layer is brown sandy loam. The upper 5 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. Loam forms the substratum to a depth of 60 inches or more. Permeability of the Mohave soils 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. The primary limitations are the moderate shrink-swell character of the Mohave soil and dustiness in disturbed areas.

Pinaleno-Stagecoach complex, 5 to 16 percent slopes. The Pinaleno-Stagecoach complex is found on strongly sloping fan terraces. The complex is 40 percent Pinaleno very cobbly sandy loam; 35 percent Stagecoach very gravelly sandy loam; and 25 percent talus, rubble, and small areas of mixed soils. The primary limitation of this soil complex for development is the percent slope and the high lime content of the Stagecoach soils.



Source: NRCS Soil Data Mart

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Pinaleno soils are typically located on crests and shoulders that have 5 to 10 percent slope. The soil is very deep and well drained and is formed in mixed alluvium. The surface is typically composed of 30 percent cobble and stones and 20 percent gravel. The surface layer, which is about 2 inches thick, is brown, very cobbly, sandy loam. The upper 28 inches of the subsoil are reddish brown and extremely cobbly, sandy clay loam. The lower 30 inches are 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, and the hazard of wind erosion is very slight.

Stagecoach soils are found on shoulders and backslopes that have 5 to 16 percent slopes. The soil 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 10 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 or 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.

Pits and Dumps. The pits and dumps map unit is found on hills and mountains with slopes ranging from 0 to 100 percent. The general profile of the unit is 40 percent open pit mines, 20 percent extremely stony waste rock dumps, 15 percent mine-related landscape and facilities (tailing impoundments, equipment yards, dike-enclosed areas, etc.), and 10 percent sanitary landfills and pits for source materials. Primary limitations to urban development on this soil unit include slope; wind erosion; seepage; and sheet, rill, and gully erosion.

Sahuarita soils, Mohave soils, and Urban land, 1 to 5 percent slopes. The soil map unit is found on gently sloping fan terraces. Characteristics of Mohave soils and Urban land are described above. Sahuarita soils are very deep, well-drained soils formed in mixed alluvium. The surface is typically covered by 35 to 55 percent gravel, and the surface layer is light yellowish brown, very gravelly fine sandy loam to a depth of 3 inches. Subsoil is light yellowish brown fine sandy loam 25 inches thick and the buried subsoil below is brown loam 17 inches thick and brown very gravelly sandy clay loam 15 inches thick. Sahuarita soils are calcareous throughout, and common fine lime filaments are found in the buried subsoil. The soils have moderate permeability in the upper part and moderately slow permeability in the lower part, moderate available water capacity, and slow to medium runoff (runoff can be rapid in shallow rills and deep gullies); the hazard from water erosion is slight, and wind erosion hazard is very slight. This soil is moderately well suited for urban development, with the only limitations due to the moderate shrink-swell potential of the Mohave component and general dustiness of the unit.

Tubac gravelly loam, 1 to 8 percent. Tubac gravelly loam is found on broad, gently sloping fan terraces, shallowly dissected by ephemeral drainageways. The soil is very deep and well drained and is formed in mixed alluvium. The surface is typically covered by 25 percent gravel and 5 percent cobble, with a brown to dark brown gravelly loam approximately 2 inches thick; in some areas, the surface is covered in coarse sandy loam. The subsurface is reddish brown and pinkish gray loam 12 inches thick. The first 17 inches of subsoil is reddish brown clay, with the lower portion of the subsoil reddish brown and brown gravelly sandy clay loam to a depth of 60 inches or more. Tubac gravelly loam can be effervescent to the surface in places, and many soft masses of lime can be found in the substratum and lower part of the subsoil. The soil has slow permeability, available water capacity is moderate, runoff is medium, and erosion hazards from both wind and water are slight. The primary limitation for urban development on the Tubac gravelly loam comes in the form of moderate 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 facilities.

Yaqui fine sandy loam, 1 to 3 percent. Yaqui fine sandy loam is found on gently sloping alluvial fans. The soil is very deep, well drained, and formed in mixed alluvium. The surface layer is typically strong brown fine sandy loam to a depth of approximately 4 inches (in some areas, the surface layer can be loam or very fine sandy loam), with a subsoil of brown to dark brown sandy clay loam 27 inches thick. Below this layer is a buried subsoil of yellowish red clay loam 12 inches thick over pink gravelly loam to a depth of 60 inches or more. Yaqui fine sandy loam is calcareous throughout, and fine lime filaments can be found in the buried subsoil. The soil has moderate permeability to a depth of 31 inches, and permeability becomes moderately slow below this point. Available water capacity is high, runoff is generally slow except when concentrated, water erosion hazard is slight, and wind erosion hazard is moderately high. Yaqui fine sandy loam is subject to rare very brief periods of flooding during prolonged, high-intensity storm events. Primary limitations to urban development include flooding and a potential hazard of wind erosion in disturbed areas.

3.1.3 Topography

The general topography of the Sonoran Desert is defined by numerous short southeast to northwest trending fault-block mountain ranges that rise abruptly from a smooth, gently sloping desert valley floor (Natural Resources Conservation Service 2006). The terrain on Davis-Monthan AFB is predominantly flat and slopes downward from the southeast to the northwest. Elevations on the Base range from 2,550 feet above mean sea level on the west side to 2,950 feet on the east side. Only two areas located on the Base have any significant slope: the road cut for Kolb Road as it passes through the Base and the Atterbury Wash in the eastern part of the Base.

Elevations (in feet above mean sea level) and topography of the project areas are:

- New dormitory project area: slopes from 2,640 in southeast to 2,636 in northwest.
- Dining facility project area: gradually slopes from 2,630 in southeast to 2,628 in northwest.
- Chiller system project area: elevation 2,632 at facility, lines vary by location and range from 2,622 in the northwest part of the Base to 2,666 in the southeast part of the developed area.
- Airman Leadership School project area: slightly slopes from 2,634 in south to 2,632 in north.
- Hush house project area: gradually slopes from 2,730 in southeast to 2,726 in northwest.
- 214 RG headquarters facility project area: elevation 2,614; mostly flat with a very slight slope from southwest to northeast.
- HAMS yard project area: slopes from 2,682 in southeast to 2,678 in northwest.
- Dormitory renovation project area: 2,642; mostly flat with a very slight slope from east to west.
- Pavement plan project area: elevations vary by road and correspond to the range of elevations at the Base.

3.2 WATER RESOURCES

Water resources include surface water, groundwater, and floodplains. Surface water resources include lakes, rivers, and streams and provide economic, ecological, recreational, and human health benefits. Groundwater includes the subsurface hydrologic resources of the physical environment, which is commonly used as a source of water supply. 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, groundwater recharge, and habitat for many plant and animal species.

3.2.1 Surface Water

Davis-Monthan AFB is located in the Rillito subwatershed, which is part of the Santa Cruz River watershed. The Santa Cruz River is the primary drainage in the watershed, and it generally flows due north through the western side of the city of Tucson, approximately 2 miles west of the Base. Major tributaries of the Santa Cruz River in the Rillito subwatershed and the vicinity of the Base are the Rillito River, Julian Wash, and Pantano Wash. The Pantano Wash is the closest tributary and is located about 0.5 mile northeast of the Base. It drains into the Rillito River, which drains into the Santa Cruz River.

The climate of the region is characterized as warm and semi-arid. An average of approximately 12 inches of precipitation falls in the Tucson area on an annual basis, with about half of this total falling between July and September in the form of scattered showers or frequent isolated thunderstorms during the monsoon period (Davis-Monthan AFB 2006). These events often result in overflows of the typically dry washes and sometimes lead to localized flash flooding. More gentle rains are typical between December and March. Due to the small amount and infrequent nature of precipitation in the region, the local drainages are primarily ephemeral, flowing only during and immediately following rainstorms.

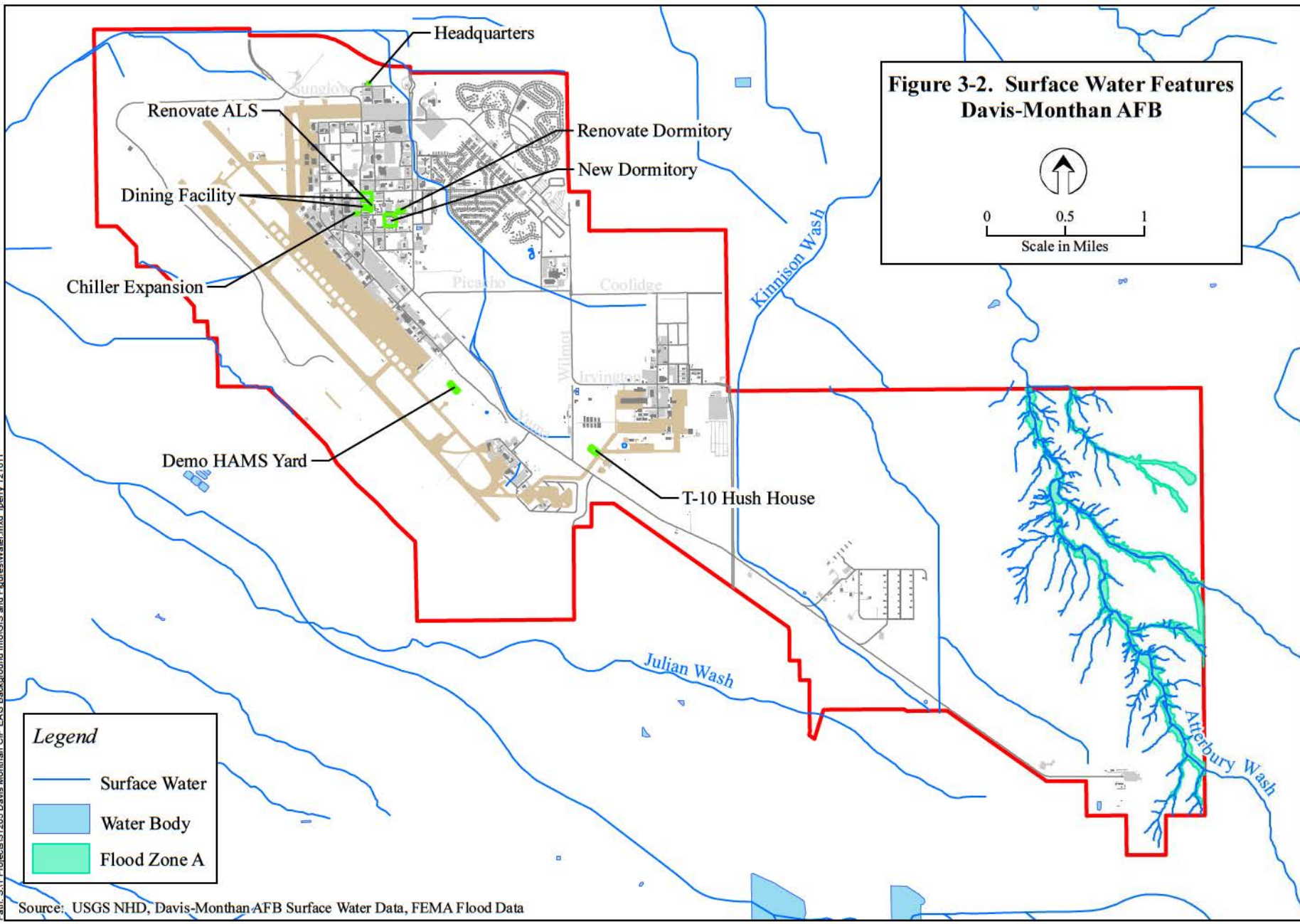
Surface drainage on most of Davis-Monthan AFB has been modified to comprise a series of ditches, channels, and culverts that ultimately discharge into the Santa Cruz River (engineering-environmental Management, Inc. 2004). No perennial drainages are located on the Base, and the main natural surface water feature is Atterbury Wash, which is an ephemeral wash in the eastern portion of the Base (Figure 3-2). The storm water drainage system consists of 11 drainage areas (Table 3-1) and 16 total outfalls (an outfall is defined as a point source that discharges storm water to waters of the U.S.). Most of the project areas are in drainage area 001; the HAMS yard project area is in drainage area 001 and 010. The hush house project area is in drainage area 002A. The drainage areas divert surface runoff to either a detention basin located about 1 mile west of the Base, the Tucson Diversion Channel, a man-made lake at Lakeside Park, or the Pantano Wash.

Table 3-1. Characteristics of Drainage Areas

<i>Drainage Area</i>	<i>Estimated Drainage Area (acres)</i>	<i>Estimated Impervious Area (acres)</i>	<i>Percent Impervious</i>
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: engineering-environmental Management, Inc. 2004

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**Figure 3-2. Surface Water Features
Davis-Monthan AFB**

Legend

- Surface Water
- Water Body
- Flood Zone A

Source: USGS NHD, Davis-Monthan AFB Surface Water Data, FEMA Flood Data

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The western portion of the Base, where most of the project areas are located, drains toward the Tucson Diversion Channel, which discharges into the Ajo Detention Basin and eventually the Santa Cruz River further west (engineering-environmental Management, Inc. 2004). The Tucson Diversion Channel generally follows the northern boundary of the Base along Golf Links Road and conveys flow west to the Ajo Detention Basin at the intersection of Ajo Way and Country Club Road. The basin detains runoff from a 17.7 square-mile area that encompasses urbanized areas of Tucson and the Base (Postillion et al. 2007). The basin is a multi-purpose facility that includes recreation areas (ball fields), wetland and riparian enhancement, and water harvesting for irrigation of ball fields and riparian areas.

The eastern portion of the Base drains toward Atterbury Wash, which flows into Lakeside Lake, a man-made lake located 1.5 miles northeast of the Base, and eventually to the Santa Cruz River via Pantano Wash and the Rillito River. Lakeside Lake collects water from storm water runoff and groundwater. The lake is designated for aquatic and wildlife uses as a warmwater fishery and for partial body contact. Lakeside Lake is considered to be impaired by the ADEQ and EPA, but it is not formally listed on the State's CWA 303(d) list. Pollutants of concern are ammonia, chlorophyll a, dissolved oxygen, nitrogen, phosphorus, and unsuitable pH levels (EPA 2008). Probable sources include internal nutrient recycling, natural sources, and municipal point source discharges. Water quality of most drainages near the Base, including the reach of the Santa Cruz River through Tucson, is good, and no other drainages near the Base are considered impaired.

3.2.2 Groundwater

The groundwater basins underlying the Tucson Basin and surrounding mountain ranges are found below an impermeable layer of metamorphic, sedimentary, and intrusive igneous rock that extends up to 7,000 feet below the surface (Natural Resources Conservation Service and University of Arizona 2007). Superficial deposits below the basin are primarily stream channel and terrace deposits of the Fort Lowell Formation, the Tinaja beds, and the Pantano Formation. The thickness of the deposits varies throughout the basin. The primary water source for the Base is groundwater withdrawn from the Tinaja beds and the Fort Lowell Formation (Davis-Monthan AFB 2008). The Tinaja beds are a series of beds extending several hundred feet deep below the Fort Lowell Formation and are composed of Catalina gneiss, with volcanics deeper below the ground surface. The deposits range from sandy gravel along the basin's margins to gypsiferous clayey silt and mudstone in the center of the basin. The Fort Lowell Formation is the uppermost basin-fill unit, just below the alluvium deposits, and is considered the main regional aquifer (Barker 2009). It ranges from 300 to 400 feet thick and is composed of unconsolidated gravel, sands, and clayey silt. The Pantano Formation is below the Tinaja beds and is several thousand feet thick.

Depletion of local aquifers is a concern in the Tucson Basin as water levels have declined an estimated 50 to 100 feet due to the high level of extraction combined with low recharge rates (Davis-Monthan AFB 2008). Groundwater depletion is expected to continue for the foreseeable future due to continued urbanization of the Tucson area. The Base relies on groundwater as its primary water supply, and the volume of water withdrawn is more than the amount replaced each year through natural recharge. The groundwater supply system at the Base is described in Section 3.11, Infrastructure.

3.2.3 Floodplains

The Federal Emergency Management Agency (FEMA) has categorized most of the Base as Zone D, which means flood hazards have not been identified, but are possible. The June 2011 update to the FEMA flood hazard maps classifies the Atterbury Wash and its floodplain (ranges from about 100 to 800 feet wide) on the east side of the Base as Zone A (special flood hazard area, no base flood elevation determined) (Figure 3-2) (FEMA 2011). The extent of Zone A appears to correlate with the results of a floodplain analysis of Atterbury Wash on Davis-Monthan AFB completed in 1998 by Science Applications International Corporation. 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 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 (Science Applications International Corporation 1998).

Localized flooding has occurred at the Base during large rain events as a result of storm drains with inadequate capacity (Davis-Monthan AFB 2008). Flooding is not expected in the building or demolition project areas, but may occur along roads or in adjacent areas where the storm drainage system may back up during large rain events.

3.3 BIOLOGICAL RESOURCES

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, special-status species are those that are: 1) listed as threatened or endangered by the USFWS, 2) wildlife of special concern in Arizona (WSC), 3) plants protected under the Arizona Native Plant Law, and 4) federal species of concern managed by the AZGF. Other sensitive species include migratory birds or raptors identified by the USFWS as “migratory nongame birds of management concern in the United States,”

raptor species on the Base monitored by AZGF, and those listed as priority species by Partners in Flight.

3.3.1 Vegetation Communities

Davis-Monthan AFB lies in the Sonoran Desert in 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 is characteristic of the Sonoran Desert. The flora is adapted to extremely high temperatures, high exposure to solar radiation, and low precipitation.

Lands at the Base are described as two cover types: developed and undeveloped. These vegetation communities are mapped as improved and unimproved in the *Integrated Natural Resources Management Plan* (Davis-Monthan Air Force Base 2008). Developed lands encompass approximately 60 percent of the Base and include developments (e.g., buildings, roads, and airfields), landscaped areas, and mowed areas. Undeveloped lands cover the remaining 40 percent of the Base and consist of three natural plant communities: semi-desert grassland, Sonoran desertscrub, and Sonoran desert riparian (Davis-Monthan Air Force Base 2008). The landscaped, mowed, semi-desert grassland, Sonoran desertscrub, and Sonoran desert riparian vegetation communities are described in further detail below.

Landscaping is not uniformly developed on the Base and is most common in areas of high visibility that are sensitive to the Base image and in developed areas. The developed area of the Base is actively landscaped with a variety of native and nonnative grasses, shrubs, and trees, such as saguaro (*Carnegiea gigantea*), ocotillo (*Fouquieria splendens*), palo verde (*Cercidium* spp.), desert willow (*Chilopsis linearis*), and various cacti. Mowed grassland is found next to the airfield, base housing, AMARG area, munitions storage, recreational fields, golf course, and roadways. It is maintained at a height of 1 to 3 inches and is composed primarily of Lehmann's love grass (*Eragrostis lehmanniana*) (Davis-Monthan Air Force Base 2008). Additionally, ruderal grassland habitats have developed in areas used by the military. These areas are often compacted by off-road vehicle use and vegetation is sparse or absent.

The semi-desert grassland community is dominated by perennial grass-scrub species. Pure stands of this community are absent from the Base because shrubs, cacti, and other forbs have replaced the original grassland species. Those areas on the Base where grasses constitute a substantial portion of cover exhibit characteristics of this community (Davis-Monthan Air Force Base 2008). Typical species occurring in this vegetation community include grama (*Bouteloua rothrockii*, *B. californica*, *B. radicata*, *B. filiformis*, *B. parryi*, and *B. barbata*), three-awns (*Aristida hamulosa*, *A. wrighti*, *A. ternipes*, and *A. aristidoides*), false grama (*Cathastecum erectum*), ganglehead grass (*Heteropogon contortus*), and windmill grasses (*Chloris* spp.). Buffelgrass (*Pennisetum ciliare*) is a common

invasive plant found in semi-desert grassland and other vegetation communities in the Sonoran Desert.

The Sonoran desertscrub community is the most common community in the Sonoran Desert, but is less common on the Base because of the existing developed areas and extent of previously disturbed areas. The Sonoran desertscrub community is divided into six subdivisions; the Base is located primarily in the Arizona Upland subdivision. Due to the proximity, similarity of habitat, and topography, many elements of the nearby Lower Colorado Valley subdivision are evident as well. Generally, the Arizona Upland subdivision occurs in the more mountainous regions and is the highest and coldest part of the Sonoran Desert. Due to higher rainfall, plant density and diversity are the greatest in this subdivision. Typical plant species include creosote bush (*Larrea tridentata*), foothill palo verde (*Cercidium microphyllum*), staghorn cholla (*Opuntia versicolor*), Engelmann prickly pear (*O. engelmannii*), barrel cactus (*Echinocactus wislizenii*), saguaro, ocotillo, Anderson lycium (*Lycium andersonii*), lotebush (*Condalia lycioides*), desert hackberry (*Celtis pallida*), and velvet mesquite (*Prosopis juliflora* var. *velutina*).

The Lower Colorado Valley subdivision is the hottest and driest subdivision; it occurs in low, broad valleys with few scattered, small mountains that are mostly barren. The vegetation is distinguished from the Arizona Upland subdivision by its simple floristic composition, especially on gravelly and sandy plains, which are dominated by creosote bush and white bursage (*Ambrosia dumosa*). The diversity and abundance of plant species increases along drainages. Common plant species include burro brush (*Hymenoclea monogyra*), seep willow (*Baccharis glutinosa*), Anderson lycium, and catclaw (*Acacia greggii*). Herbaceous annuals are generally abundant after significant winter rains.

The Sonoran Desert Riparian community is found on the Base primarily along Atterbury Wash and comprises a relatively small proportion of the total acreage of the Base. Typical species found in the riparian habitat include tomatillo (*Lycium brevipes*), catclaw, desert hackberry, mesquite, desert broom (*Baccharis salicifolia*), seep willow, and mule fat (*B. viminea*). Because of the greater diversity and density of vegetation found in riparian communities, this community provides habitat for many species (Davis-Monthan Air Force Base 2008).

The project areas are located in previously disturbed areas that are currently landscaped (new dormitory, dining facility, chiller system, Airman Leadership School, and dorm renovation) or that are actively mowed or disturbed (hush house, 214 RG headquarter facility, and HAMS yard). The improvements associated with the pavement plan would be Base-wide in previously disturbed areas that include paved roads and parking areas. The natural vegetation communities described above do not occur in the project areas.

3.3.2 Common Wildlife

The Base is known to have a diverse wildlife community with more than 120 avian species; numerous mammalian, reptilian, and amphibian species; and hundreds of invertebrate species (Davis-Monthan Air Force Base 2008). This diverse wildlife community is typical of the Sonoran Desert, and the species are typically adapted to extreme temperatures and low precipitation. Species occurring on the Base are generally adapted to urban environments because more than half of the Base is composed of the landscaped and mowed vegetation community. Grassy and landscaped areas are often watered, attracting a diversity of wildlife species, particularly birds.

The developed and natural, undeveloped areas within the Base support a wide variety of resident, migratory, and transient species. Common species include cactus wren (*Campylorhynchus brunneicapillus*), curve-billed thrasher (*Taxostoma curvirostre*), Gambel's quail (*Callipepla gambelii*), greater roadrunner (*Geococcyx californianus*), house sparrow (*Passer domesticus*), common raven (*Corvus corax*), and Inca dove (*Columbina inca*). Raptors, such as great-horned owl (*Bubo virginianus*), Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Buteo swainsoni*), and American kestrel (*Falco sparverius*), commonly nest on the Base and prey on rodents and reptiles. Some of the more common mammals include Mexican free-tailed bat (*Tadarida brasiliensis mexicana*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), and desert cottontail (*Sylvilagus audubonii*). Common reptiles indigenous to the area include the regal horned lizard (*Phrynosoma solaris*), eastern fence lizard (*Sceloporus undulatus*), gopher snake (*Pituophis melanoleucus*), and western diamondback rattlesnake (*Crotalus atrox*) (Davis-Monthan Air Force Base 2008).

3.3.3 Special-Status Species

Special-Status Plant Species

The Pima pineapple cactus (*Coryphantha scheeri robustispina*) is listed as endangered under the ESA and is the only federally listed plant that has the potential to occur on the Base. This species occurs in alluvial valleys or hillsides in rocky to sandy or silty soils in Sonoran desertscrub or semi-desert grassland communities. This cactus occurs in Pima County; however, it was not located on the Base during surveys conducted in 1990 (Davis-Monthan Air Force Base 2008). Subsequent surveys conducted in northern, western, and southern portions of the Base also did not locate the cactus (Davis-Monthan Air Force Base 2009c). Habitat suitable to support this species does not occur in any of the project areas.

Plants protected by the Arizona Native Plant Law include the saguaro, hedgehog cactus, and pincushion cactus. Many of these species occur on the Base in both native and landscaped vegetation communities and may occur within the project areas. The Arizona Department of Agriculture

designated giant saguaro and crested saguaro (*Carnegie giganteus* and *C. giganteus* form *acristata*) as highly safeguarded (Arizona Department of Agriculture 2011). Highly safeguarded plants are threatened for survival or are in danger of extinction, and the plants and their parts (e.g., fruits, seeds) are protected by the State.

Special-Status Wildlife Species

Base Setting. The USFWS and AZGF identify 41 special-status wildlife species with potential to occur in Pima County, Arizona, including 27 listed under the ESA and 14 that are considered WSC (AZGF 2011, USFWS 2011) (Appendix B). Of these, eight species have the potential to occur on the Base: desert tortoise (*Gopherus agassizii*), Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*), American peregrine falcon (*Falco peregrinus anatum*), western burrowing owl (*Athene cunicularia hypugaea*), cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), loggerhead shrike (*Lanius ludovicianus*), lesser long-nose bat (*Leptonycteris curasoae yerbabuenae*), and cave myotis (*Myotis velifer*). Table 3-2 provides an overview of the habitat requirements of these species and identifies where they might occur on the Base. Discussions of each species' presence on the Base and in each of the project areas are provided after the table.

Table 3-2. Special-Status Wildlife Species Potentially Occurring at Davis-Monthan AFB

<i>Common Name Scientific Name</i>	<i>Federal Status</i>	<i>State Status</i>	<i>General Habitat Requirements</i>	<i>Occurrence at the Base</i>
Desert tortoise (<i>Gopherus agassizii</i>) Sonoran Desert region	C	WSC	Rocky outcrops, hillsides, washes, and creosote scrub in the Sonoran and Mojave deserts	Not known on to occur on the Base, but known to occur within 2 miles of the Base (Davis-Monthan Air Force Base 2008). Suitable habitat is present in the native vegetation communities in the eastern portion of the Base.
Tucson shovel-nosed snake (<i>Chionactis occipitalis klauberi</i>)	C	—	Sandy washes and dunes of arid deserts; prefers areas with scattered mesquite and creosote bush	Not known to occur on the Base. Survey conducted in the northern, western, and southern portions of the Base did not detect this species (Davis-Monthan Air Force Base 2009c). Suitable habitat is present in the native vegetation communities in the eastern portion of the Base.
American peregrine falcon <i>Falco peregrinus anatum</i>	SC	WSC	Steep, sheer cliffs overlooking woodlands, riparian areas, or other habitats supporting abundant avian prey species	Occurs as forager. No cliff habitat available for nesting habitat.

Common Name Scientific Name	Federal Status	State Status	General Habitat Requirements	Occurrence at the Base
Western burrowing owl <i>Athene cunicularia hypugaea</i>	SC	WSC	Variable in open, well-drained grasslands, steppes, deserts, prairies, and agricultural lands; often associated with burrowing mammals; may occur in developed areas	Occurs as breeder. At least 50 known burrows are present on the Base (Davis-Monthan Air Force Base 2008). Suitable habitat occurs in open and ruderal habitats on the Base.
Cactus ferruginous pygmy-owl <i>Glaucidium brasilianum cactorum</i>	SC	WSC	Nests in saguaro cactus cavities excavated by other species	Not known to occur. Suitable habitat is present in the native vegetation communities in the eastern portion of the Base. Although saguaro cactus may also be present in the landscaping on the Base, landscaped areas lack contiguous foraging habitat to support the owl. Presence of the owl is unlikely in areas landscaped with saguaro cactus.
Loggerhead shrike <i>Lanius ludovicianus</i>	SC	—	Small to mid-sized trees in open or brush areas with short to mid-level grasses	May occur. Suitable nesting and foraging habitat is present in brushy areas with short grass.
Lesser long-nosed bat <i>Leptonycteris curasoae yerbabuenae</i>	LE	WSC	Desertscrub habitat with agave and columnar cacti present as a food source; roosts in mines, caves, and old buildings.	May occur as forager or use structures for day roosts. No suitable maternity roosting habitat. Food resources available in desertscrub habitat with agave and columnar cacti in the eastern portion of the Base.
Cave myotis <i>Myotis velifer</i>	SC	—	Desertscrub of creosote, brittlebush, palo verde, and cacti; roosts in caves, tunnels, mineshafts, under bridges, and sometimes in buildings within a few miles of water	May occur as forager. Suitable roost sites near water are not present at the Base. Food resources available in desertscrub habitat in the eastern portion of the Base.

Notes:

Federal Status: LE = List Endangered, C = Candidate, SC = Species of Concern (02-28-1996)

State Status: WSC = Wildlife of Special Concern in Arizona

Source: Davis-Monthan Air Force Base 2008

The **desert tortoise** prefers rocky hillsides, outcrops, and the banks of desert washes as burrow sites. Because the Base is predominantly flat, suitable habitat is generally absent; however, native vegetation communities, including Sonoran desert scrub, semi-desert grassland, and Sonoran riparian in and adjacent to the Atterbury Wash, could provide potential burrow sites. Desert tortoises have not been sighted on the Base, but they have been found within 2 miles in the Tucson Valley.

The **Tucson shovel-nosed snake** inhabits sandy washes and dunes of arid deserts with scattered mesquite and creosote bush vegetative cover. This species has not been detected in past surveys (Davis-Monthan Air Force Base 2008, 2009c). However, soft, sandy loams with sparse gravel in creosote-mesquite habitat in the eastern portion of the Base provide suitable foraging and breeding habitat.

The **American peregrine falcon** is known as one of the fastest flying birds of prey, feeding almost entirely on birds that it kills while in flight. Peregrine falcons nest primarily on high, sheer cliffs that overlook a variety of habitats and support an abundance of avian prey species. Suitable nesting habitat does not occur on the Base, but is present in the Rincon Mountains east of the Base. Foraging habitat is present throughout the Base in open developed areas and in undeveloped, natural vegetation communities.

Western burrowing owls can be found in pristine or ruderal open, short grass and shrubland habitats that support burrowing mammals. Owls do not excavate their own burrows; instead they occupy the abandoned burrows of other wildlife species, generally ground squirrels (*Spermophilus* spp.) or coyote (*Canis latrans*). The owl feeds primarily on insects, but also takes small mammals, birds, reptiles, and carrion. The owl is known to breed on the Base and approximately 50 burrows are active from year to year (Davis-Monthan Air Force Base 2008).

Cavities within saguaro cactus provide suitable nesting habitat for the **cactus ferruginous pygmy-owl**. However, saguaro cacti in the developed portion of the Base are generally part of the landscaping, and contiguous foraging habitat is not available. It is unknown if this species occurs on the Base. Suitable habitat occurs in the Sonoran desertscrub and riparian vegetation communities of the undeveloped portion of the Base where columnar cacti are present.

The **loggerhead shrike** prefers open habitats, such as grasslands, agricultural fields, and riparian areas, where scattered shrubs, trees, posts, fences, utility lines, or other perches are available. They nest in shrubs or small trees and forage for small mammals and reptiles. On the Base, this species may breed and forage in semi-desert grassland, Sonoran desertscrub, and Sonoran riparian vegetation communities in undeveloped areas, as well as open grass and shrublands adjacent to developed areas.

The **lesser long-nosed bat** roosts in caves, abandoned mines, and tunnels and is found in the Rincon Mountains just east of the Base. Roost sites suitable for maternity colonies are not found on the Base. Aircraft and aircraft hangars could provide potential day roost sites; however, high daytime temperatures within the aircraft or the hangars would preclude use for daytime and maternity roosting sites. This species forages on the nectar of columnar cacti and agave and may occur as a transient forager in areas with columnar cacti and agave. These plant species occur primarily in landscaped areas of the Base and provide very little preferred foraging habitat for the bat. Limited suitable foraging habitat may be present in the natural vegetation communities on the eastern portion of the Base.

The **cave myotis** roosts in caves, tunnels, mineshafts, and under bridges within a few miles of water and sometimes roosts in buildings. The bat's preferred foraging habitat is in habitats containing creosote bush, brittlebush, palo verde, and cacti. This species is known to occur in the Tucson area within 2 miles of the Base. Suitable roosting habitat near water is absent from the Base; however, this species likely uses open habitats on the Base for foraging.

Local Setting. Of the eight special-status wildlife species that may occur on the Base, only two species, burrowing owl and loggerhead shrike, have potential to occur in the project areas based on the habitats present. Suitable habitat is not present for any of the other special-status wildlife species. Table 3-3 summarizes the habitats in each of the project areas and identifies the special-status species with potential to occur.

Table 3-3. Special-Status Wildlife Species with Potential to Occur in the Project Areas

<i>Project Area</i>	<i>Habitat Present</i>	<i>Species</i>
1. New Dormitory	Developed: actively used buildings with secondary landscaping and mowed areas; mowed area has a saguaro cactus	No suitable roosting or nesting habitat for any special-status species.
2. Dining Facility	Developed: buildings, paved areas, secondary landscaping.	No suitable roosting or nesting habitat for any special-status species.
3. Chiller System	Developed: paved lot, small building	No suitable roosting or nesting habitat for any special-status species.
4. Airman Leadership School	Developed: buildings, paved areas, secondary landscaping.	No suitable roosting or nesting habitat for any special-status species.
5. Hush House	Undeveloped, heavily disturbed: compacted and actively disturbed area. Ruderal, open areas are adjacent.	Burrowing owl habitat within and adjacent to the project area.
6. 214 RG Headquarters Facility	Undeveloped, heavily disturbed: open, grassland area with some shrubs and trees adjacent.	Burrowing owl and loggerhead shrike habitat within and adjacent to the project area.
7. HAMS Yard	Developed: pavement with ruderal, open areas adjacent.	Burrowing owl habitat in adjacent open ruderal and grassland areas.

<i>Project Area</i>	<i>Habitat Present</i>	<i>Species</i>
8. Dormitory Renovation	Developed: buildings, paved areas, secondary landscaping.	No suitable roosting or nesting habitat for any special-status species.
9. Pavement Plan	Developed: paved parking lots and roads with adjacent open areas and/or scrublands possible.	Burrowing owl or loggerhead shrike habitat near roads adjacent to open ruderal and grassland areas.

Other Sensitive Wildlife Species

Raptors, which are protected under the Migratory Bird Treaty Act, generally nest in trees and shrubs and forage for bird, mammal, and reptile prey in many urban and natural habitats. Suitable habitat occurs in both the developed and undeveloped portions of the Base. Raptors known to occur on the Base include ferruginous hawk (*Buteo regalis*), Swainson's hawk, Cooper's hawk, and great horned owl. Additionally, Swainson's hawk, Cooper's hawk, and great horned owl are known to nest on the Base and are currently monitored by the AZGF (Davis-Monthan Air Force Base 2008). Suitable nesting habitat for these raptor species is not present in any of the project areas.

The Arizona Partners in Flight Conservation Plan identifies bird species that appear to be sensitive to loss of undisturbed native habitat associated with urbanization and that should be monitored in the Arizona Uplands vegetation subdivision. Of those listed in the plan, only Gambel's quail and greater roadrunner are likely to occur on the Base. The Conservation Plan also lists bird species that are indicators of Sonoran desertscrub habitat health, including Costa's hummingbird (*Calypte costae*), gilded flicker (*Colaptes chrysoides*), rufous-winged sparrow (*Peucaea carpalis*), Le Conte's thrasher (*Toxostoma lecontei*), and purple martin (*Progne subis*) (Latta et al. 1999). Nesting and foraging habitat for these species is abundant regionally. Due to the abundance of nesting and foraging habitat for these species, they are not considered for further evaluation.

3.3.4 Wetlands

A wetland delineation conducted in 1996 determined that the ephemeral drainages associated with the Atterbury Wash fall under the USACE's jurisdiction as waters of the U.S. (U.S. Army Corps of Engineers 1996). This investigation did not delineate any wetlands on the Base. The storm water drainage system, which includes natural and man-made features, drains into waters of the U.S. and is regulated under Section 402 of the CWA.

A cursory review of 2008 aerial photography from Bing Maps and a reconnaissance-level site visit indicate that no suspect wetlands or other waters occur in any of the project areas.

3.4 AIR QUALITY

The climate of Pima County and southeastern Arizona varies with elevation; the mountain ranges experience higher amounts of precipitation and lower temperatures than the low desert regions. Average maximum and minimum temperatures at the Tucson International Airport (elevation 2,560 feet), approximately 5 miles southwest of the Base, 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 in Tucson is 12 inches, compared with 31 inches at the higher elevations. Average snowfall is slightly more than 1 inch per year in Tucson and 78 inches per year at the ranger station (Arizona Board of Regents 2004).

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 lightning strikes and occasional flash flooding.

Tucson experiences an average of 193 clear days, 91 partly cloudy days, and 81 cloudy days (53 of the 81 cloudy days are also considered rainy days) per year. Temperatures above 90°F occur 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 2007, Western Regional Climate Center 2004).

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 accumulation of GHG emissions in the atmosphere has been attributed to global warming because GHGs tend to trap heat in the atmosphere, which in turn heats the surface of the Earth. Human activities that involve combustion of fossil fuels (i.e., fuels containing carbon, such as wood, coal, gasoline, and diesel) produce GHGs, primarily carbon dioxide (CO₂), methane (CH₄), and NO₂, and contribute increased GHGs in the atmosphere. Fossil fuel combustion from electricity use and transportation are the principal GHG emissions sources in Arizona, and they account for nearly 80 percent of the State's gross GHG emissions (Arizona Climate Change Advisory Group 2006). Use of other fossil fuels for residential, commercial, and industrial development account for about 11 percent of the State's gross GHG emissions, and agricultural activities and industrial processes each account for about 5 percent.

The significance of a pollutant concentration in a region or geographical area is determined by comparing it to NAAQS and/or state ambient air quality standards. Davis-Monthan AFB is in the Pima Intrastate air quality control region (AQCR 15), which is a federally delineated air basin that encompasses all of Pima County, Arizona. Pima County is currently in attainment (i.e., meeting

national standards) for all criteria pollutants (CO, NO₂, SO₂, PM₁₀, O₃, and Pb), but some areas of the county have reported exceedances of NAAQS. The Tucson metropolitan area is designated as a maintenance area for CO (65 FR 36353, June 8, 2000), and conformity requirements apply for CO in the metropolitan area due to its maintenance status. The *de minimis* threshold for CO is 100 tons per year; exceedance of this threshold triggers the need to conduct a conformity determination.

Regional emissions are monitored by PDEQ at several monitoring stations across the county, including at two stations north of Davis-Monthan AFB: 22nd/Craycroft and 22nd/Alvernon. The highest maximum 8-hour CO value was 1.1 parts per million at both sites in 2010 (PDEQ 2010). The highest maximum 8-hour ozone value at 22nd/Crayford was 0.066 parts per million in 2010. The average mean value for NO₂ at 22nd/Crayford was 11.6 parts per billion in 2010. The maximum 1-hour value for SO₂ at 22nd/Crayford was 14.0 parts per billion in 2010. CO concentrations tend to be highest during the morning and evening peak traffic hours, with lows during the day and night. Ozone concentrations tend to peak during the late afternoon. All monitored pollutants at the nearest monitoring stations to the Base were below the NAAQS in 2010.

The National Emissions Inventory estimates county- and state-wide emissions for stationary and mobile sources of air pollutants every 3 years based on locally provided data and EPA data. The latest inventory data available for Pima County are from 2008 and are presented in Table 3-4.

Table 3-4. Air Emissions Inventory for Pima County, Arizona Calendar Year 2008

<i>Source</i>	<i>Pollutant Emissions (tons per year)</i>				
	<i>CO</i>	<i>NO_x</i>	<i>PM</i>	<i>SO_x</i>	<i>VOC</i>
Point Sources	11,911	5,858	5,178	4,279	6,476
Nonpoint Sources	2,806	96	26,849	26	9,735
Highway Vehicles	105,673	14,334	696	133	13,070
Off-Highway Vehicles	49,161	5,636	910	123	4,230
Total	169,551	25,924	33,633	4,561	33,511

Source: EPA 2010

In 1999, Tucson violated the 24-hour PM₁₀ NAAQS due to natural high wind events and an extended period of low rainfall. As a result, the Pima County Department of Environmental Quality adopted a Natural Events Action Plan in 2002 to protect the public from airborne fine dust particles on days with high ambient levels of PM₁₀ by implementing Best Available Control Measures, notifying the public of elevated levels of PM₁₀, and increasing enforcement and educational measures. With the plan in place, the County currently follows the Exceptional Events Rule instituted by EPA on November 21, 2008, for exceedances of the standard. No PM₁₀ or CO exceedances were recorded in 2010 (PDEQ 2010).

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

Davis-Monthan AFB to be categorized as a “Synthetic Minor” source of hazardous air pollutants, 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. Since the permit was issued in 1998, the Base hazardous air pollutant 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 AFB 2011a).

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 basewide emissions inventory. Stationary sources at Davis-Monthan AFB 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. Table 3-5 summarizes the results of an emissions inventory for stationary sources at Davis-Monthan AFB for calendar year 2009 (Davis-Monthan AFB 2011a). In the table, particulate matter includes PM10 as a component of the total; NOx includes NO2 and other nitrogen compounds; and sulfur oxides (SOx) includes SO2 and other sulfur compounds. Because VOCs and NOx are precursors to the formation of O3 in the atmosphere, control of these pollutants is the primary method of reducing O3 concentrations in the atmosphere. The inventory also estimated GHG emissions from certain sources to be 7,923 metric tonnes of CO2-equivalent, which is less than the EPA reporting threshold of 25,000 metric tonnes (40 CFR 98).

Table 3-5. Baseline Emissions at Davis-Monthan AFB, Calendar Year 2009

	<i>CO</i>	<i>NOx</i>	<i>PM</i>	<i>SOx</i>	<i>VOC</i>
Stationary Sources	31.7	42.1	9.6	3.09	18.3

Source: Davis-Monthan AFB 2011a

Note: Emissions are in tons per year and are only a portion of the total emissions at the Base.

The primary sources of air emissions or pollutants in or near the project areas include:

- New dormitory project area: vehicle emissions and energy use for residential uses.
- Dining facility project area: vehicle emissions and energy use for dining and residential uses.
- Chiller system project area: primarily vehicle emissions and some energy use at existing chiller plant.
- Airman Leadership School project area: primarily energy use for existing building and vehicle emissions in vicinity.
- Hush house project area: none in project area, but vehicle and aircraft emissions nearby.

- 214 RG Headquarters facility project area: none in project area, but vehicle emissions and energy use nearby.
- HAMS yard project area: none in project area, but vehicle and aircraft emissions nearby.
- Dormitory renovation project area: primarily energy use for existing building and vehicle emissions in vicinity.
- Pavement plan project area: vehicle emissions.

3.5 NOISE

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, stationary or transient. Stationary sources are normally related to specific land uses, such as housing tracts or industrial plants. Transient noise sources move through the environment, either along established paths (e.g. highways, railroads, airports) or randomly. Responses to noise vary widely as a result of the type of noise and the characteristics of the sound source, as well as 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 different sounds contain different frequencies. Sound levels are easily measured, but the physical response to sound complicates the analysis of its effect on people. People judge the relative magnitude of sound sensation by subjective terms such as “loudness” or “noisiness.”

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 American National Standards Institute (1983). The dBA 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. Typical noise levels for common sources and the subjective impression of the noise are identified in Table 3-6.

Table 3-6. Noise Levels and Associated Effects for a Variety of Noise Types

<i>Noise Source at a Given Distance</i>	<i>A-Weighted Sound Level in Decibels</i>	<i>Subjective Impression</i>
Jet takeoff (50 feet)	140	Pain threshold
Civil defense siren (100 feet)	130	
Rock concert near stage	120	Uncomfortably loud
Train warning horn (90 feet)	110	
Heavy truck or motorcycle (25 feet)	90	Very loud
Garbage disposal (2 feet)	80	Moderately loud
Passenger car at 65 mph (25 feet)	70	
Vacuum cleaner (100 feet)	60	
Light traffic (100 feet)	50	Quiet
Bird calls	40	
Soft whisper (15 feet)	30	Very quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Sources: Beranek 1988 and U.S. Environmental Protection Agency 1971

The word “metric” is used to describe a standard of measurement. As used in environmental noise analysis, many different types of noise metrics exist. 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 EPA, the Federal Aviation Administration, and the Department of Housing and Urban Development as the accepted unit for quantifying human annoyance to general environmental noise.

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 results primarily from maintenance and shop activities, ground traffic movement, explosives detonation, occasional construction, and similar sources. The resultant noise is almost entirely restricted to the

Base itself and is comparable to noise levels 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 are used to determine compatible levels of noise exposure for various types of land use surrounding airports (Federal Interagency Committee on Urban Noise 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 3-3 depicts the baseline DNL 65 to 85 dB noise contours in 5 dB increments surrounding the Davis-Monthan AFB airfield. Table 3-7 presents the baseline land acreage exposed to noise levels greater than 65 dB (DNL).

Table 3-7. Noise Contour Acreage, Baseline Conditions

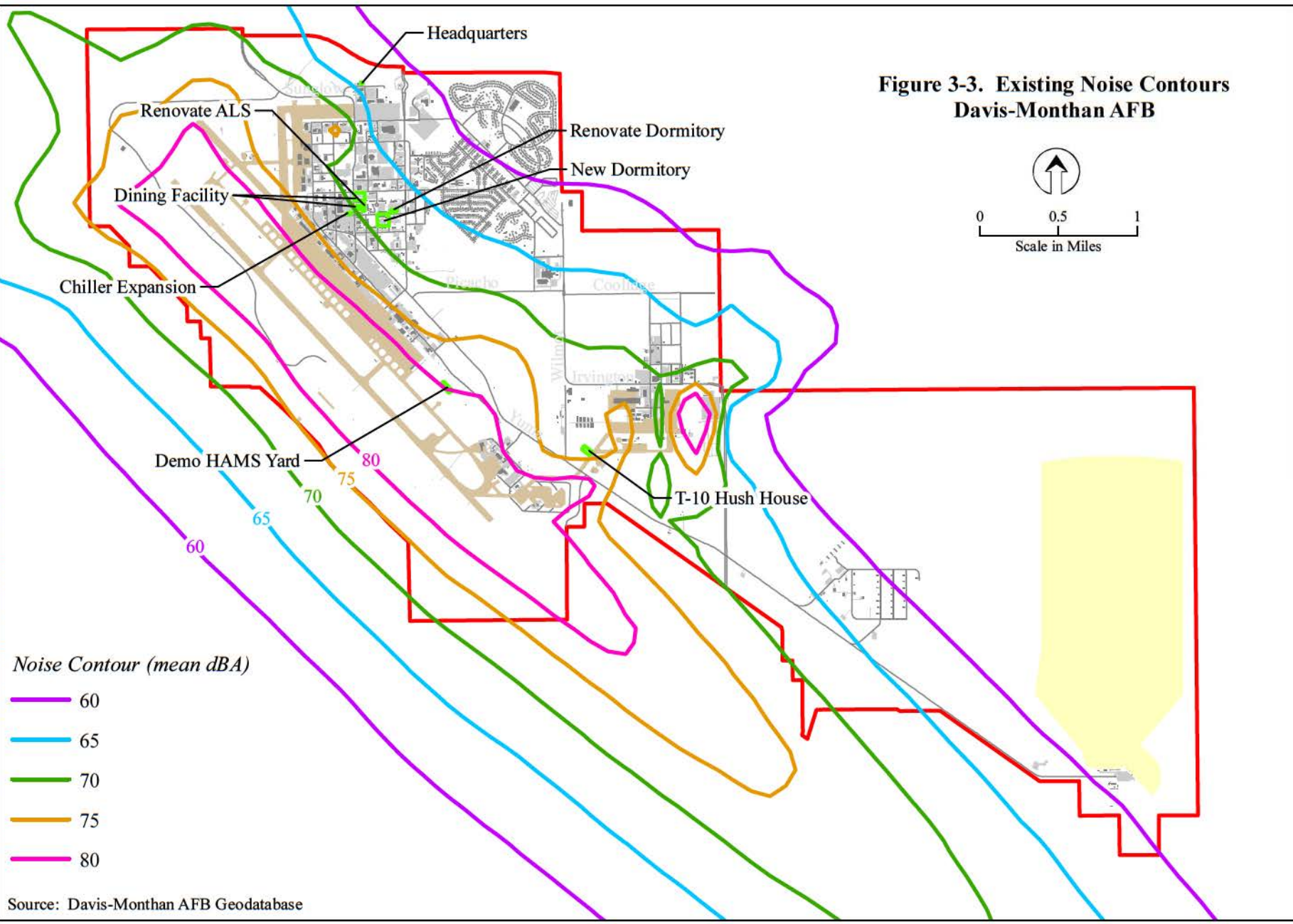
<i>Noise Contour (DNL)</i>	<i>Acres</i>
65 – 70 dB	3,506
70 – 75 dB	1,293
75 – 80 dB	642
80+ dB	564
Total	6,005

Source: U.S. Air Force 2002

Much of the Base administrative, industrial, and unaccompanied housing areas are within the DNL 65 dB noise level contour. Although not prohibited, residential and community areas are discouraged from being sited inside the DNL 65 dB noise contour. Sound attenuation is required for administrative facilities exposed to the DNL 70 dB noise contour, which includes areas mostly along the flight line (Davis-Monthan AFB 2006).

The HAMS yard is along the 80 dB noise contour, and primary noise at this project area is from air and vehicle traffic. No noise is generated from the HAMS yard because it is not currently in use. The hush house and chiller system project areas are within the 70 dB noise contour. Sources of noise at the hush house project area include existing engine testing, which can generate noise levels greater than 80 dB; vehicle traffic; and periodic air traffic. The new dormitory, dining facility, dormitory renovation, and Airman Leadership School project areas and most of the chiller system lines are within the 65 dB noise contour. Noise sources at these project areas, as well as the chiller system project area, are primarily related to daily activities associated with operations at the Base, vehicle traffic, and occasional air traffic. The 214 RG headquarters facility project area is outside the 65 dB noise contour. Noise at the 214 RG headquarters facility project area is primarily from localized operations from the Reconnaissance Group with periodic vehicle and air traffic.

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The chiller lines and road and parking area improvements would be located primarily in the 65 or 70 dB noise contour, with some outside the 65 dB contour and others possibly in the 75 or 80 dB noise contour. Noise sources vary along the roads, in parking areas, and where chiller lines would be located and are typical of operations at the Base.

Few sensitive receptors exist in the project areas, but residents in the dormitories near the new dormitory, dining facility, Airman Leadership School, and dormitory renovation project areas are considered sensitive receptors to noise. Several residential areas also surround the Base, and noise from aircraft operations and periodic loud noise from other Base operations (e.g., engine testing) can affect nearby residents. Nighttime noise in particular can disrupt sleep and tends to be more noticeable because of the generally quiet ambient noise levels at night.

3.6 LAND USE AND VISUAL RESOURCES

Land use is the classification of lands based on natural and human-modified activities occurring at a given location. Natural land use includes native habitats, 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 that identify the type and extent of allowed uses in specific areas and designate environmentally sensitive areas. Visual resources consist of natural elements (e.g., vegetation, waterbodies, mountains) and manmade structures that comprise the viewing environment. Visual resources can influence the compatibility of uses with other uses in the surrounding environment.

3.6.1 Land Use

Davis-Monthan AFB occupies 10,589 acres in the city of Tucson. The City of Tucson, State of Arizona, federal government, and private landowners own the lands comprising the Base (Davis-Monthan AFB 2006). The non-federal lands have been leased to the federal government, and management of the lands is the responsibility of Davis-Monthan AFB. The City of Tucson leases approximately 4,436 acres; the State of Arizona leases 133 acres; and private landowners lease 99 acres. The Air Force acquired 958 acres through a Public Land Order and 1,280 acres through an Executive Order—this land is under the jurisdiction of the Department of the Interior. The Air Force owns 3,373 acres.

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. Land uses adjacent to the north side are primarily suburban residential, with a mix of office, retail, and

business services. Land uses to the east and south comprise primarily undeveloped rangeland, along with pockets of planned mixed uses including light industrial, scientific and research, and single-family residential subdivisions. Land uses to the west comprise residential, office retail, business services, and light industrial.

Encroachment of nearby development in the city and county is a primary land use concern at the Base because aircraft operations are incompatible with certain adjacent land uses, and approximately 3,139 acres outside of the Base boundary are assumed to be affected by Base operations (based on flight paths and proximity to the Base), including 471 acres that contain incompatible uses. The primary conflicts between Base operations and off-Base land uses relate to safety risks from military overflights and noise exposure (Arizona Department of Commerce 2004, Davis-Monthan AFB 2006, U.S. Air Force 2002). Davis-Monthan AFB, the City of Tucson, and Pima County have worked collaboratively to identify solutions to alleviate encroachment of incompatible land uses and conflicts with off-base land uses. Their efforts have included preparation of the *Davis-Monthan Air Force Base/Tucson/Pima County Joint Land Use Study* (Arizona Department of Commerce 2004), modifications to zoning and allowed land uses on lands adjacent to the Base, and meeting regularly with other interested parties to discuss compatible noise and safety land use criteria for lands near Davis-Monthan AFB.

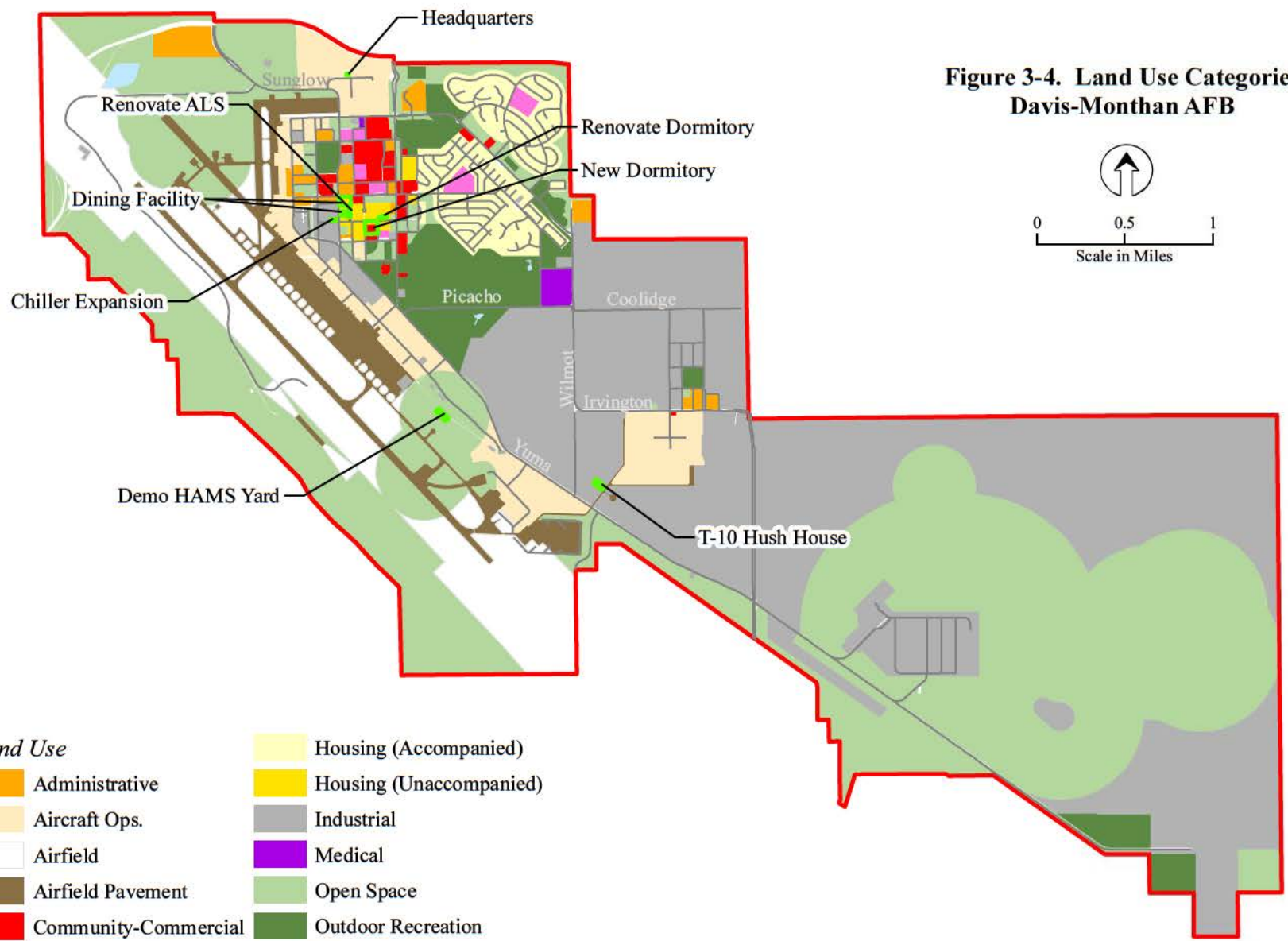
Within Davis-Monthan AFB, land uses are regulated by the Davis-Monthan AFB General Plan, and new development is guided by the CIP and BCAMP. The General Plan designated 12 land use categories at the Base (Table 3-8; Figure 3-4). Open Space is the most prevalent land use type, followed by Industrial and Airfield uses, respectively.

Table 3-8. Land Use Categories at Davis-Monthan AFB

<i>Land Use Category</i>	<i>Acres</i>	<i>Example</i>
Administrative	85	Headquarters facilities, Base support, security, etc.
Aircraft Operations and Maintenance	444	Hangars, maintenance shops, aircrew facilities, etc.
Airfield	1,453	Runway, overruns, taxiways, aprons
Community Commercial	68	AAFES, commissary, credit union, dining hall, etc.
Community Services	31	Schools, post office, library, chapel, etc.
Industrial	3,470	Supply, Civil Engineering facilities, vehicle maintenance facilities, etc.
Accompanied Housing	291	Family housing, temporary housing, trailer courts
Unaccompanied Housing	30	Dormitories, Visiting Officers Quarters, Visiting Airman Quarters
Medical	31	Medical clinic, dental clinic, veterinarian facility, etc.
Outdoor Recreation	332	Golf course, swimming pool, playing fields, etc.
Open Space	3,948	Conservation areas, safety clearance zones, etc.
Water	13	Storm drainage collection ponds

Source: Davis-Monthan AFB 2006

**Figure 3-4. Land Use Categories
Davis-Monthan AFB**



Land Use

- | | |
|----------------------|-------------------------|
| Administrative | Housing (Accompanied) |
| Aircraft Ops. | Housing (Unaccompanied) |
| Airfield | Industrial |
| Airfield Pavement | Medical |
| Community-Commercial | Open Space |
| Community-Service | Outdoor Recreation |
| | Water |

Source: Davis-Monthan AFB Geodatabase

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Most of the land use pattern at Davis-Monthan AFB 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, primarily associated with structures in the airfield clear zone (Davis-Monthan AFB 2006). To minimize on-Base land use conflicts with airfield-related activities, the General Plan established the following land use policies consistent with UFC 3-260-01 (Airfield and Heliport Planning and Design):

- 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, and
- Structures that are not related to flight operations cannot be located within 125 feet of the edge of the aircraft parking apron.

Table 3-9 identifies the designated and existing land uses of each project area, surrounding land use designations (if different), and adjacent structures or uses (Davis-Monthan AFB 2006).

Table 3-9. Land Use Designations of Each Project Area

<i>Project Area</i>	<i>Designated and Existing Use</i>	<i>Adjacent Use and Structures</i>
1. New Dormitory	Unaccompanied Housing with parking area	Same adjacent uses with dormitories and office/administrative buildings
2. Dining Facility	Unaccompanied Housing with parking area	Administrative, Community Commercial, and Unaccompanied Housing with dormitories and administrative and support facilities; existing dining facility (building 4100) is located 200 feet south of area
3. Chiller System	Industrial with parking area (chiller facility, building 5101); chiller lines would follow roads with short connections through various uses to connect to buildings	Industrial with parking area to north/south/west and existing chiller facility adjacent to east side of project area
4. Airman Leadership School	Unaccompanied Housing with one building used for current Airman Leadership School (building 4101)	Mostly same adjacent uses with dormitories and office/administrative buildings; small community commercial area to south
5. Hush House	Industrial with part of a concrete pad	Mostly same adjacent uses with concrete pad nearby; Airfield to southeast
6. 214 RG Headquarters Facility	Aircraft Operations and Maintenance with no existing buildings	Same adjacent uses with fuel tanks to south and administrative building to west
7. HAMS Yard	Industrial and Open Space with parking area and explosive facility (building 103)	Open Space with few structures around
8. Dormitory Renovation	Unaccompanied Housing with one dormitory (building 3509)	Same adjacent uses with parking area to north and other dormitories nearby
9. Pavement Plan	Roads have no designated uses, and parking areas vary by adjacent uses	Adjacent uses vary depending on road or parking area location

3.6.2 Visual Resources

The general visual setting of Davis-Monthan AFB is typical of an urbanized area with a mixture of residential, commercial, and industrial uses. The airfield and AMARG area are prominent focal points in the central portion of the Base from an aerial perspective. The heavily developed area between Arizola Street, Fifth Street, Ironwood Street, and Craycroft Road as well as the 12th Air Force building, east of Craycroft Road near the main entrance, are prominent focal points from the ground-level, particularly as people access the Base from the north. Development is concentrated in the northern portion of the Base, and the southeastern portion of the Base is typical of a desert setting with a braided ephemeral wash (Atterbury Wash) and Sonoran Desert scrub habitat.

The visual character of the Base features a mixture of architectural styles and varying degrees of landscaping, with little uniformity. The varying architectural styles of the buildings at the 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. Landscaping ranges from areas that are highly landscaped to areas that generally lack any landscaping. Because of the generally flat topography of the Base and varying degrees of landscaping and development, views across the Base extend into the surrounding vicinity in most areas, with views of nearby mountain ranges from many places on the Base. Within the developed areas, buildings and vegetation can serve as obstructions to more distant views.

The five project areas in the developed portion of the Base (new dormitory, dining facility, chiller system, Airman Leadership School, and dormitory renovation) are typical of the urban setting, with existing buildings and associated facilities, and surrounding views are of similar development. Landscaping varies around each project area. The 214 RG headquarters facility project area is at the northern extent of the developed area and has views of some existing development to the south, but views to the north are of open space with little landscaping or vegetation. The HAMS yard project area is near the airfield and is surrounded by desert scrub vegetation with little development, and surrounding views are generally of open space with some development and paved areas. The hush house project area is also in a less developed portion of the Base and has surrounding views of the airfield, some development, and planes associated with the AMARG area. Chiller lines and roads would cross through multiple land uses, and views along these linear project areas and in parking areas vary depending on the nearby uses, although they are typical of the general visual setting of the Base.

3.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

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. Environmental justice is the fair treatment of all people regardless of race, color, national origin, or income, and no group of people 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. Children are also considered under environmental justice to ensure they do not suffer disproportionately from environmental health and safety risks.

3.7.1 Population and Employment

The populations of Arizona and Pima County have been steadily increasing over the last several decades, increasing by approximately 74 percent and 47 percent, respectively, over the past two decades and by 25 percent and 16 percent, respectively, over the past decade (Table 3-10) (U.S. Census Bureau 2011). The population of Pima County in 2010 was 960,263, which includes the Tucson metropolitan area, Davis-Monthan AFB, and outlying unincorporated areas. The military population at Davis-Monthan AFB is approximately 6,200 personnel (Davis-Monthan AFB 2006).

Table 3-10. Population Trends for Arizona and Pima County, 1990 to 2010

<i>Area</i>	<i>1990 Population</i>	<i>2000 Population</i>	<i>2010 Population</i>	<i>% Change (2000-2010)</i>
Pima County	666,880	843,746	980,263	16%
Arizona	3,665,228	5,130,632	6,392,017	25%
United States	248,709,873	281,421,906	308,745,538	10%

Source: U.S. Census Bureau 2011

In 2009, the retail trade employed the largest percent of the civilian population over 16 years of age in the U.S. (14.5), Arizona (13.8), and Pima County (14.0) (U.S. Census Bureau 2011). In Pima County, health care and social assistance and professional, scientific, and technical services also employed the highest percentages of the county population at 13.1 percent and 12.6 percent, respectively.

Davis-Monthan AFB employs slightly more than 2,400 civilian workers (Davis-Monthan AFB 2011b). Approximately 8,600 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 2011), Davis-Monthan AFB has an annual regional economic effect

of more than \$1.0 billion (Davis-Monthan AFB 2011b), which includes not only payroll and pensions, but also materials and construction expenditures. Expenditures for construction, services, and procurement of materials, equipment, and supplies in 2010 were approximately \$370 million. The per capita income of Pima County in 2007 was \$24,319, slightly lower than the per capita income of Arizona, which was \$24,811 (U.S. Census Bureau 2007).

Only the dormitory renovation and Airman Leadership School project areas support existing populations or provide office space for workers or training purposes. Building 3509 is in the dormitory renovation project area and is currently used as a dormitory with capacity to house 78 people (unaccompanied housing) (Davis-Monthan AFB 2006). Building 4101 is in the Airman Leadership School project area and provides classrooms for training purposes. The dining facility and chiller system project areas encompass parking lots that provide parking spaces for nearby buildings. The remaining project areas do not support buildings or facilities that are currently used by workers or others at the Base.

3.7.2 Environmental Justice

This section presents information on the race, poverty, and legal (under age 18) status of people in Pima County and on the Davis-Monthan AFB to support the consideration of environmental justice. Of the total estimated 2010 population of Pima County, 34.6 percent were Hispanic or Latino, 55.3 percent were white only and non-Hispanic, and less than 10 percent were other races. The Tohono O'odham Nation encompasses approximately 2.8 million acres in southwestern Arizona, including the main reservation and three other reservations in the vicinity of Tucson, and supports approximately 28,000 members, who are of American Indian decent (Tohono O'odham Nation 2011). Census 2010 data for Census Tract 36, which correlates to the boundaries of the Base, indicate a primarily white population (69 percent), with 24 percent Hispanic or Latino, 12 percent black, and less than 6 percent American Indian, Asian, or Native Hawaiian (U.S. Census Bureau 2011).

Approximately 18.9 percent of the Pima County population was in poverty in 2009, which was slightly higher than Arizona and United States estimates (U.S. Census Bureau 2011). Approximately half the population on the Tohono O'odham Reservation for both individuals and persons under age 18 was below the poverty level. An estimated 5 percent of families and 13.1 percent of the population in Census Tract 36 was at or below the poverty level in 2009. The median family income for the county in 2009 was \$43,243, which was slightly lower than the Arizona and United States estimates. Poverty in 2009 was defined as an income of \$10,956 in a household of one individual or \$21,954 for a family of four.

Approximately 25 percent of the Pima County population in 2010 was under the age of 18 (U.S. Census Bureau 2011). The residential uses surrounding Davis-Monthan AFB are considered sensitive uses where children may be present in large numbers, such as at daycare facilities or schools. Approximately 77 percent of the population on the Base includes families with children under the age of 18, and the Base has several schools and daycare facilities to support its population. Family residences are concentrated in the northeast portion of the Base, and several schools are located within the residential area. Other than the road improvement project area, none of the project areas are near a school.

3.8 CULTURAL RESOURCES

Cultural resources are any prehistoric or historic district, site, 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. These resources are evaluated for their significance and may be determined eligible for listing based on criteria identified in the National Historic Preservation Act; cultural resources are called “historic properties” if they are determined to be eligible for listing or are already listed in the NRHP.

3.8.1 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 in the southwest were occupied by shallow lakes and wetlands and supported a variety of wildlife, such as birds, 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 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 2004). 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, 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 2004).

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 2004). 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 encompasses 71,095 acres just south of Tucson (Tohono O'odham Nation 2011).

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 (Pascua Yaqui 2005).

The Tucson Presidio was established in 1775, and Tucson became part of Mexico in 1821 (City of Tucson 2011). 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 to be important 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 2009b). 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 2009b). During World War II, Davis-Monthan AFB served as a training location for medium and heavy bomber operations. Because of its arid climate, after World War II Davis-Monthan AFB became the

final resting place of decommissioned B-29 (Super Fortress) long-range heavy bombers and C-47 (Gooney Bird) transport aircraft, among others. Today the facility contains more than 5,000 aircraft, providing a stockpile of rare parts for airframes (Davis-Monthan AFB 2009b). Davis-Monthan Field was officially renamed Davis-Monthan AFB in 1948 shortly after it was placed under the jurisdiction of the Strategic Air Command. The Base was also used throughout the Cold War Period (1946-1989) for various support functions and still contains structures and facilities associated with the past uses.

3.8.2 Identified Cultural Resources

The only NRHP-listed property associated with Davis-Monthan AFB is the Titan II Museum, Missile Site 571-7, which is maintained by the Pima Air and Space Museum and is located south of Tucson off the Base in Green Valley, Arizona (Davis-Monthan AFB 2004). Once part of a 54-missile network on constant alert throughout the Cold War Period, the missile site 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 2004). None of the project areas are located near the missile site.

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 (Altschul and Lindsay 1993). The area surveyed represents approximately 45 percent of the total Base acreage and nearly 66 percent of its undeveloped areas. The results of the 1993 survey indicated a low probability of discovering subsurface deposits in the western portion of the Base or in previously developed areas. The eastern portion of the Base, which is less developed, has a higher potential to contain subsurface deposits, and all of this area was surveyed, resulting in recordation of eight archaeological sites and 139 isolated artifacts. Only one of the recorded sites (AZ BB:13:392) was determined to be eligible for listing in the NRHP; however, this site has been completely excavated since the survey and is no longer eligible (Davis-Monthan AFB 2004).

An inventory of Base facilities in 2003 identified 474 facilities that were more than 50 years old (Davis-Monthan AFB 2004), but some of these facilities have been demolished since the inventory. A more recent inventory identified 328 facilities that are currently more than 50 years old (built in 1961 or earlier) (Davis-Monthan AFB 2011c).

Three noteworthy facilities at the Base are associated with the Cold War Era: a bomber/tanker alert facility (building 140, scheduled to be demolished as part of a separate action), a fighter alert facility (building 128), and a ground-launched cruise missile headquarters (building 70). In addition, building 8030, the Heritage Hangar, was built in 1932 and is the oldest historic building on Davis-Monthan AFB. These facilities were recommended for stewardship and potential NRHP listing

(Davis-Monthan AFB 2004). Facilities that have not been formally evaluated and are more than 50 years old are treated as eligible for inclusion in the NRHP until they are determined ineligible.

Building 4100 in the dining facility project area and building 4101 in the Airman Leadership School project area were built in 1953, and both buildings have been renovated since their original construction to provide more current facilities and maintain their functions. Although these buildings are more than 50 years old and have not been formally evaluated for eligibility, past renovations have substantially altered the original buildings and have likely made the buildings ineligible for listing on the NRHP. None of the buildings in other project areas are more than 50 years old.

No traditional cultural properties or other traditional resources have been identified at Davis-Monthan AFB (Altschul and Lindsay 1993, Davis-Monthan AFB 2004). The Base maintains contact with the nearby Tohono O'odham Nation and the Pascua Yaqui Tribe, and only formally consults with the tribes on proposed actions if requested by the tribes.

3.9 SAFETY

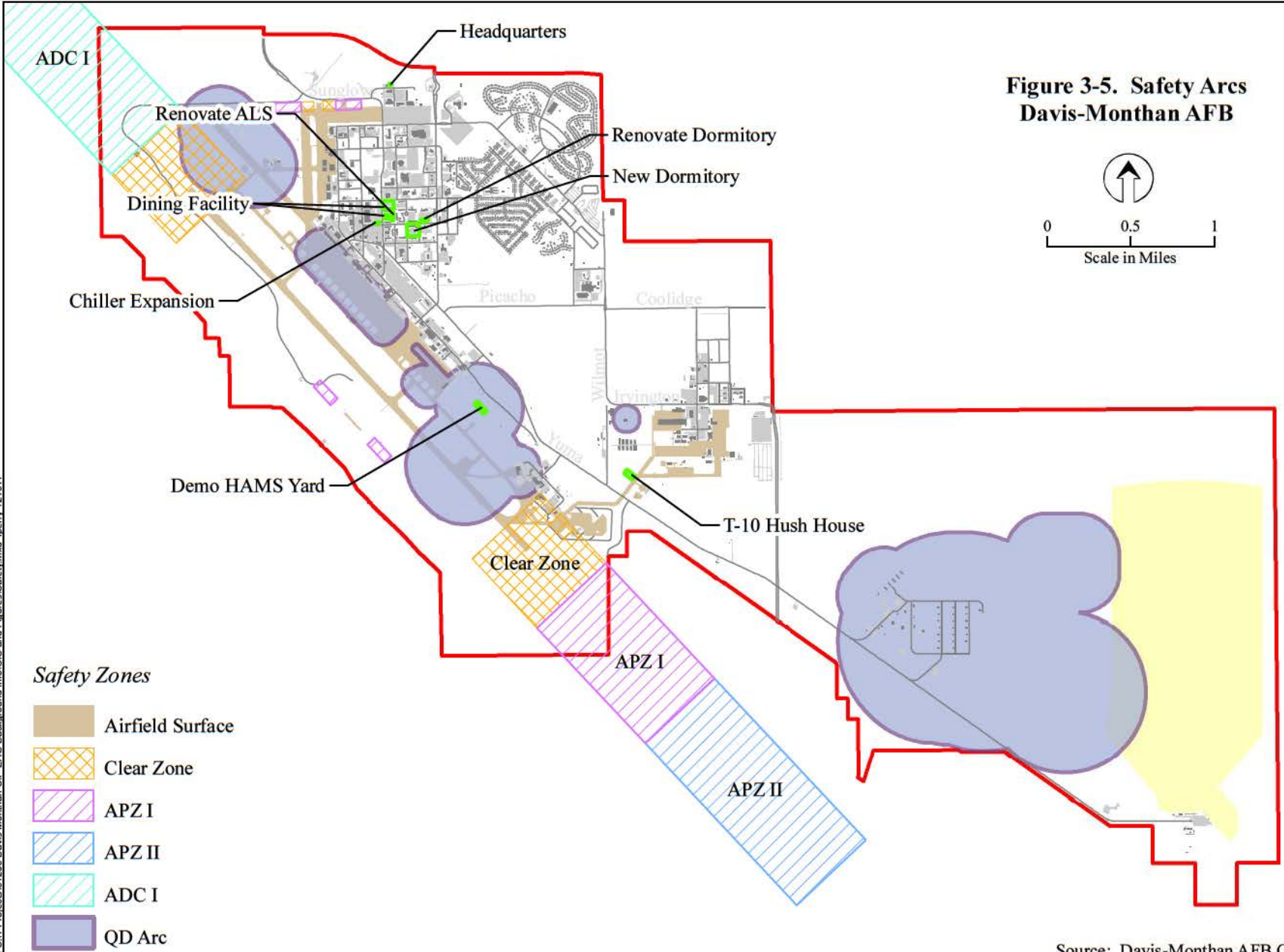
The ground and explosives safety sections below consider issues involving day-to-day operations and maintenance activities of personnel at Davis-Monthan AFB.

3.9.1 Ground Safety

Day-to-day operations and maintenance activities conducted by the 355 FW 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. Davis-Monthan AFB has established clear zones and APZs to control development and restrict land uses around the airfield and runway. The clear zones at Davis-Monthan AFB are within Base boundaries; however, APZs I and II extend outside of the Base (Figure 3-5). Despite the restrictions, 24 structures are present in the restricted zones. Three of the structures have the required waivers, nine are authorized deviations to airfield criteria, and five are exempt from waivers.

None of the project areas are in a clear zone or APZ, although some road and parking area improvements may take place within one or more of these zones.

Figure 3-5. Safety Arcs
Davis-Monthan AFB



Source: Davis-Monthan AFB Geodatabase

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3.9.2 Explosives Safety

Explosives include ammunition, propellants (solid and liquid), pyrotechnics, explosives, warheads, explosive devices, 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 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. 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. Identification of the QD arcs during planning ensures that construction does not occur within these areas.

Facilities or areas with QD arcs at Davis-Monthan AFB include the munitions storage area, the explosive ordnance disposal area, the alert hangar and apron, combat aircraft parking areas, hot cargo pad, aircraft explosives cargo area, the arm/dearm aprons on the airfield, the AMARG explosive ordnance disposal area, and the AMARG ammunition shipping/inspection/storage facilities (Davis-Monthan 2006). The locations of QD arcs at Davis-Monthan AFB are depicted on Figure 3-5. One of the project areas (the existing HAMS yard) is in a QD arc, but this QD arc is associated with the HAMS yard, which has been relocated, and is no longer applicable. None of the building or renovation project areas are in a QD arc. Some road or parking area improvements may be in QD arcs.

3.10 SOLID AND HAZARDOUS MATERIALS AND WASTE

The terms “hazardous materials” and “hazardous waste” refer to substances defined as hazardous by CERCLA and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial dangers to public health or the environment when released into the environment. Hazardous wastes that are regulated under the Resource Conservation and Recovery Act 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 that identifies, characterizes, and remediates environmental contamination from past activities at Air Force installations. Solid waste includes non-hazardous waste or materials, such as household waste, construction debris, or other waste that does not have the chemical properties or other characteristics to make it a hazardous substance.

Issues associated with hazardous material and waste typically center around waste streams; underground storage tanks (USTs); aboveground storage tanks (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.

3.10.1 Solid Waste Management

Solid waste generated by residential sources and mission activities on Davis-Monthan AFB is removed by a licensed contractor or the City of Tucson and taken to the Los Reales Landfill, which is operated by the City of Tucson (Davis-Monthan AFB 2005b). The Los Reales Landfill is being expanded to provide disposal service for the city through 2067 (City of Tucson 2006). In calendar year 2006, Davis-Monthan AFB generated 4,381 tons of solid waste and 17 tons of construction and demolition debris and diverted 2,694 tons for recycling (Davis-Monthan AFB 2005b). Recyclables are picked up by the Arizona Training Program at 139 buildings across the Base. The proper management and recycling or disposal of construction and demolition debris is the responsibility of construction contractors.

3.10.2 Hazardous Materials and Waste

Aircraft flight operations and maintenance and installation maintenance require the storage and use of many types of hazardous materials. These materials include flammable and combustible liquids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, pesticides, herbicides, lubricants, alcohols, and sealants.

Hazardous wastes are generated from a variety of functions, including aircraft, vehicle, weapons, equipment, and facility maintenance. Davis-Monthan AFB is regulated under the Resource Conservation and Recovery Act as a large quantity generator of hazardous waste because it generates more than 2,200 pounds of hazardous waste per month. Davis-Monthan AFB typically generates 80,000 pounds of regulated waste annually (personal communication, Shore 2011). Hazardous wastes are managed in accordance with the Davis-Monthan AFB Hazardous Waste Management Plan (May 2010). Wastes include sealants, paints, solvents, blasting media, wastewater and sludge, petroleum products (oil, grease, gasoline, diesel, JP-8, etc.), antifreeze, batteries, fluorescent lamps, polychlorinated biphenyls, asbestos, and various other chemical process wastes.

Wastes are stored at approximately 100 locations where the waste is initially generated (Hazardous Waste Satellite Accumulations Areas), then transferred to the HAZMART (building 5227) for storage up to 90 days prior to shipment to off-site EPA-permitted facilities for recycling, treatment, or disposal. Many types of petroleum products, solvents, antifreeze, fluorescent lamps, batteries, and dental amalgam are recycled instead of disposed. Davis-Monthan AFB operates an industrial wastewater pre-treatment plant that removes oils and heavy metals from select wastewater streams prior to discharge to the sanitary sewer for treatment by the Pima County wastewater treatment plant.

Daily operations in and near the project areas involve the use of various hazardous materials and waste typical of Base operations.

3.10.3 Storage Tanks

Davis-Monthan AFB has 94 ASTs, with storage capacities ranging from 125 to 2.7 million gallons. These tanks are used for refueling as well as storage of fuels and used oil. The Base also has 75 reported USTs, with capacities ranging from 3,000 to 50,000 gallons, 25 of which are regulated by ADEQ (personal communication Machado 2011). All storage tanks at Davis-Monthan AFB are inspected and maintained by Civil Engineering Power Production and the Liquid Fuels Section, and the integrity and condition of the associated piping is verified by the users. None of the USTs are associated with buildings in the project areas. Two fuel tanks are located just south of the 214 RG headquarters facility project area.

3.10.4 Asbestos

Asbestos-containing materials (ACMs) are 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 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 (Davis-Monthan AFB 2009a). 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.

An asbestos survey of facilities on the Base identified ACM in building 4100 in the dining facility project area and building 4101 in the Airman Leadership School project area (Davis-Monthan AFB 2010a). No ACM was identified in building 103 in the HAMS yard project area, and wall surfaces

and adhesives sampled in building 3509 in the dormitory renovation project area tested negative for ACM. Activities in buildings that contain ACM would need to comply with the asbestos management plan for the Base.

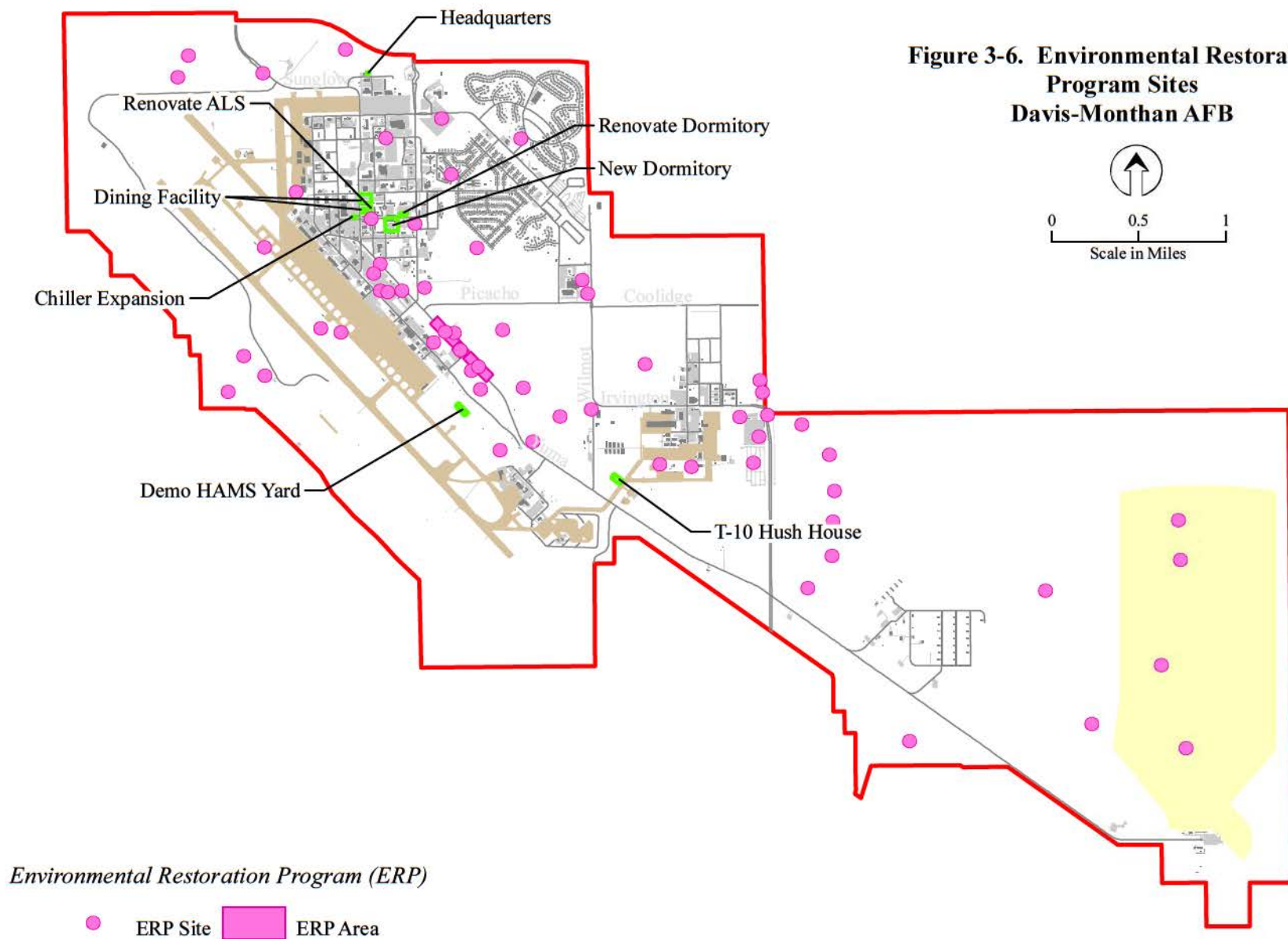
3.10.5 Environmental Restoration Program

The DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984. Fifty-three ERP sites and three Areas of Concern have been identified at Davis-Monthan AFB and are regulated under CERCLA. Three of the ERP sites remain in remedial action-operation. The remaining sites are expected to be converted to closed status by the end of 2012 (Davis-Monthan AFB 2010b). The *Davis-Monthan AFB Environmental Restoration Program Site Status Summaries* (Davis-Monthan AFB 2005a) 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 a construction waiver be obtained through the Davis-Monthan ERP Manager for any proposed project on or near a Davis-Monthan AFB ERP site. Aside from road and parking area improvements and chiller lines, none of the project areas encompass an ERP site (Figure 3-6). ERP site AOC-53 is located just south of the Airman Leadership School project area, at the intersection of Kachina Street and Sixth Street.

3.10.6 Military Munitions Response Program

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 as part of their MMRP.



Source: Davis-Monthan AFB ERP Data

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Davis-Monthan AFB has four active ranges and 11 MMRP sites. Seven of the sites have been recommended for No Defense Action Indicated, which would clear the sites for unrestricted use, and are awaiting concurrence from ADEQ and approval from the DoD Explosives Safety Board, which is expected by March 2012. The remaining four sites are in the process of being evaluated, and fieldwork and paperwork are expected to be completed by 2014. The active ranges and MMRP sites include:

- *Training Areas 1 and 2.* Training Area 1 (151 acres) and Training Area 2 (186 acres) are both located south of the runway (Davis-Monthan AFB 2001). 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 of 1,250 feet and are expected to be cleared for unrestricted use by March 2012. A landfill associated with Training Area 1 is also expected to be cleared by March 2012.
- *Poorman Ranges.* The Poorman Ranges include an active explosive ordnance disposal range, transferring range, an active small arms range complex, a closed area, and two off-Base transferred ranges (Davis-Monthan AFB 2001). The active Poorman Ranges Area was reduced by 2,145 acres to close several former range buffers and firing fans. A small closed area and buffer area are being evaluated, and a non-munitions and explosives of concern area is one of the seven sites that should be cleared by March 2012.
- *Wilmot National Guard Target Range.* The Wilmot National Guard Target Range includes a formerly used defense site and a closed portion that encompasses 1,278 acres at the southeastern end of the runway (Davis-Monthan AFB 2001). Two small areas of the target range are being evaluated, and a non-munitions and explosives of concern area is one of the seven sites that should be cleared by March 2012.
- *Open Air Test Range.* The Open Air Test Range is currently active and is located in the eastern portion of the Base near the Poorman Ranges (Davis-Monthan AFB 2001).
- *Air Base Ground Defense Area.* The Air Base Ground Defense Area is currently active and is located in the extreme southeast portion of the Base near the Poorman Small Arms Range Complex (Davis-Monthan AFB 2001).
- *Former Areas.* A former munitions storage area and former skeet range are located north of the Wilmot National Guard Target Range, northeast of the runway. These areas are expected to be cleared for unrestricted use by March 2012.

All former range areas have potential to contain ordnance and explosive contamination. Until these areas are formally cleared, any proposed activities in them should be coordinated through the Civil

Engineering Squadron/Environmental Restoration Element point of contact. Training or a waiver for construction may be required. Only the HAMS yard project area is located in an MMRP site (the former Wilmot National Guard Target Range), and some road or parking area improvements may be located in MMRP sites.

3.11 INFRASTRUCTURE

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 as well as parking areas. Utilities include potable water supply, wastewater collection and treatment, a storm drainage system, an electrical system, heating and cooling systems, and liquid fuels.

3.11.1 Transportation

Davis-Monthan AFB is located near Interstate 10 (I-10) and Interstate 19 (I-19), two major interstate highways in Arizona. I-10 provides east-west access between Phoenix, Arizona, and El Paso, Texas, while I-19 connects Tucson with the Mexican border. Access to the Base is via four gates with entry points, including the Main Gate Access on Craycroft Road and secondary gates off Swan, Wilmot, and Irvington roads (see Figure 2-1). The Main Gate Access is the primary access to the Base, and the Swan and Wilmot gates provide alternate access. The Irvington gate is restricted to people with higher security clearances. Valencia Road borders the south side of Davis-Monthan AFB from Alvernon Way to South Houghton Road. Between Alvernon Way and Kolb Road, Valencia Road is a four-lane divided road. After Kolb Road, Valencia Road becomes a two-lane road. East Golf Links Road is a divided six-lane road that is located along the north and northwest boundary of Davis-Monthan AFB.

Four major primary roads provide access within Davis-Monthan AFB:

- Craycroft Road runs generally north/south through the main part of the Base and serves as the main access route onto the Base. The Craycroft Gate is on the north side of the Base, just south of the intersection of Craycroft Road and East Golf Links Road.
- Wilmot Road is a short arterial that enters the Base at the Wilmot Gate at the east end of the Base and provides access to the hospital and AMARG.
- The intersection of Sunglow Road, Fifth Street, and Yuma Street begins at Swan Gate on the northwest side of the Base just south of the intersection of Swan Road and East Golf Links Road. Sunglow Road turns into Fifth Street 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 collector roads in the main portion of the Base are Quijota Road, Arizola Street, Comanche Street, Granite Street, Ironwood Street, First Street, and Third Street. The AMARG area is served by Irvington Road, the Wilmot Road extension, Coolidge Street, and Wickenburg Street. Irvington Road enters the Base on the east side at the Irvington Gate.

Inbound and outbound traffic at the four entry gates was estimated in 2009 as part of an engineering assessment for the entry control facilities (Gannett Fleming 2010). Most traffic passed through the Craycroft Gate, which had an estimated inbound total of 6,909 vehicles over a 24-hour period and an estimated outbound total of 8,212 vehicles over a 24-hour period (Table 3-11). Less traffic passed through the Swan and Wilmot gates, which had about 3,000 in- and outbound trips over a 24-hour period. The Irvington Gate experienced substantially less traffic, with about 600 in- and outbound trips over a 24-hour period. Congestion has been an issue at each of the gates during peak a.m. and p.m. hours, and traffic at Swan Gate experiences increased congestion during fuel truck inspections.

Table 3-11. Peak Hour Traffic at Entry Control Facilities

	<i>Craycroft Gate</i>		<i>Swan Gate</i>		<i>Wilmot Gate</i>		<i>Irvington Gate</i>	
	<i>In</i>	<i>Out</i>	<i>In</i>	<i>Out</i>	<i>In</i>	<i>Out</i>	<i>In</i>	<i>Out</i>
AM Peak Hour	772	304	797	167	683	152	342	15
Midday Peak Hour	599	724	301	251	290	279	32	47
PM Peak Hour	372	986	209	502	107	712	7	331
24-Hour Volume	6,909	4,422	3,701	2,808	2,936	3,019	596	659

Source: Gannett Fleming 2010

The City of Tucson does not provide mass transit or rail connection to Davis-Monthan AFB, although nearby bus stops provide service to the main gate (Davis-Monthan AFB 2006). Several officially designated bike paths provide bicycle access throughout the Base, and two major pedestrian routes on Kachina and Sixth streets serve the dormitory area. Additional pedestrian paths are planned for the residential areas.

Tucson International Airport provides air passenger service to the Tucson metropolitan area. The airport is located approximately 10 miles from the Craycroft Gate and can be reached in approximately 15 minutes by car or by airport shuttle bus. Military passengers and military cargo are served by the Military Air Passenger Terminal Building (building 4819) and the Air Cargo Terminal (building 4822) at the Base. Additionally, east of the Air Cargo Terminal is a cargo marshalling area for cargo handling (Davis-Monthan AFB 2006).

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 2006).

Each of the project areas is readily accessible from existing streets, and parking is available in or near the project areas. Table 3-12 identifies the primary access routes and parking areas for each project area.

Table 3-12. Access and Parking for Representative CIP Projects

<i>Project Area</i>	<i>Access</i>	<i>Parking Area</i>
1. New Dormitory	Kachina or Madera Street from Craycroft Road or Fifth Street; Seventh or Eighth Street from Kachina or Madera Street	Two parking areas between Kachina and Madera streets and Seventh and Eighth streets
2. Dining Facility	Ironwood or Kachina Street from Craycroft Road or Fifth Street; Fifth or Sixth Street from Ironwood or Kachina Street	One parking area at Ironwood and Fifth Streets in project area; others nearby
3. Chiller System	Kachina Street from Fifth Street or Craycroft Road; Sixth Street and Jeddito Street as alternate route	Large parking lot at Fifth Street and Kachina Street in and adjacent to project area
4. Airman Leadership School	Same as dining facility project area	Same as dining facility project area
5. Hush House	Limited access from Yuma Street via the airfield surface	No designated parking area nearby; parking available in disturbed areas off the airfield surface
6. 214 RG Headquarters Facility	Restricted access; Gafford Way from Sunglow Road	Parking areas on south side of Gafford Way east of project area and on north side of Gafford Way west of project area
7. HAMS Yard	South Ramsgate Road via Yuma Street, Craycroft Road, and others	Parking area in project area
8. Dormitory Renovation	Kachina Street from Craycroft Road; Eighth Street from Kachina Street	One parking area between Kachina and Ironwood streets and Eighth Street and Craycroft Road
9. Pavement Plan	All roads throughout Base	All parking areas throughout Base

3.11.2 Utilities

Potable Water. Potable water is obtained from eight groundwater wells at Davis-Monthan AFB to serve the various uses at the Base. The eight wells have capacity to supply 5.8 million gallons per day (MGD). The Base also has three non-operational wells and six wells that have insufficient flow to support production. Average daily demand from 2001 to 2003 ranged from 0.6 MGD to 1.78 MGD, with an average daily demand of 1.1 MGD (URS Group, Inc. 2004). Demand tends to be highest in summer and early fall and 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 AMARG 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. Water is chlorinated at the well heads and pumped into storage tanks. The tanks include 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, which are below-ground steel tanks that are covered by soil to resemble reservoirs (Davis-Monthan AFB 2006, URS Group, Inc. 2004). 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 (URS Group, Inc. 2004).

Water supply pipelines generally follow the roads on the Base and provide water to all buildings and facilities that house or provide office or administrative space for people. Water supply lines are located in or near all project areas. Wells and storage tanks are not located in any of the project areas.

Wastewater. The Base discharges approximately 1 MGD of wastewater into the Pima County sanitary sewer system. The Pima County wastewater treatment plant functions as the sole treatment facility for all wastewater generated by the city of Tucson, including most of Davis-Monthan AFB. Some areas on the Base are not currently connected to the sewer system and are served by septic systems.

The 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 AMARG area and three along the flightline. No capacity issues with the lift stations have been identified (Davis-Monthan AFB 2006); however, none of the lift stations provide redundancy, and the entire sewer line is down if one station fails. The system is in need of upgrading to meet Air Force regulations to provide at least double redundancy.

Like the water supply pipelines, wastewater collection pipelines generally follow roads and provide service to most buildings and facilities on the Base. Wastewater pipelines cross through or near all of the project areas, with the exception of the hush house project area.

Storm Drainage System. Storm water runoff on Davis-Monthan AFB is managed through a storm drainage system consisting of a combination of swales, culverts, and pipes with adequate capacity to handle most flows. The Base has three large underground collector pipes: one along Fifth Street, one for the runway and apron areas, and the other beneath the northern airfield apron. The system has one retention pond on the edge of the AMARG area just south of the golf course. Generally, runoff flows toward the northwest (Davis-Monthan AFB 2006).

The storm drainage system is generally adequate for the arid climate. However, during the rainy season from July through September, storms can lead to flooding in portions of the Base. Excessive storm water flows have degraded the security grates at outfall locations where the flow exits the Base (Davis-Monthan AFB 2006).

Electrical System. Tucson Electric Power provides electrical service to the Base through two 46 kilovolt (kV) lines. A substation, with the capacity to handle loads of 25 megavolt-amperes, steps the power down to 13.8 kV and distributes it to eight circuits. Transformers that feed facilities step down 13.8 kV to 480 volts before reducing the load to 120/208 volts. Separate power lines enter the Base from the southwest to supply the control tower, building 8030, and Navigation Aids west of the airfield (Davis-Monthan AFB 2006). Davis-Monthan AFB consumes approximately 100,000 megawatt hours on an annual basis.

Heating and Cooling Systems. Natural gas is used primarily for heating 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 AMARG and hospital areas are supplied separately from a line entering the Base from the south. These two separate supply systems are linked at the FAM Camp area and have a delivery capacity of 3.4 million cubic feet per day. Maximum consumption between 1995 and 2005 was 2.5 million cubic feet per day or approximately 74 percent of the delivery capacity (Davis-Monthan AFB 2006).

Davis-Monthan AFB does not have a central heating and cooling system for the Base. Two mini-systems supply chilled or heated and chilled air to some facilities (Davis-Monthan AFB 2006). Chilled air is provided to the airmen's dormitories and some other facilities by a chiller facility (building 5101). This facility is capable of producing about 1,200 tons of chilled air. Heated and chilled air is provided to the hospital by a second system (building 401).

The chiller facility in building 5101 has two natural gas-fired engines coupled to centrifugal compressors. It connects to two main loops that currently supply chilled air to 11 facilities, including three dormitories. The northern loop is also tied to the Fitness Center heating loop. The Fitness Center has five water-to-water heat pumps capable of producing 100 tons of chilled water for the northern chilled water loop. On the heating side, it provides hot water year-round for the domestic hot water and pool water systems at the Fitness Center.

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, including Ft. Huachuca (Army), Arizona National Guard, Yuma Proving Grounds, Sky Harbor Airport (Phoenix), and Tucson ANG at Tucson International Airport, as a Defense Fuels Support Point (Davis-Monthan AFB 2006).

Davis-Monthan AFB supports a large number of flying operations, and most of its fuel handling consists of JP-8 aviation fuel. The Base receives JP-8 via commercial pipeline and highway tanker truck. The Base receives, stores, and distributes a variety of fuels, including JP-8, DL-2 diesel fuel, BDI bio-diesel, Mogas unleaded regular, and two kinds of cryogenics fuel: liquid oxygen and liquid nitrogen (Davis-Monthan AFB 2006).

The Kinder-Morgan Pipeline routinely delivers JP-8 to one of three 60,000-barrel storage tanks. This 6-inch pipeline has the capability to deliver 579,600 gallons per 24-hour period. In the event of pipeline failure, the storage tanks can receive 3,456,000 gallons per day via tanker truck. JP-8 can be dispensed to flightline fuel hydrants at a rate of 1,100 gallons per minute using the pumps or 450 gallons per minute using gravity flow in the event of pump failure (Davis-Monthan AFB 2006).

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 2006).

Other features of the JP-8 fueling system include mobile units to increase the number of simultaneously fueled aircraft during surge operations, berms and a dedicated fire system for the tank farm, and a series of underground tanks at each pump house (Davis-Monthan AFB 2006).

The hush house project area is near the refueling pit locations and several fuel tanks, and the 214 RG headquarters facility project area is near a couple of fuel tanks. None of the liquid fuel tanks are in the project areas, but pipelines between pit locations may be under roads that are part of the pavement plan.

4.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA assesses the potential environmental consequences associated with the proposed action and the no-action alternative. The analysis of environmental consequences includes a discussion of typical impacts associated with the various types of CIP projects that may be implemented at Davis-Monthan AFB and a more project-specific discussion of impacts associated with the nine representative projects described in Chapter 2. The potential impacts are discussed in the context of the affected environment described in Chapter 3. For some resource topics (e.g., air quality, noise), impacts are quantified, but most impacts are discussed qualitatively. Mitigation measures are identified where necessary to reduce the intensity of an impact.

4.1 EARTH RESOURCES

4.1.1 Proposed Action

Overview of Impacts

Construction activities associated with CIP projects at Davis-Monthan AFB could affect soils, expose people or structures to geologic or soil hazards, and modify topography. Ground disturbing activities, such as grading, trenching, and vegetation removal, would expose soil surfaces and spoil piles to water and wind erosion, which could result in increased fugitive dust, soil erosion, and sediment in runoff. Additionally, the operation of construction vehicles on undeveloped surfaces would disturb soils and cause indirect impacts from fugitive dust and soil erosion.

Generally, the wind and water erosion hazards of Base soils are slight to very slight (e.g., Cave soils, Urban Land, Pinaleno-Stagecoach complex, Sahuarita soils, and Tubac gravelly loam). Other soils have a slight water erosion potential with moderate to moderately high wind erosion potential (e.g., Hantz loam, Mohave soils, and Yaqui fine sandy loam). Because the soils in the eastern portion of the Base are rated as having a slight potential for wind and water erosion, activities on these soils have a lower potential for erosion-related impacts. Projects located in Mohave soils would have a moderate wind erosion potential, which could result in impacts on water and air quality due to soil erosion. Best management practices should be employed to reduce the potential for soil erosion and indirect impacts associated with erosion caused by earth moving activities.

Geologic and soil hazards (e.g., shrink/swell potential of Mohave soils) could limit construction on some soils on the Base. To minimize the potential for structural damage from geologic or soil hazards, projects should be designed in compliance with the Universal Building Code and results of geotechnical investigations or other site-specific soil evaluations. CIP projects located on developed lands have a lower potential of being affected by soil hazards because the soils have already been modified to accommodate structures, parking areas, and roads.

Project Impacts

Construction and demolition activities associated with the nine representative CIP projects would disturb soils and could expose people or structures to geologic or soil hazards. None of the projects would modify the topography of the project areas. Most of the projects would be in areas that are currently developed with existing buildings and paved areas (new dormitory, dining facility, chiller system, Airman Leadership School, HAMS yard, dormitory renovation, and pavement plan), and two of the projects (214 RG headquarters facility and hush house) would be located on compacted and disturbed soils. The dormitory renovation project and renovations to the Airman Leadership School would primarily involve activities inside existing buildings, which would not disturb soils in the project areas. The renovations would not increase the potential for damage from soil or geologic hazards.

The new dormitory, dining facility, chiller system storage, hush house, and 214 RG headquarters facility projects would require construction of new buildings or structures in developed and undeveloped areas of the Base. The new dormitory, dining facility, and chiller system storage would involve removal of existing pavement and structures and soil disturbance for 3-foot-deep trenches under the footprints of the facilities. The hush house and 214 RG headquarters facility would be located in previously disturbed (graded and leveled) soils in undeveloped areas. Soils in the project areas would be temporarily exposed to wind and water erosion, which could result in indirect effects on air and water quality during high winds or rain events. Pipeline trenching for underground utilities and chiller lines would involve disturbance to the top 3 feet of soils under the facility footprints and along existing roads. Trenching could also result in spoils that would require disposal and that may be temporarily stockpiled in the project areas. If disturbed soils, including spoil piles, are left unattended, wind and water soil erosion could result. Implementation of BMPs, such as proper grading; use of silt fences, straw bales, and other storm water filter devices; and watering construction sites, and compliance with the Base's SWPPP for construction activities would minimize the potential for wind and water erosion of exposed, disturbed soils. Construction-related impacts on soils would be insignificant.

The hush house and 214 RG headquarters facility projects would be constructed in undeveloped areas on soils that exhibit shrink/swell potential (Mohave soils), which may limit their ability to support new construction. These facilities would be designed with consideration for this soil hazard to prevent damage to the new facilities.

Demolition of the existing dining facility, a portion of the Airman Leadership School, and the HAMS yard would disturb soil as pavement and buried structures are excavated for removal. The demolished areas would be landscaped or seeded with grasses to control dust and soil erosion over the long term. Soil and geologic hazards are not a concern for the demolition activities because no new

structures would be built. During demolition activities, BMPs would be implemented to minimize soil erosion.

The pavement plan would involve disturbance to existing pavement, but some soil disturbance may occur along the shoulders of the roads and the perimeter of parking areas. BMPs to minimize soil erosion would be implemented for road and parking area improvements. Road improvements in the areas affected by other projects would be completed after the installation of pipelines and other utilities to minimize disturbance.

Longer term operational impacts of the projects would be consistent with ongoing Base operations and would not increase activities that would affect soil, geologic, and topographical conditions.

4.1.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and soils in the project areas would not be affected by the construction and/or demolition activities. Geologic and soil conditions would remain as described in Section 3.1.

4.2 WATER RESOURCES

4.2.1 Proposed Action

Overview of Impacts

Construction activities associated with CIP projects at Davis-Monthan AFB could convert pervious ground to impervious surfaces, which could affect groundwater recharge and the storm drainage system capacity, and could affect water quality through discharge of sediment or other pollutants into surface waters. CIP projects that increase impervious surfaces could increase surface water runoff into the storm drainage system and decrease groundwater recharge on the Base. CIP projects in developed areas of the Base typically include building renovations or new construction in place of previously demolished buildings or parking lots. These types of activities are not likely to increase impervious surfaces. Projects in the undeveloped portions of the Base would increase impervious surfaces that would collect water that would otherwise percolate into the ground and divert it to the storm drainage system. Increased flow in the storm drainage system could result in insufficient capacity and localized flooding if the system backs up. Modifications to the storm drainage system (i.e., culverts and additional storm water drains) may be necessary to accommodate the additional runoff.

Water quality impacts could result from soil erosion or discharge of pollutants into surface waters or the storm drainage system on the Base. As discussed in Section 4.1, Earth Resources, disturbed soils could be exposed to water erosion, which could transport sediment into nearby surface waters or the

storm drainage system. Additionally, petroleum-based fluids or other chemicals used for vehicles, equipment, or construction activities could spill or leak during refueling or other applications. To prevent impacts on water quality, CIP projects should comply with the Base's SWPPP for construction activities and implement BMPs for erosion prevention and spill containment to prevent sediment and pollutants in runoff. These measures may include stockpiling materials and staging equipment more than 50 feet from drainage features and using absorbent materials to contain potential spills or leaks. Landscaping, which may be required around areas disturbed by CIP projects or on lands reclaimed by demolition projects, could also be used to minimize impacts on water quality. Landscaping provides a vegetation cover that could control dust by reducing the amount of exposed soil and could filter pollutant discharge from developed areas. The *Design and Compatibility Standards, Davis-Monthan AFB* (Davis-Monthan AFB 1998) provides design criteria for xeric landscaping and water budgeting on the Base.

To avoid flood damage, CIP projects should be located outside the floodplain of the Atterbury Wash. If structures are necessary in the Atterbury Wash area, they should be elevated above the floodplain or be capable of conveying storm water based on the 100-year flood event along the wash.

Increased water use from CIP projects would increase the volume of groundwater withdrawn from Base wells. Although the wells have capacity to supply additional water, groundwater depletion is currently a concern in the region due to a decline in water levels because of the high level of extraction combined with low recharge rates. Groundwater depletion is expected to continue for the foreseeable future due to increased urban development around the Tucson area.

Project Impacts

Some of the representative CIP projects would result in an increase in impervious surfaces on the Base, while the demolition projects (HAMS yard and part of Airman Leadership School) would remove impervious surfaces. The hush house and 214 RG headquarters facility projects would increase impervious surfaces on the Base by about 0.35 acre. The new dormitory, dining facility, chiller system storage, and pavement plan would result in little to no changes to impervious surfaces because these facilities or improvements would be located in areas that already have impervious surfaces (e.g., existing roads, parking areas, or former building sites). Demolition of the HAMS yard and part of the Airman Leadership School would reduce impervious surfaces on the Base by about 1.4 acres. The renovations to the dormitory and the remaining portion of the Airman Leadership School would not affect impervious surfaces or storm water runoff. The net decrease in impervious surfaces would result in a slight decrease in storm water runoff from the project areas, particularly where the former HAMS yard is removed. Runoff would continue to be managed in accordance with the Base's NPDES General Permit and SWPPP. Based on the small area of disturbance and net change in impervious surfaces, impacts on the storm drainage system would be insignificant.

Construction activities in the project areas would disturb soils and involve the use of hazardous materials, which could result in the discharge of sediment or other pollutants (e.g., from petroleum or chemical spills) into nearby surface water features or the storm drainage system. Such water quality impacts would be most noticeable during the rainy seasons (July through mid-September and December through mid-March) when storm water can convey the pollutants into downstream drainages, such as the Tucson Diversion Channel. BMPs would be implemented during construction to prevent pollutants in runoff in accordance with the Base's SWPPP for construction activities. Spills would be quickly contained and properly cleaned up. With implementation of construction measures, impacts on water quality would be insignificant.

None of the representative projects would affect the floodplain of Atterbury Wash or modify natural surface water features. The projects would result in a slight increase in water use, but the increased groundwater withdrawal would be within the capacity of the Base's water supply system and would have an insignificant effect on the groundwater aquifer in the region.

4.2.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and no changes to impervious surfaces or impacts on water quality would occur. Water resources conditions would remain as described in Section 3.2.

4.3 BIOLOGICAL RESOURCES

4.3.1 Proposed Action

Overview of Impacts

Construction activities associated with CIP projects at Davis-Monthan AFB would involve activities that could remove vegetation and disturb wildlife, which could affect special-status plants and wildlife. Projects in the undeveloped portion of the Base, primarily in the eastern portion where native vegetation communities are present, have the highest potential to affect special-status plant and wildlife species and could result in a net loss of native vegetation communities. Projects in developed areas are less likely to require removal of native vegetation and have a lower potential to affect special-status plant and wildlife species. Ground disturbance can also increase the potential for invasive plants to spread into disturbed areas if they are present nearby or if seeds are carried into the project area by equipment. Activities in waters of the U.S., such as Atterbury Wash, could require a CWA Section 404 permit if the placement of dredged or fill material is anticipated.

For CIP projects, vegetation removal would generally be minimized to comply with the Base's Wildlife Management Goal of limiting the loss and fragmentation of natural desert vegetation areas (Davis-Monthan AFB 2008). Ground-disturbing activities, particularly in native vegetation

communities, could result in the direct loss of special-status plants (e.g., Pima pineapple cactus, saguaro cactus) by crushing or damaging individuals or result in the direct loss of fertile eggs or nestlings/hatchlings of resident special-status wildlife, including ground-dwelling species (e.g., burrowing owl, desert tortoise, Tucson shovel-nosed snake), those that nest in saguaro cactus (e.g., cactus ferruginous pygmy-owl), and those that nest in shrubs and trees (e.g., loggerhead shrike). Ground disturbing activities could also demolish burrows essential to burrowing owl and desert tortoise. Activities in or near native communities could disturb wildlife nesting and foraging, including aerially foraging species (e.g., lesser long-nosed bat, cave myotis, and American peregrine falcon). Noise generated by large construction equipment and demolition activities could result in nest abandonment and the subsequent loss of young if nesting birds are present.

Pre-construction surveys for special-status plant and wildlife species in suitable habitat would be useful to identify the potential for impacts from CIP projects and to determine the need for species-specific measures to avoid or reduce impacts. Avoidance and minimization measures (e.g., project design, project timing, nest/burrow buffers, and relocation) would be consistent with management goals provided in the *Integrated Natural Resources Management Plan* (Davis-Monthan AFB 2008). As a general practice, post-construction activities include restoration and landscaping of disturbed areas where appropriate, with native grass seed mixes and native plants used as appropriate. Invasive plant control measures should also be implemented as described in the Base's Pest Management Plan.

Project Impacts

Construction impacts associated with the nine representative CIP projects could affect plant or wildlife species during grading activities and vegetation removal and from noise generated by construction activities. The nine project areas are in developed and previously disturbed areas where special-status species have a low potential to occur due to the lack of suitable breeding and foraging habitat. None of the projects would require removal of vegetation in native vegetation communities, and any vegetation removal would be limited to landscaped vegetation and grasses.

Common wildlife in or near the project areas could be disturbed during construction or demolition activities, but these species would be expected to relocate to nearby suitable habitat and would not be adversely affected. Renovation activities that take place entirely inside buildings, such as the dormitory renovation project, would not be expected to affect plants or wildlife, although staging activities outside the building could temporarily disturb wildlife in the vicinity. Projects in more developed areas (i.e., new dormitory, dining facility, chiller system, Airman Leadership School, and dormitory renovation) are less likely to disturb wildlife because of the existing ongoing disturbances associated with Base operations in the developed area; impacts from these projects on wildlife would be insignificant. Projects in less developed areas (i.e., hush house, 214 RG headquarters facility, HAMS yard, and some road and parking area improvements) could disturb wildlife in or near the

project areas, including burrowing owl and/or loggerhead shrike, but conservation measures should be implemented to minimize or avoid adverse impacts. Table 4-1 summarizes the potential impacts of each of the projects on special-status species, and a discussion of potential impacts and recommended conservation measures for burrowing owl and loggerhead shrike is presented after Table 4-1.

Longer term impacts associated with operation of the projects would be consistent with ongoing Base operations and would not increase activities that would affect plants or wildlife. Daily disturbances would continue to influence wildlife present in the developed areas of the Base.

Table 4-1. Special-Status Species Impacts from Representative CIP Projects

<i>Project Area</i>	<i>Habitat Present</i>	<i>Potential Construction Impacts</i>	<i>Species Potentially Affected</i>
1. New Dormitory	Developed: actively used buildings with secondary landscaping and mowed areas; mowed area has a saguaro cactus	Minimal vegetation removal (landscaped), ground disturbance, construction noise, staging on dirt lot	Protected cacti, no wildlife
2. Dining Facility	Developed: buildings, paved areas, secondary landscaping.	Building demolition, minimal vegetation removal (landscaped), ground disturbance, construction noise, staging in parking area	Protected cacti, no wildlife
3. Chiller System	Developed: paved lot, small building	No vegetation removal, ground disturbance, construction noise, staging likely in previously disturbed and compacted areas	None
4. Airman Leadership School	Developed: buildings, paved areas, secondary landscaping.	Partial building demolition, no vegetation removal, limited construction noise due to inside renovations, staging in parking area	None
5. Hush House	Undeveloped, heavily disturbed: compacted and actively disturbed area. Ruderal, open areas are adjacent.	Minimal vegetation removal (grasses), ground disturbance, construction noise, staging in previously disturbed and compacted areas	Burrowing owl
6. 214 RG Headquarters Facility	Undeveloped, heavily disturbed: open, grassland area with some shrubs and trees adjacent.	Minimal vegetation removal (grasses), ground disturbance, construction noise, staging in previously disturbed and compacted areas	Burrowing owl and loggerhead shrike

<i>Project Area</i>	<i>Habitat Present</i>	<i>Potential Construction Impacts</i>	<i>Species Potentially Affected</i>
7. HAMS Yard	Developed: pavement with ruderal, open areas adjacent.	Building demolition, no vegetation removal, native vegetation restoration, construction noise, staging in previously disturbed and compacted areas	Burrowing owl (nearby)
8. Dormitory Renovation	Developed: buildings, paved areas, secondary landscaping.	Inside renovations	None
9. Pavement Plan	Developed: paved parking lots and roads with adjacent open areas and/or scrublands possible.	Resealing and pavement improvements would be in same footprint as existing roads and parking areas, staging in previously disturbed and compacted areas	Burrowing owl (nearby)

Protected Cacti. Protected cacti may require removal for construction of the new dormitory and dining facility, but the affected cacti are part of the existing landscaping and would be replaced as part of the landscaping plan around the constructed facility.

Western Burrowing Owl. Ruderal areas and open grasslands, which may have burrows suitable for owl occupation, are present in and adjacent to the hush house, 214 RG headquarters facility, HAMS yard, and pavement plan project areas. Grading and vegetation removal and construction-related noise could result in the direct loss of individuals, disturbance to nesting activity, or destruction of burrows, if present. These impacts can be avoided or minimized with implementation of AZGF measures for protecting burrowing owls. A pre-construction survey should be conducted in and within 100 feet of these project areas to locate active owl burrows in accordance with the survey protocol in *Burrowing Owl Project Clearance Guidance for Land Owners* (Arizona Burrowing Owl Working Group 2009). If owls are present, they should be relocated or avoided during construction in coordination with AZGF. With implementation of these measures, impacts on burrowing owls would be insignificant.

Loggerhead Shrike. Suitable nesting and foraging habitat for loggerhead shrike occurs in shrubs and trees adjacent to the 214 RG headquarters facility project area. No trees or shrubs would be removed for construction of the 214 RG headquarters facility project; however, construction disturbance and noise could lead to nest abandonment and result in the loss of eggs or nestlings if active nests are located near the project area. Loggerhead shrikes nest between April and July, and construction of the 214 RG headquarters facility during these months could result in adverse impacts on the shrike. A pre-construction survey should be conducted during the nesting period in and within 100 feet of the 214 RG headquarters facility project area to locate active loggerhead shrike nests. If an active nest is

located, activities within 100 feet of the nest should be avoided until the nestlings have fledged. The 355CES/CEVA office should be contacted to notify them of the nest and identify additional appropriate measures to implement. With implementation of these measures, impacts on loggerhead shrike would be insignificant.

4.3.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented. No construction disturbance would take place, and the developed vegetation communities, burrowing owls, and loggerhead shrikes would not be affected. Biological resources would remain as described in Section 3.3.

4.4 AIR QUALITY

4.4.1 Proposed Action

Overview of Impacts

Construction and demolition activities associated with CIP projects at Davis-Monthan AFB would emit air pollutants, such as CO, NO_x, and fugitive dust, and could contribute to regional air quality impacts. Equipment and vehicle use during these activities would emit pollutants into the air (CO, NO_x, SO_x); ground disturbance would result in fugitive dust (PM₁₀ and PM_{2.5}); and demolition activities would also result in fugitive dust and could release hazardous materials or chemicals into the air. Furthermore, these activities could result in temporary emissions of GHG from construction equipment and could contribute to regional GHG emissions.

Most construction and vehicle emissions would be confined to the project areas and remain on the Base, but some pollutants could be transported off the Base during high winds and contribute to air quality impacts in the Tucson metropolitan area, which has existing violations of CO standards. Because of the maintenance status of the Tucson area for CO, the Base must evaluate each project's estimated emissions against the *de minimis* threshold for CO (100 tons per year) and conduct a conformity determination if the threshold would be exceeded. Although some pollutants may be transported off the Base, the emissions from CIP projects are not expected to result in an appreciable deterioration of air quality or impaired visibility in nearby PSD Class I areas (e.g., the Saguaro National Park West about 4 miles east of the Base). Construction measures should be implemented to minimize construction-related emissions and fugitive dust and reduce the potential for regional air quality impacts.

Operational emissions from daily energy use, vehicle use, and routine activities at the Base would be comparable to current conditions. Some emissions may decrease as old facilities and buildings are renovated to operate more efficiently, while other emissions may increase if activities at the Base

increase or more people use the Base. Some activities, such as the installation or modification of gasoline stations, boilers and heaters, or emergency generators, could require modification of the Base's synthetic minor operating permit and require a permit from PDEQ, depending on the resulting operational emissions.

Project Impacts

Construction emissions for the nine representative CIP projects were estimated using emission factors and formulas published in the *CEQA Air Quality Handbook* prepared by the South Coast Air Quality Management District (1993). Emission factors for VOC (formerly ROC), CO, NO_x, and PM₁₀ emissions from construction of various types of facilities, demolition activities, general grading activities, asbestos disturbance, and vehicle travel were used to estimate project emissions (Appendix C). The construction emission factors account for on-site construction equipment as well as worker travel to the site. The demolition factor applies only to fugitive dust emissions. The applicable factors were used to calculate annual emissions for each project activity, and the resulting emissions are identified in Table 4-2. The estimate is conservative, and actual emissions would likely be lower than the totals presented because of the use of construction measures, such as frequent spraying of water on exposed soil, proper soil stockpiling methods, and prompt replacement of ground cover or pavement, to reduce pollutants and the short time period (less than 1 year) for most of the projects.

Table 4-2. Estimated Emissions for Representative CIP Projects

<i>Activity</i>	<i>Assumption</i>	<i>Emissions (tons/yr)</i>			
		<i>VOC</i>	<i>CO</i>	<i>NO_x</i>	<i>PM₁₀</i>
Build dormitory	42,600 sf, 1 yr construction, government office	1.18	3.77	17.35	1.23
Demolish ramada	415 sf, 1 mo demolition	-	-	-	0.04
Build dining facility	20,580 sf, 0.5 yr construction, government office	1.14	3.65	16.77	1.19
Demolish dining facility	239,250 cf, 1 mo demolition	-	-	-	1.53
Build storage facility	2,000 sf, 0.5 yr construction, industrial	0.07	0.21	0.96	0.07
Install pipelines	18,900 sf, 1 yr construction, industrial	0.31	0.99	4.55	0.32
Renovate school	12,080 sf, 0.5 yr construction, government office	0.67	2.14	9.84	0.70
Demolish school (part)	432,000 cf, 1 mo demolition	-	-	-	2.76
Build hush house	12,225 sf, 0.5 yr construction, industrial	0.40	1.28	5.89	0.42
Build 214 RG headquarters facility	2,200 sf, 1 yr construction, government office	0.06	0.19	0.90	0.06
Demolish HAMS yard	682,500 cf, 1 mo demolition	-	-	-	4.36
Renovate dormitory	26,500 sf, 0.5 yr construction, government office	1.47	4.70	21.59	1.53
Pave roads/parking	300 acres, 5 yrs construction, general grading	-	-	-	1.65

<i>Activity</i>	<i>Assumption</i>	<i>Emissions (tons/yr)</i>			
		<i>VOC</i>	<i>CO</i>	<i>NO_x</i>	<i>PM₁₀</i>
Asbestos removal (demolition)	671,250 cf of demolition	0.60	-	-	-

Notes: sf = square feet, cf = cubic feet, yr = year, mo = month

Projects requiring less than 1 year to construct would emit less pollutants, in proportion to the time needed to construct.

Emission factors are as follows:

Government Office – 55.44 (VOC), 177.17 (CO), 814.72 (NO_x), 57.85 (PM_{2.5/10}) in pounds per 1,000 sf per year

Industrial – 32.79 (VOC), 104.79 (CO), 481.88 (NO_x), 104.79 (PM_{2.5/10}) in pounds per 1,000 sf per year

Demolition – 0.00042 (PM₁₀) pounds per cubic foot per day

Grading – 55 pounds per day per acre disturbed per day

Asbestos – 0.00006 pounds per cubic foot per day

Source: South Coast Air Quality Management District 1993

Construction and demolition activities would take place over several years, and not all projects would be expected to be completed simultaneously. Emissions would, therefore, be spread out over several years, which would further reduce actual emissions at any one time. Even if all nine projects were implemented at the same time, the combined total CO emissions (less than 17 tons per year) would not exceed the *de minimis* threshold of 100 tons per year, and a conformity determination is not needed for the representative CIP projects. The total emissions of other pollutants (5 tons per year for VOC, 78 tons per year for NO_x, and 16 tons per year for PM₁₀) would also be comparable to existing emissions generated by Base activities and ongoing operations.

Activities associated with the individual projects would temporarily increase air pollutants in the vicinity of the project areas and could affect sensitive receptors in the immediate vicinity.

Construction activities would result in temporary emissions of GHGs from construction equipment, but the emissions would contribute minimally to regional GHG emissions. Emissions would be expected to dissipate within several hundred feet of the source and are not likely to be transported off the Base. Construction measures would be implemented to minimize fugitive dust and control equipment emissions in compliance with federal, state, and local laws and applicable permits, including a fugitive dust activity permit from PDEQ. Example measures include frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, prompt replacement of ground cover or pavement, using efficient practices for equipment operation, avoiding running engines at idle for long periods, and encouraging carpooling for workers. The Base will obtain an activity permit from PDEQ, Air Quality Division pursuant to Title 17 of the Pima County Code prior to any construction or demolition activities. In addition, the Base will notify ADEQ and PDEQ prior to demolition projects and obtain any necessary permits for asbestos removal. Construction-related emissions associated with each of the projects would result in insignificant impacts on air quality.

Longer term operational emissions after construction is completed would be similar to current conditions because none of the projects are intended to increase use of the Base. The renovation and new build projects are intended to modernize existing facilities in order to better support current mission requirements, and the new facilities would be more efficient and have lower emissions than the existing facilities, particularly from energy use. Operational emissions, including GHG emissions, are not expected to increase from implementation of the nine representative CIP projects.

4.4.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and air quality in the project areas and on the Base would not be affected by the construction and/or demolition activities. Air quality conditions would remain as described in Section 3.4.

4.5 NOISE

4.5.1 Proposed Action

Overview of Impacts

Construction and demolition activities associated with CIP projects at Davis-Monthan AFB would result in temporary increases in noise levels in the vicinity of the project areas and could have adverse effects on nearby sensitive receptors. Equipment and vehicle use during these activities would generate the primary noise. Typical noise levels generated by heavy equipment used for construction and demolition range from 75 to 89 dBA at 50 feet from the source (Table 4-3). Noise levels attenuate (decrease in intensity) the further they are from the source, and a decrease of 6 dB for each doubling of distance is typical in an area without structures that reflect sound.

Table 4-3. Heavy Equipment Noise Levels at 50 Feet

<i>Equipment Type</i>	<i>Generated Noise Levels, L_p (dBA)</i>
Bulldozer	88
Backhoe (rubber tire)	80
Front Loader (rubber tire)	80
Dump Truck	75
Concrete Truck	75
Concrete Finisher	80
Crane	75
Flat-bed Truck (18 Wheel)	75
Scraper	89
Trenching Machine	85

Source: American Industrial Hygiene Association 1986

Construction noise would be intermittent and short-term. Noise from CIP projects is not expected to affect off-Base sensitive receptors (e.g., residences in nearby communities) because of the distance and intervening topography and structures between the Base and nearby residences. On-Base receptors may notice construction noise, particularly for projects near residential areas. Existing noise levels from aircraft operations on the Base, however, are much louder than most noise generated from construction and demolition activities. Construction measures should be implemented to minimize construction-related noise and reduce the potential for noise impacts on nearby sensitive receptors.

Operational noise from vehicle use and routine activities at the Base would be comparable to current conditions. The CIP projects would not be expected to affect aircraft operations or substantially increase noise levels because they are intended to support current missions and improve operations, not necessarily increase use of the Base.

Project Impacts

Construction noise from the nine representative CIP projects would be typical of periodic construction activities at the Base. Noise from the construction and demolition activities would be localized around the project areas and would generally blend in with existing noise levels in the more developed areas of the Base. Outlying projects, such as the 214 RG headquarters facility and some road improvements, would be in less developed areas where existing noise levels are generally lower, but fewer receptors are near these project areas. Table 4-4 identifies the existing noise levels at each project area based on the runway noise contours (see Figure 3-3) and the sensitive receptors that could be affected by each project.

Table 4-4. Sensitive Receptors Affected by Representative CIP Projects

<i>Project Area</i>	<i>Existing Noise Level</i>	<i>Potentially Affected Sensitive Receptors</i>
1. New Dormitory	65-70 dB	Dormitory residents, workers in office buildings, library users
2. Dining Facility	65-70 dB	Dormitory residents, workers in office buildings/training center
3. Chiller System	65-75 dB	Workers in nearby buildings
4. Airman Leadership School	65-70 dB	Dormitory residents, workers in training center and nearby buildings
5. Hush House	70-75 dB	None
6. 214 RG Headquarters Facility	60-65 dB	Workers in nearby buildings
7. HAMS Yard	75-80 dB	None
8. Dormitory Renovation	65-70 dB	Dormitory residents
9. Pavement Plan	55-80 dB	Various receptors across the Base

Construction activities would be scheduled between 7:00 a.m. and 5:00 p.m. and would be temporary, lasting between 1 month for demolition of the HAMS yard and 1.5 years for construction of the chiller system. The pavement plan would be implemented over a 5-year period, with paving activities taking place periodically across the Base. Construction and demolition activities would take place over several years, and not all projects would be completed simultaneously. The activities would also be spread out across the Base, with a few projects concentrated in the developed area. Construction-related noise would be expected to be spread out over several years, which would further reduce actual noise levels at any one time. Based on the typical equipment expected to be used, noise levels during construction would range from 75 to about 90 dBA at 50 feet from the project area. In the less developed areas, these noise levels would likely attenuate to less than 65 dBA before reaching the nearest sensitive receptors. In developed areas, nearby sensitive receptors would notice the noise and may experience minor annoyances, but the high noise levels would be temporary and typical of construction activities. Existing buildings and structures in the developed areas would also help mask noise levels in surrounding areas, which would reduce the distance the construction noise travels and reduce the number of affected sensitive receptors. Construction-related noise associated with each of the projects would result in insignificant impacts on noise levels around each project area.

Periodic groundborne vibrations may also be felt during drilling or demolition in the immediate vicinity of the project areas. The vibrations, however, would be expected to be minor based on the nature of the activities and would not cause structural damage to nearby facilities or pose safety concerns for people in the vicinity.

Operational noise would be similar to current conditions in and near most of the project areas because the projects would improve operations and are not intended to increase use of the Base. They would not modify aircraft operations, which are a dominant source of noise on the Base. Activities associated with jet engine testing in the hush house would generate less ambient noise in areas around the hush house than current activities, which require outside testing and generate noise that can travel off the Base. The hush house is designed to reduce exterior noise levels during testing and would reduce noise effects on sensitive receptors that currently experience periodic noise from engine testing. The resulting noise from the hush house would be less discernible for on- and off-Base receptors. However, periodic groundborne vibrations would still be felt from engine testing activities and may be more intense. The insulation of the hush house would help absorb noise, but it would also convert that noise energy into vibrations that would travel through the ground from the hush house to nearby areas, possibly up to 2,000 feet away. No sensitive receptors are located within 2,000 feet of the hush house project area, and noise or vibration-related impacts on sensitive receptors are not expected from hush house operations. Operational noise would be similar to current conditions around most project areas and would be less near the hush house; therefore, project-related impacts would be insignificant.

4.5.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and noise levels in the project areas and on the Base would not be affected by the construction and/or demolition activities. Noise levels would remain as described in Section 3.5.

4.6 LAND USE AND VISUAL RESOURCES

4.6.1 Proposed Action

Overview of Impacts

CIP projects at Davis-Monthan AFB are intended to improve Base operations and functions and would be consistent with the uses described in the Davis-Monthan AFB General Plan (Davis-Monthan AFB 2006). The selection of CIP projects involves a comprehensive planning process and coordination between the different groups at the Base to ensure new projects are designed and located based on allowed uses. Facilities are designed based on architectural and engineering principles provided in the Base's Design Compatibility Standards (Davis-Monthan AFB 1998), which seek to create a military installation that is architecturally compatible with design features that create visual harmony. These standards include landscaping to enhance the visual setting of the Base and using exterior coverings that are earth tones and consistent with the existing landscaping and natural environment in the area. To prevent incompatible uses, new facilities would be located based on designated land uses, existing nearby uses, noise and safety criteria, and the type of facility proposed.

Renovations would be consistent with the existing uses of the facility and are intended to improve the conditions of the facility and extend its life. Demolitions may take place to remove existing facilities that are inconsistent or incompatible with existing land uses. These types of activities would not be expected to change land uses or degrade the visual setting of the Base, and some activities would correct existing minor land use issues and improve the functionality and architectural compatibility of the Base.

Project Impacts

Construction and/or demolition activities associated with the nine representative CIP projects would temporarily create land use conflicts (e.g., through noise and other disturbances) and degrade visual quality in the project areas. Construction disturbances, such as loud noises and traffic detours, would create temporary conflicts with uses in and near the project areas, as discussed in other sections of this EA, but these conflicts would be insignificant. Temporary changes to the visual setting would take place while structures are demolished, the ground is disturbed, and construction equipment works in each project area, but these activities are typical of construction activities on the Base. Fencing may be used around the project areas, particularly in developed areas, to mask views of the activities and restrict access to the areas for safety reasons. The visual setting of the Base in the

project areas would be restored once the construction period is over, and temporary changes to the visual setting would be insignificant.

Renovations in the existing dormitory would require residents to be relocated during the activities, but the Base would coordinate their temporary relocation to ensure minimal hardships on the residents. The Airman Leadership School building would remain in use while the renovations are completed, but necessary precautions would be taken to ensure minimal safety hazards and disruptions to the uses. The renovations would take approximately 6 months for each building, which would cause temporary impacts on the existing uses, but once the renovations are complete, operations would be improved and benefit the uses over the long term. The other projects would temporarily restrict access to and use of the project areas during construction, which would primarily affect parking in some of the project areas. Parking is available in nearby lots, so this use would not be adversely affected.

Each of the projects will be designed based on the needs of the Base and applicable standards and guidelines to ensure the new or modified use is consistent with Base missions, the General Plan, and existing uses. Each project would be consistent with the designated uses of the project areas, as summarized in Table 4-5. The hush house would reduce land use conflicts and compatibility issues associated with jet engine testing by enclosing testing activities in a building. The hush house would allow the Base to conduct testing and do repairs in a more efficient manner by removing obstacles, such as harsh weather, and maintaining a schedule for the activities. No long-term land use conflicts or compatibility issues are anticipated with implementation of the projects.

Table 4-5. Land Use Changes for Representative CIP Projects

<i>Project Area</i>	<i>Designated and Existing Use</i>	<i>Proposed Use</i>
1. New Dormitory	Unaccompanied Housing with parking area	New dormitory to provide unaccompanied housing, consistent with designated use
2. Dining Facility	Unaccompanied Housing with parking area	New dining facility to support operations, particularly dining for unaccompanied housing, and replace existing dining facility, consistent with designated use
3. Chiller System	Industrial with parking area (chiller facility); chiller lines would follow roads with short connections through various uses to connect to buildings	New storage facility for chiller system, consistent with designated use
4. Airman Leadership School	Unaccompanied Housing with one building used for current leadership school	Same building and use as current, consistent with designated use
5. Hush House	Industrial with part of a concrete pad	New building for existing use, no change in use, consistent with designated use
6. 214 RG Headquarters Facility	Aircraft Operations and Maintenance with no existing buildings	New building for operations, consistent with designated use

<i>Project Area</i>	<i>Designated and Existing Use</i>	<i>Proposed Use</i>
7. HAMS Yard	Industrial and Open Space with parking area and explosive facility	Remove facility/yard for future use, but no change in use from current; consistent with designated use
8. Dormitory Renovation	Unaccompanied Housing with one dormitory	Same building and use as current, consistent with designated use
9. Pavement Plan	Roads have no designated uses, and parking areas vary by adjacent uses	No change from current use (roads and parking areas)

New facilities, including the dormitory, dining facility, storage facility for the chiller system, hush house, and 214 RG headquarters facility, would be painted consistent with the Design Compatibility Standards and would have exteriors similar to the facilities in nearby areas of the Base. Landscaping around the facilities would help improve the visual setting and ensure consistency with nearby facilities. Chiller system pipelines would be underground and would not affect the visual setting other than temporarily during construction. Renovations to the interior of the dormitory and Airman Leadership School would also not affect the visual setting. The demolition of part of the Airman Leadership School building and of the HAMS yard would modify the visual setting in these project areas by removing the existing structures, but revegetation and landscaping of these areas as part of the projects would create a consistent visual setting with the surrounding areas. The pavement plan would improve the quality of roads and parking areas and would result in a similar appearance as the existing pavement. Overall, the visual setting of the Base would be similar to current conditions with implementation of the representative CIP projects, and visual impacts would be insignificant.

4.6.2 No-Action Alternative

Under the no-action alternative, Davis-Monthan AFB would maintain its existing facilities and would not implement the nine representative CIP projects. Continued use and maintenance of the existing degraded and inefficient facilities and infrastructure would require the 355 FW to continue to operate under unnecessarily inefficient conditions.

4.7 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.7.1 Proposed Action

Overview of Impacts

Implementation of CIP projects at Davis-Monthan AFB would result in fiscal impacts associated with the costs of the projects, but long-term operations would be improved as a result of the projects and could result in lower operational costs as facilities become more efficient. Minor temporary benefits to the surrounding community may occur from employment of workers, equipment rentals, and material purchases from the surrounding area. The CIP projects are not intended to increase use of

the Base, and the population of the Base is, therefore, not expected to increase with implementation of these types of projects.

Minority and low-income populations on the Base would benefit from improved facilities, as will all workers and residents on the Base. Some CIP projects may be located in or near areas where daycares, schools, or other concentrations of children are located, but the projects would be designed consistent with adjacent uses to minimize adverse effects on children and other sensitive people. No disproportionate effects would be expected from implementation of CIP projects.

Project Impacts

Implementation of the nine representative CIP projects would require initial expenditures for construction and demolition activities, as well as longer term operational costs for new facilities. The nine projects would require approximately \$35 million of expenditures through the end of the construction period, which would be spread out over about 3 years for the new and renovated facilities and demolition activities and about 5 years for the pavement plan. The project budgets would be approved as part of the Base budget for the appropriate fiscal year and are typical of past CIP expenditures, which are spread out over several years. The new and renovated facilities would also incorporate energy efficient measures and other improvements that would result in lower operating costs, which would benefit Base operations. The use of construction contractors from the surrounding community for some of the projects would provide an economic benefit to the community, as would the purchasing of supplies and materials and renting of equipment. Economic impacts associated with the representative projects would be primarily beneficial and insignificant.

Most of the projects would not affect on-Base residential populations, but the dormitory renovation project would require the temporary relocation of up to 78 people, depending on the exact number of people residing in the dormitory at the time of the renovations. The Base would coordinate temporary housing for the residents during the 6-month renovation period. Some of the relocated individuals may include minority or low-income persons, but the project would not disproportionately affect these individuals because all residents would be required to temporarily relocate. The other projects would also not disproportionately affect minority or low-income persons or families.

Most of the project areas are in the main operations area of the Base or in less developed areas, where no children's schools are located. Some road and parking area improvements may be in or near areas with children, but these activities would be conducted entirely in the existing paved area and would not cause health or safety concerns for children in nearby buildings. For safety reasons, the construction areas would be restricted, either by fencing or another means, to effectively bar any person, including children, from unauthorized access. None of the representative CIP projects would pose health or safety concerns to children on the Base.

4.7.2 No-Action Alternative

Under the no-action alternative, the 355 FW would maintain the existing facilities on the Base without renovations, construction of new facilities, or demolition of unnecessary or degraded facilities. Without implementation of the nine CIP projects, the Base would not need to expend the estimated \$35 million and would it generate construction-related employment or other beneficial economic effects. Base operations would also not be improved through more efficient facilities, and socioeconomic conditions would remain as described in Section 4.7.

4.8 CULTURAL RESOURCES

4.8.1 Proposed Action

Overview of Impacts

Construction and demolition activities associated with CIP projects at Davis-Monthan AFB could affect cultural resources on the Base, depending on the proximity of the projects to known archaeological and architectural resources and potential for previously undiscovered resources in each project area. CIP projects are not expected to affect traditional cultural properties or other traditional resources because none have been identified at the Base.

No adverse effects on known archaeological resources would be expected because the eight documented archaeological sites are not eligible for listing in the NRHP (Davis-Monthan AFB 2004). Three of the previously inventoried Cold War Period structures and facilities (two alert facilities and one missile complex) and an old hangar building (the Heritage Hangar) were determined to be eligible for listing in the NRHP (Davis-Monthan AFB 2004), and adverse effects on these historic resources could occur if the structures or facilities are affected by CIP projects. Many of the buildings on the Base are more than 50 years old and may be eligible for listing in the NRHP, pending formal evaluations. For CIP projects that could affect historic buildings that have potential to be eligible for listing in the NRHP, the Base will need to formally evaluate the building(s) and assess impacts based on its eligibility status in compliance with Section 106 of the NHPA.

The Base would comply with Section 106 of the NHPA and consult with the SHPO, as necessary, for each CIP project. In the event of inadvertent discoveries of cultural resources during construction or demolition of any CIP project, 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 (Davis-Monthan AFB 2004) and federal regulation.

Project Impacts

Construction and/or demolition activities associated with the nine representative CIP projects would not affect known cultural resources at the Base, and the potential for inadvertent discoveries in each of the project areas is considered to be low. Three of the projects (dining facility, Airman Leadership School, and HAMS yard) involve demolition activities that would remove or modify existing buildings and structures; however, none of the existing buildings or structures are anticipated to be eligible for listing in the NRHP. Removal of building 4100 (current dining facility) and building 103 (former storage for HAMS yard) and partial demolition of building 4101 (Airman Leadership School) would not result in adverse effects on historic resources. In addition, renovation of building 3509 (existing dormitory) would not affect historic resources because this building is less than 50 years old and not anticipated to be eligible for listing in the NRHP. The Base would comply with Section 106 of the NHPA and consult with the SHPO, as necessary, for each CIP project.

The potential for inadvertent discoveries is considered low in the project areas because of the existing development, previous disturbances, and lack of previously recorded resources. During ground disturbing activities, the construction contractor or Base workers would comply with Base policies for inadvertent discoveries of cultural resources and would notify the Base point of contact if any potential cultural resources are discovered.

4.8.2 No-Action Alternative

Under the no-action alternative, the representative CIP projects would not be implemented. Cultural resources would continue to be managed in compliance with federal law, Air Force regulation, and the Davis-Monthan AFB Integrated Cultural Resources Management Plan.

4.9 SAFETY

4.9.1 Proposed Action

Overview of Impacts

Construction and demolition activities associated with CIP projects at Davis-Monthan AFB could expose workers to health and safety risks. All activities must comply with Occupational Safety and Health Administration standards to protect workers, and all construction contractors would need to coordinate with the Base prior to any activities. Contractors may be required to prepare Safety Plans that detail safety protocols for all aspects of work, identify safe practices on construction sites, and describe required occupational protective gear, emergency procedures, and construction traffic routes. Following Base practices, fencing would be erected around construction sites to restrict access.

The U.S. Department of Labor, Bureau of Labor Statistics maintains data analyzing fatal and nonfatal occupational injuries for various occupations. For workers in the Construction Trade (Standard

Industrial Codes 15, 16, and 17), the probability of a fatal injury is statistically predicted to be from 1.2 to 3.1 out of 10,000 (U.S. Department of Labor 2005). Although DoD guidelines for assessing risk hazards would categorize the hazard category as “catastrophic” (because a fatality would be involved), the expected frequency of the occurrence would be considered “remote” (DoD 1993). While a fatality would be undesirable, the relative risk for typical CIP projects is low. Strict adherence to all applicable occupational safety requirements would further minimize the relatively low risk.

CIP projects would improve Base operations and modernize facilities, which would improve overall safety conditions at the Base. Projects that include measures to enhance security and comply with AT/FP requirements as part of the facility designs would correct deficiencies identified at the Base. Properly sited and designed facilities with adequate space and modernized supporting infrastructure would generally enhance safety during routine training, maintenance, and support procedures; security functions; and other daily operations conducted by the Base.

Project Impacts

Implementation of the nine representative CIP projects would involve safety risks associated with construction and demolition activities, but none of the projects would conflict with safety zones identified at the Base. Construction and demolition activities would have a low risk of worker fatalities or other injuries because all activities would comply with Occupational Safety and Health Administration standards and Air Force occupational safety requirements. No explosives would be used or handled during construction activities. Safety risks during construction and demolition activities would be insignificant for all representative projects.

Some road and parking area improvements would be located in clear zones, APZs, or QD arcs, but the improvements would not place new structures in these zones or conflict with the zone requirements. They would not create unsafe conditions or hazards for persons or mission activities on the runway or airfield, such as ponding water, trash, unusual light sources, or release of substance into the air. Safety requirements would be adhered to during all work in these zones to minimize the potential for worker accidents. Demolition of the HAMS yard would take place in a QD arc associated with the former yard use, but this arc is no longer applicable, and the activities would not conflict with the arc requirements. None of the other projects would be implemented in these zones.

4.9.2 No-Action Alternative

Under the no-action alternative, the representative CIP projects would not be implemented, and potential safety risks associated with construction and demolition activities would not occur. Management of safety programs and safety zones would continue under existing Davis-Monthan AFB programs and guidance.

4.10 SOLID AND HAZARDOUS MATERIALS AND WASTE

4.10.1 Proposed Action

Overview of Impacts

Implementation of CIP projects at Davis-Monthan AFB would require compliance with various solid and hazardous materials and waste regulations and policies to minimize exposure of people and the environment to hazardous conditions. Construction and demolition activities would generate waste, including potentially hazardous waste or ACMs, that would need to be properly disposed of by the construction contractors or Base workers; the volume and type of waste would depend on the specific project. Materials should be recycled to the maximum extent possible to reduce the volume of waste disposed in landfills.

Some activities may involve hazardous materials that would require compliance with stringent federal, state, and local environmental laws and Base requirements (e.g., Hazardous Materials Pharmacy procedures) and may require handling and disposal permits. ACMs are a particular concern for demolition projects because of potential exposure of workers to hazardous fibers released into the air. Buildings to be demolished or renovated should be evaluated for the presence of ACMs or other hazardous substances (e.g., lead-based paints), if they have not already been surveyed and tested by the Base. If ACMs or other hazardous substances are found in or near a project area, 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 National Emission Standards for Hazardous Air Pollutants Regulation) and transported in accordance with EPA regulations that govern transportation of hazardous materials (EPA 530-F-96-032 et seq.). All waste ACM will be transported to an appropriate disposal facility in Pima County.
- **Lead-Based Paint Removal and Disposal.** Activities would comply with the Occupational Safety and Health Administration regulations and the EPA regulations addressing Lead Management and Disposal of Lead-Based Paint Debris (40 CFR Part 257, 258, and 745).

Handling, use, and disposal of hazardous materials and waste increases the potential for an accidental spill to contaminate the environment and pose human health risks. In the event of an accidental spill during construction, the construction workers would be responsible for having sufficient spill supplies readily available and for containing, cleaning, and disposing of the contaminated soil or other materials. In the event of a contractor-related spill, the contractor would call 911, immediately notify

the 355 CES Programs Flight, and take appropriate actions to correct its cause and prevent future occurrences.

CIP projects may take place in or near known ASTs, USTs, ERP sites, MMRP sites, or other designated hazardous sites on the Base. A thorough evaluation of each project area will identify the proximity of the area to known sites and allow proper project design to be consistent with Base requirements for the sites and implementation of appropriate safety procedures during construction and/or demolition activities.

Project Impacts

Solid and Hazardous Wastes. Construction and demolition activities for the nine representative CIP projects would involve the use of hazardous materials (e.g., fuel, oil) and would generate solid and possibly hazardous waste. Solid wastes generated by these activities would include concrete, brick, wood, structural steel, glass, and miscellaneous metal building components; hazardous wastes could include ACM, fluorescent lamps, and lamp ballasts. The estimated total waste generated by each of the representative projects is presented in Table 4-6. Waste estimates are based on waste generation rates of 155 pounds per square foot of facility demolished and 3.89 pounds per square foot of facility constructed, which are from the EPA's 1998 document titled "Characterization of Building-Related Construction and Demolition Debris in the United States." The estimated total amount of waste generated by all nine projects (approximately 6,200 tons) is conservative, and some of the materials would be recycled, if practicable, to reduce the amount of waste disposed in the landfill. The Los Reales Landfill would have capacity to receive the estimated amount of solid waste, and impacts would be insignificant.

Table 4-6. Estimated Solid Waste Generation for Representative CIP Projects

<i>Project Area</i>	<i>Construction/Demolition Activities</i>	<i>Estimated Waste</i>
1. New Dormitory	Building: 42,610 square feet Demolition: none	85 tons
2. Dining Facility	Building: 12,830 square feet Demolition: 15,946 square feet	1,260 tons
3. Chiller System	Building: 2,000 square feet (storage yard) Demolition: none	4 tons
4. Airman Leadership School	Building: 12,000 square feet (renovation) Demolition: 14,461 square feet	1,145 tons
5. Hush House	Building: 12,225 square feet Demolition: none	25 tons
6. 214 RG Headquarters Facility	Building: 2,200 square feet Demolition: none	4 tons
7. HAMS Yard	Building: none Demolition: 46,705 square feet	3,620 tons
8. Dormitory Renovation	Building: 26,510 square feet Demolition: none	50 tons
9. Pavement Plan	Pavement: 13 million square feet	n/a

The dining facility and Airman Leadership School projects would involve removal of ACM during demolition activities, which could expose workers and other people in the vicinity to hazardous fibers from the asbestos. Building 103 in the HAMS yard project area and building 3509 in the dormitory renovation project area are not expected to contain ACM based on previous evaluations, and demolition and renovation activities associated with these projects are not expected to expose people to asbestos. Buildings subject to demolition or renovation may also contain lead-based paints. Precautions would be taken during all demolition activities to properly remove, handle, and dispose of solid and hazardous waste in accordance with the Base's asbestos and hazardous waste management plans. Asbestos removal permits would be obtained prior to demolition or removal of ACM.

Hazardous Sites. None of the projects would affect ASTs or USTs on the Base. The new dormitory, dining facility, chiller system storage, hush house, 214 RG headquarters facility, and dormitory renovation projects would not be located near ERP or MMRP sites or in active ranges, and no further action with regard to these hazardous sites is needed for these projects.

Demolition and renovation activities for the Airman Leadership School project would be implemented near ERP site AOC-53, and chiller lines and road and parking area improvements may occur near ERP sites. The Base ERP office would request an ACC waiver to implement projects near active ERP sites. A waiver is not expected to be needed for the Airman Leadership School project (AOC-53 is not active), but may be needed for some road and parking area improvements and chiller line construction. Any soil suspected of contamination during construction activities would be tested, and, if found to be contaminated, would either be remediated or disposed of in accordance with ADEQ regulations.

The HAMS yard demolition project would take place in the former Wilmot National Guard Target Range, which is a closed range, and some road and parking area improvements may take place in closed or active ranges on the Base. Neither activity is expected to result in hazardous conditions for workers because both projects would take place in previously disturbed areas, reducing the likelihood of ordnance and explosive contamination. In addition, a waiver would be requested for activities in the closed ranges through the 355 CES/CEVR office; the waiver would outline procedures to be taken to safeguard workers in the event that munitions are unearthed.

4.10.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and potential environmental and human hazards would be the same as the current conditions described in Section 3.10. Management of solid waste, hazardous wastes, or materials would continue under existing Davis-Monthan AFB programs.

4.11 INFRASTRUCTURE

4.11.1 Proposed Action

Overview of Impacts

Implementation of CIP projects at Davis-Monthan AFB would result in temporary increases in traffic during the construction period, increases in the demand for various utilities, and potential increases in storm water runoff due to increased impervious surfaces. Some CIP projects may also involve improvements to or modifications of the liquid fuels system on the Base, which would be expected to benefit the system.

Construction traffic would involve both off-Base traffic from construction contractors and materials and equipment transport to the Base, which would temporarily increase traffic at the entrance gates, and from on-Base traffic from the gates to the project areas. Some road or lane closures may be necessary during construction of CIP projects, but traffic management measures, such as use of signs and flaggers, should be implemented to control and direct traffic to minimize impacts. Haul routes for CIP projects should be routed to avoid Base housing areas and other noise-sensitive areas as much as practicable. Increased truck traffic on the Base could lead to the degradation of road surfaces over extended periods of use, but regular improvements to the roads (i.e., through the Base's pavement plan) would maintain them over the long term. Operational traffic may increase in some areas of the Base, depending on locations of new facilities, but overall traffic to the Base is not expected to increase unless use of the Base increases as a result of a CIP project.

Construction and/or demolition activities for CIP projects may involve the use of water for dust control and could generate wastewater or runoff. Some CIP projects may increase the demand for water supply, wastewater treatment, electricity, or other services, while other projects may improve the efficiency of existing facilities and decrease the demand for these services. Each CIP project is designed with consideration for the increased demand on utility providers and systems and the ability of the existing providers and systems to serve the new project. Applicable permits and authorizations would be obtained before implementation of a CIP project that increases demand for utilities.

New facilities could increase the amount of impervious surfaces on the Base, which could increase storm water runoff. Demolition projects may remove impervious surfaces. Projects in previously developed areas, such as new buildings that replace existing facilities, would result in little to no change in the amount of impervious surfaces in the project area. Storm water runoff from CIP project areas would need to comply with the terms of the Base's NPDES *General Permit for Stormwater Discharges Associated with Industrial Activity from Non-Mining Facilities* (AZMSG2010-002).

Project Impacts

Transportation. Construction and/or demolition activities associated with the nine representative CIP projects would temporarily increase traffic to the Base and on roads within the Base. Traffic management measures would be implemented around the project areas to alert drivers to these activities and any lane closures or detours. Traffic to the Base would include construction contractors and trucks for hauling equipment and materials, which could increase congestion at the Main Gate Access on Craycroft Road or at the Swan and Wilmot Gates due to safety checks. The increased traffic is expected to be minimal, with few daily trips expected based on the nature of the projects and because the projects would be expected to be implemented over different periods of time. Not all projects would require the use of construction contractors or transportation of off-Base equipment to the Base (e.g., renovations); off-Base construction traffic generated by these projects would be less than for the other projects and limited only to material transport.

On-Base traffic during the construction periods may increase congestion in localized areas around the project areas, particularly when lane or road closures are necessary for construction (e.g., road improvements). The projects in the developed areas would have the most noticeable effect on traffic, particularly if these projects are scheduled at the same time, because daily traffic in these areas tends to be higher and more people would be affected. Detours are readily available in the vicinity of each project area to maintain access to areas around the project areas (see Table 3-12 for local access roads), and minimal disruptions to daily traffic would be expected. The hush house, 214 RG headquarters facility, and HAMS yard demolition projects would take place away from main roads and the primary developed areas and would not be expected to affect vehicle traffic. Because of the proximity of the hush house project area to the airfield, traffic management measures in this area would need to incorporate aircraft measures to avoid potential issues (e.g., delays, safety concerns) with aircraft using the road adjacent to the project area. Construction-related impacts on traffic would be insignificant.

Operational traffic on the Base would be similar to current conditions, with some additional traffic expected in areas where new facilities are constructed (i.e., new dormitory, 214 RG headquarters facility, and hush house). These areas are already accessed for similar uses, and the increase in local traffic would be insignificant.

Some of the representative projects would remove parking areas to construct new facilities (i.e., new dormitory, dining facility, chiller system storage), which would reduce the total available parking spaces on the Base. Several parking areas are currently available in the vicinity of these project areas, and additional parking for the new facilities would be constructed in the project areas, as needed. The modification of parking areas may slightly increase the time people need to walk to their buildings, but parking is readily available in the developed areas. Impacts on parking would be insignificant.

The pavement plan would involve improvements to roads and parking areas on the Base, which would require temporary road, lane, or parking area closures during construction. Signs would be posted to notify people of the closures and direct them to detour routes or other available parking to ensure minimal disruptions to traffic and access. The purpose of the pavement plan is to provide long-term improvements to roads and parking areas on the Base and benefit operations.

Utilities. Implementation of the representative CIP projects would increase the demand for utilities and could result in temporary disruptions to service during construction. The pavement plan would have no effect on utilities, other than for the use of water for dust control during construction. The chiller system expansion would improve cooling operations at the Base and benefit uses in the additional buildings that would be connected to the system (see Section 2.1.3). None of the representative projects would affect the liquid fuels system on the Base. None of the projects would modify the storm drainage system.

The new dormitory, dining facility, chiller system, hush house, and 214 RG headquarters facility would require new water supply, wastewater treatment, electricity, and telecommunications services, which would increase the annual demand for these services. The dormitory and Airman Leadership School renovation projects would improve efficiency of the buildings and may slightly reduce the utility demands for these uses. All projects would require water for dust control during construction and demolition activities, but this temporary use of water would be minimal. The Base has available capacity from its existing water supply wells to meet the increased demands from the new facilities and the construction activities. The Pima County treatment facilities and existing sewer system on the Base have capacity to serve the new facilities. The existing electrical and telecommunications systems on the Base would be capable of serving the new facilities using existing or expanded lines. Improved efficiency of Base operations would also be expected to reduce long-term energy generation and demand. Impacts on the Base's utility systems and providers would be insignificant.

Installation of new pipelines and other service lines for the new facilities could result in a temporary disruption of service in the immediate vicinity of the project areas. If any services need to be turned off during construction, the Base would notify all affected parties and attempt to schedule the activities during off-peak times. The chiller system lines would be installed and connected during the winter when the system is not needed to avoid disruptions to the system. Few, if any, disruptions to existing services are anticipated, and impacts would be insignificant.

4.11.2 No-Action Alternative

Under the no-action alternative, none of the representative CIP projects would be implemented, and traffic conditions and utility demands would be the same as the current conditions described in Section 3.11. Operational deficiencies would continue; mission requirements would not be met.

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. Cumulative impacts can result from individually minor, but collectively major 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 is required in an EA or EIS.

5.1.1 Past, Present, and Reasonably Foreseeable Actions

Davis-Monthan AFB is an active military installation that undergoes continuous changes in mission and training requirements in response to U.S. defense policy that requires the Air Force be ready to respond to threats to American interests throughout the world. The Base, like any other major military installation, also requires occasional new construction, facility improvements, and infrastructure upgrades. As such, Davis-Monthan AFB updates facilities on a continual basis. While it is not practical to catalog all projects that could occur over the short-term, the BCAMP identifies priority projects to implement in response to key issues of concern at the Base. The latest BCAMP, approved on November 2, 2011, lists various facility improvements, housing needs, and infrastructure upgrades. These types of projects are typical of ongoing Base improvements, and other projects, such as a solar power system that was evaluated in a 2009 EA (Davis-Monthan AFB 2009c), are periodically implemented to improve Base operations. This analysis of cumulative impacts considers typical project types that may be implemented over the next 3 to 5 years at the Base and could contribute to cumulative impacts in combination with the proposed action.

5.1.2 Analysis of Cumulative Impacts

Earth Resources. The nine representative CIP projects and other projects at the Base would result in surface disturbance and expose soils to wind and water erosion. Most projects would be implemented in previously disturbed areas, which would not substantially alter existing soil conditions at the Base. In addition, as standard practice, BMPs would be used to limit soil movement, stabilize runoff, and control sedimentation. The CIP projects would not modify topography of the Base, and other projects would be expected to cause minimal changes to topography. All projects would be designed to minimize potential damage or hazards associated with hazardous soil or geologic conditions. Cumulative impacts to earth resources would be minimal.

Water Resources. The nine representative CIP projects would result in a net decrease in impervious surface area at the Base, and other projects may increase or decrease the impervious surface area, depending on the specific activities (i.e., demolition versus construction). Overall, impervious surfaces would be expected to be similar to current conditions, with increases or decreases in areas where projects take place, and surface runoff would increase in areas where impervious surfaces are increased. The storm drainage system would be expected to have capacity to accommodate any increase in runoff, or it could be modified to accommodate the runoff in accordance with the Base's General Permit for Stormwater Discharges. The representative projects and other projects at the Base would also increase the potential for water quality impacts, but standard practices require implementation of BMPs to minimize pollutant discharge in runoff. All projects would comply with the Base's SWPPPs and NPDES General Permits. Projects in or near the floodplain of Atterbury Wash would be designed to accommodate flood flow to minimize flood hazards. Cumulative impacts to surface water resources would be minimal. Cumulative increases in groundwater withdrawals would continue to affect the groundwater aquifer.

Biological Resources. The nine representative CIP projects would not affect native habitats and would have minimal effects on special-status species. Most other projects at the Base would be expected to have minimal impacts on native habitats and special-status species because most would be implemented in previously developed or disturbed areas. Projects in undeveloped areas could affect native habitats and special-status species, such as burrowing owl, loggerhead shrike, other birds, and bats, but the Base would coordinate with AZGF, as appropriate, and implement measures to avoid or minimize adverse effects. The cumulative loss of native habitat and impacts on special-status species would be minimal.

Air Quality. The nine representative CIP projects and other projects at the Base would generate temporary emissions during construction and demolition activities and longer term emissions during operation. Few projects would be implemented at the same time, and cumulative emissions would be spread out over several years. Operational impacts would be similar to current conditions, with potential cumulative increases as activities on the Base increase. Facility improvements would be expected to improve efficiencies and reduce operational emissions over the long term. Each project's effects on air quality would be minimal with implementation of BMPs, such as fugitive dust control, and cumulative impacts to regional air quality would also be minimal.

Noise. The nine representative CIP projects and other projects at the Base would generate temporary noise during construction and demolition activities. Construction noise would be limited to the immediate vicinity of the project areas and would not be expected to affect sensitive receptors off-Base. Localized noise may affect sensitive receptors, such as residents, at the Base, but as standard Base practice, activities would be scheduled during daytime hours, to the extent feasible, to avoid

nighttime noise impacts. Operational noise would be similar to current conditions because major changes in operations would not be anticipated as a result of CIP or other Base projects. Cumulative impacts from noise would be minimal.

Land Use/Visual Resources. The nine representative CIP projects and other projects at the Base would result in temporary land use disruptions and visual changes during construction and demolition activities, but long-term land use conflicts or visual effects would not be expected. Temporary disruptions would be minimized through standard construction practices and compliance with Base policies and applicable permits. New facilities would be designed to appear similar to existing facilities and incorporate landscaping around the facilities, and demolition areas would be restored to native grasses or converted to another use, consistent with surrounding uses. Cumulative impacts to land use and visual resources would be minimal.

Socioeconomics/Environmental Justice. The nine representative CIP projects and other projects at the Base would require initial expenditures for construction and demolition activities, but long-term expenditures would be similar to current conditions. Dormitory and residential projects at the Base would generally be intended to improve existing facilities and accommodate the existing demand and would not be expected to increase the Base population. Some temporary relocations may be necessary as improvements are completed. None of the projects is expected to result in disproportionate adverse impacts on minority, low-income, or youth populations. Cumulative impacts associated with socioeconomics and environmental justice would be minimal.

Cultural Resources. The nine representative CIP projects are not expected to adversely affect cultural resources, including known historic properties and previously undiscovered buried resources. Other projects at the Base in undeveloped areas with moderate to high potential to contain cultural resources could affect buried resources, and some projects may involve modifications to historic buildings or other eligible cultural resources at the Base. All activities would comply with the Base's Integrated Cultural Resources Management Plan and applicable laws and regulations, and appropriate measures would be implemented to avoid adverse effects on eligible cultural resources. Cumulative impacts on cultural resources would be minimal.

Safety. The nine representative CIP projects and other projects at the Base would involve safety risks during construction and demolition activities, and some activities would take place in designated safety zones on the Base. Strict adherence to applicable occupational safety requirements would minimize the relatively low risk associated with these activities, and compliance with Base policies and measures in safety zones would minimize potential risks in these zones. Many of the projects would include measures to enhance and correct AT/FP shortfalls as part of the facility designs. Cumulative impacts related to safety would be minimal.

Solid and Hazardous Materials and Waste. The nine representative CIP projects and other projects at the Base would generate construction and demolition waste, including solid and potentially hazardous waste that would be recycled or properly disposed of at local landfills. Hazardous materials and wastes would be handled, stored, and disposed of in accordance with applicable regulations and permits, specifically ACM, lead-based paints, and contaminated soils associated with ERP sites. Some projects may be implemented near ERP sites or in closed ranges and would require waivers and safety measures to minimize hazards. Cumulative impacts relating to solid and hazardous materials and waste would be minimal.

Infrastructure. The nine representative CIP projects and other projects at the Base would result in temporary increase in traffic during construction and demolition activities and could result in temporary disruptions to utility services. Standard Base practices would minimize temporary impacts associated with each project on traffic and utilities. Some of the projects would also increase the demand for utility services, but the cumulative increase would be within the capacity of existing service providers and facilities. Improvement projects would include infrastructure upgrades to improve operational efficiencies. Cumulative impacts on infrastructure would 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 proposal should it be implemented” (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the resulting effects on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy, minerals) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

The proposed action would not have irreversible impacts on the land because the affected parcels could be used for other activities in the future. 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. Future uses may include restoring native habitat or developing other facilities.

The primary irretrievable impact of the proposed action is from the use of energy, labor, materials, and funds for the CIP projects. Irretrievable impacts would result from the use of fuel for construction equipment; energy and other nonrenewable resources for facility operation; and fuel, energy, and other nonrenewable resources for maintenance activities. Direct losses of biological productivity and the use of natural resources for the CIP projects would be inconsequential.

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APPENDIX A

Interagency and Public Coordination

Scoping Process

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SAMPLE LETTER



DEPARTMENT OF THE AIR FORCE

355TH CIVIL ENGINEER SQUADRON (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

SEP 07 2011

James B. Barker, P.E.
Deputy Base Civil Engineer
Davis-Monthan AFB, AZ 85707-3012

Amanda Stone
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Dear Sir/Madam:

The United States Air Force is in the process of preparing an Environmental Assessment (EA) to analyze the potential environmental impacts associated with implementing its three-year Capital Improvement Program (CIP) for Davis-Monthan Air Force Base (DMAFB), Arizona. The EA will evaluate the Proposed Action and No Action Alternative and is being prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality guidelines.

The Proposed Action consists of nine construction, renovation, and demolition projects deemed necessary to fully support the DMAFB mission in FY12-14. Attachment 1 is a map showing the locations of eight of the project areas; the ninth project is road improvements that would be implemented across the base. Attachment 2 provides a project summary table.

We request your assistance in identifying potential issues and areas of environmental impact to be addressed in the EA. If you have any specific input on the EA, we would like to hear from you by October 6, 2011. Please forward written comments to our consultant, North State Resources, attention: Ms. Leslie Wagner, 1321 20th Street, Sacramento, CA 95811, or wagner@nsrnet.com. Thank you for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to be "James B. Barker", is written over a horizontal line.

James B. Barker, P.E., GS-14
Deputy Base Civil Engineer

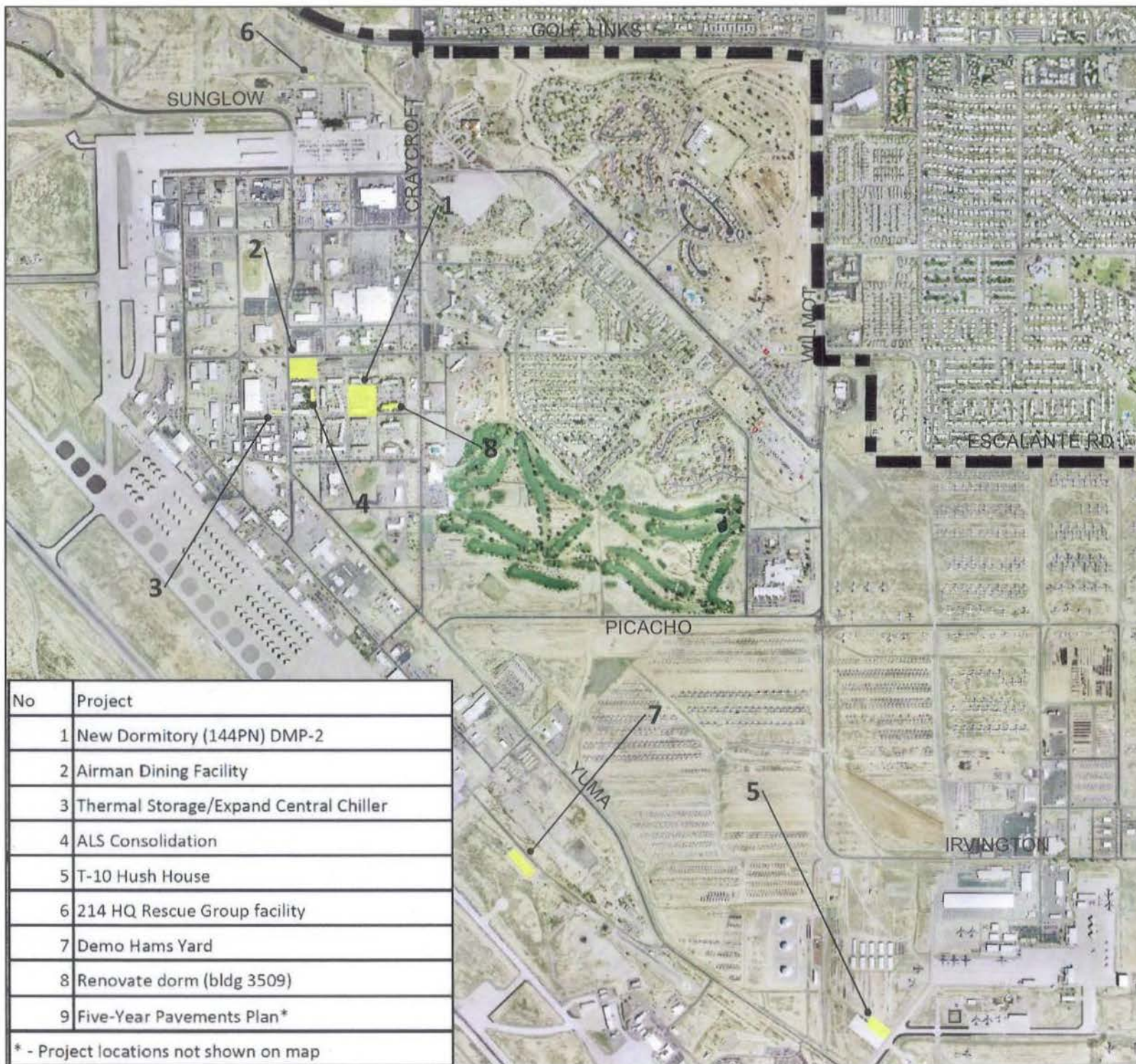
Attachments:

1. Draft CIP EA Projects Map
2. Draft CIP EA Projects Summary Table

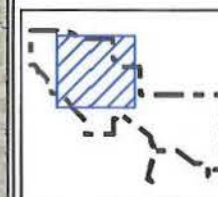
2011-13 Capital Improvement Program (CIP) Environmental Assessment (EA) - DRAFT Project Map

Davis-Monthan AFB
Tucson, AZ


 Project Area
 Installation Boundary



No	Project
1	New Dormitory (144PN) DMP-2
2	Airman Dining Facility
3	Thermal Storage/Expand Central Chiller
4	ALS Consolidation
5	T-10 Hush House
6	214 HQ Rescue Group facility
7	Demo Hams Yard
8	Renovate dorm (bldg 3509)
9	Five-Year Pavements Plan*
* - Project locations not shown on map	



Date Created: 15 Jun 2011
K Bom, 355 CES/CEAO

 Feet
0 500 1,000 2,000

This map is for reference only. Although every effort has been made to ensure the accuracy of information, errors and conditions originating from physical sources used to develop the database may be reflected on this map. The USAF Geobase & 350th CES shall not be liable for any errors, omissions, or damage that results from inappropriate use of this document.

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Draft Capital Improvements Program Environmental Assessment Projects Summary Table

Count	Project	Unit	Details
1	New 144-Person Dormitory - Dormitory Master Plan (DMP) Phase 2	355th Mission Support Group (355 MSG)	Construct new 144-person dormitory, consistent with DMP.
2	Airman Dining Facility	355 MSG	Construct 1,192 SM split-face block facility will house an Airman Dining Facility. The structure will have a single story with a reinforced concrete foundation, floor slab, masonry walls, structural steel frame and metal roof system. Included are all utilities, site work, equipment, fire protection, and other support as required. Work includes demolition of Building 4100.
3	Ice Storage/Expand Central Chiller	355 MSG	Construct 1,918 LM of new chilled water distribution lines. Construct thermal storage facility with 1,300 ton capacity.
4	Airman Leadership School Consolidation (Bldg 4101)	355 MSG	Repair Airman Leadership School (ALS), including new roofing system.
5	T-10 Engine Test Cell	Aerospace Maintenance & Regeneration Center (AMARG)	Construct 4,000 SM power check pad (foundation and slab), and install T-10 Hush House.
6	214th Reconnaissance Group Headquarters Facility	Air National Guard	Construct 206 SM group headquarters facility to accommodate Group Commander and Deputy, two executive officers, Group Superintendent, and Group Shirt. Facility will also include Stan Eval work area which will include a common area.
7	Demo Holding Area Munitions Storage Yard	355 MSG	Demolish existing 20 SM facility and corresponding munitions holding yard to include all pavement (4,209 SM), fencing, and exterior lighting. Selective asbestos removal may also be required.
8	Repair Dorm (Bldg 3509)	355 MSG	Repair and modernize dormitory. This project will sustain dorm 3509 by updating the dorm rooms. Demolish carpet, tile, light fixtures, wall lockers, vanity, and sink. Repaint dorm rooms, bathrooms, railings, and doors. Replace door signs. Install new carpet, tile, light fixtures, vanity, and sink.
9	Pavements (Roads/Parking)	355 MSG	Construct new roads, parking lots and sidewalks at multiple locations to improve vehicle and pedestrian circulation, consistent with 5-Year Pavements Plan. Repair, reseal and restripe existing pavements at multiple locations.



**PIMA COUNTY
DEPARTMENT OF ENVIRONMENTAL QUALITY**

33 North Stone Avenue, Suite 700
Tucson, Arizona 85701-1429
www.deq.pima.gov

Ursula Kramer, P.E.
Director

(520) 243-7400
FAX (520) 838-7432

September 13, 2011

North State Resources
Attn: Ms. Leslie Wagner
1321 20th Street
Sacramento, CA 95811

Sent Via Email
wagner@nsrnet.com

Dear Ms. Wagner,

In response to your letter dated October 4, 2010 requesting the identification of any issues or concerns regarding the proposed bridge scour and retrofit project along Interstate 19, Pima County Department of Environmental Quality (PDEQ) is providing the following information.

Fugitive Dust Activity Permits

Title 17 of the Pima County Code, Section 17.12.470.A states in part, "*No person shall conduct, cause, suffer, allow land stripping, earthmoving, blasting, trenching or road construction without first obtaining an activity permit from the Control Officer.*" Section 17.12.470.B states that a single activity permit is required for land stripping and/or earthmoving activities totaling more than one acre in size, trenching activities totaling more than 300 feet in length, and road construction activities totaling more than 50 feet in length. Details on obtaining a fugitive dust activity permit may be found at the PDEQ website:

<http://www.deq.pima.gov/air/FugitiveDustProgram.htm>

Storm Water Permits for Construction Sites

The Arizona Department of Environmental Quality (ADEQ) regulates storm water discharges from construction sites, including clearing, grading and excavation activities. Construction activities may include road building, construction of residential houses, office buildings, or industrial buildings; and demolition activity. If a construction activity is undertaken at an industrial facility that already holds a permit for industrial storm water discharges, a separate permit must be obtained for the construction activity.

The Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for Discharges from Construction Activities requires the submittal of a Notice of Intent (NOI) at least two days before the start of construction. The construction site operator must also prepare and maintain a Storm Water Pollution Prevention Plan. After completion of a construction project, site operator(s) must submit a Notice of Termination (NOT) to ADEQ. The NOT certifies that specific activities in the SWPPP have ended and that one of the following conditions is true:

- Final stabilization is complete, and temporary erosion and sediment controls have been removed.
- All discharges from the construction area have been eliminated.
- The operator has changed, and the new operator is responsible for compliance. The new operator is responsible for submitting an NOI if activities continue.

The ADEQ website provides more information on construction storm water permitting: <http://www.azdeq.gov/environ/water/permits/stormwater.html#const>.

Asbestos NESHAP Regulations

40 CFR, Part 61 – National Emission Standards for Hazardous Air Pollutants, Subpart M – National Emission Standard for Asbestos § 61.145(a) requires that the owner or operator thoroughly inspect a facility for the presence of asbestos prior to renovation or demolition activity. Furthermore, a NESHAP activity permit may be required from PDEQ and further standards may apply based on the findings of the asbestos inspection. Additional information about the asbestos NESHAP regulations may be found at the PDEQ website:

<http://www.deq.pima.gov/air/asbestos/AsbestosProgram.htm>

I hope that this information is helpful as you move forward with this project. Please call our department at (520) 243-7400 if you have any questions regarding this correspondence.

Sincerely,



Anna Martin

Air Compliance Inspector

cc: PDEQ Air Agency Response Letters - DMAFB

From: [Wendy S. LeStarge](#)
To: [Leslie Wagner;](#)
cc: [Linda C. Taunt;](#)
Subject: Davis-Monthan Air Force Base Capital Improvement Program
Date: Tuesday, September 27, 2011 12:05:53 PM

Ms. Wagner,

On behalf of Linda Taunt, Deputy Division Director of the Arizona Department of Environmental Quality, Water Quality Division, we do not have any comments at this time related to water quality but we would like to receive a copy of the future Environmental Assessment.

Thank you.

*Wendy LeStarge
Environmental Rules Specialist
Arizona Department of Environmental Quality
Water Quality Division
(602) 771-4836*



Janice K. Brewer
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Henry R. Darwin
Director

September 28, 2011

Ms. Leslie Wagner
North State Resources
1321 20th Street
Sacramento, CA 95811

RE: Pima County: Scoping Letter for the Davis-Monthan Air Force Base Nine Projects
Environmental Assessment

Dear Ms. Wagner:

The ADEQ Air Quality Division has reviewed your letter, dated September 7, 2011, concerning the Scoping Letter for the Davis-Monthan Air Force Base Nine Projects. Your projects are located in a maintenance area for carbon monoxide (CO). As described, they may have a de minimis impact on air quality. Disturbance of particulate matter and possible asbestos is anticipated during construction. Considering prevailing winds, to comply with other applicable air pollution control requirements and minimize adverse impacts on public health and welfare, the following information is provided for consideration:

PREVENT RELEASE OF REGULATED ASBESTOS FIBERS

Title 40 Code of Federal Regulations § 61.145 contains requirements to survey for the presence of asbestos at each demolition or renovation activity prior to demolition or renovation (Asbestos National Emission Standards for Hazardous Air Pollutants. A 10-business days advance notification of demolition is required for every demolition project (unless at an exempt facility) and for any renovation project that would disturb at least 260 linear feet, on pipes, at least 160 square feet on other components, or at least 35 cubic feet where length or area cannot be measured. A permit may be required. To determine applicability of asbestos survey and work practice standards, please contact the Environmental Program Specialist, Air Quality Division Compliance Section at (602) 771-2333.

REDUCE DISTURBANCE of PARTICULATE MATTER during CONSTRUCTION

This action, plan or activity may temporarily increase ambient particulate matter (dust) levels. Particulate matter 10 microns in size and smaller can penetrate the lungs of human beings and animals and is subject to a National Ambient Air Quality Standard (NAAQS) to protect public health and welfare. Particulate matter 2.5 microns in size and smaller is difficult for lungs to expel and has been linked to increases in death rates; heart attacks by disturbing heart rhythms

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and increasing plaque and clotting; respiratory infections; asthma attacks and cardiopulmonary obstructive disease (COPD) aggravation. It is also subject to a NAAQS.

The following measures are recommended to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site:

- I. Site Preparation and Construction
 - A. Minimize land disturbance;
 - B. Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air;
 - C. Cover trucks when hauling soil;
 - D. Minimize soil track-out by washing or cleaning truck wheels before leaving construction site;
 - E. Stabilize the surface of soil piles; and
 - F. Create windbreaks.
- II. Site Restoration
 - A. Revegetate any disturbed land not used;
 - B. Remove unused material; and
 - C. Remove soil piles via covered trucks.

The following rules applicable to reducing dust during construction, demolition and earth moving activities are enclosed:

- ☐ Arizona Administrative Code R18-2-604 through -607
- ☐ Arizona Administrative Code R18-2-804

Should you have further questions, please do not hesitate to call me at (602) 771-2375, or Lhamo LeMoine at (602) 771-2373.

Very truly yours,



Diane L. Arnst, Manager
Air Quality Planning Section

Enclosures (2)

cc: Bret Parke, EV Administrative Counsel
Lhamo LeMoine, Administrative Secretary
File No. 267554

R18-2-605. Roadways and Streets

- A. No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust and other particulates shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down, detouring or by other reasonable means.
- B. No person shall cause, suffer, allow or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from becoming airborne. Earth or other material that is deposited by trucking or earth moving equipment shall be removed from paved streets by the person responsible for such deposits.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-605 renumbered without change as Section R18-2-605 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-605 renumbered to R18-2-805, new Section R18-2-605 renumbered from R18-2-405 effective November 15, 1993 (Supp. 93-4).

R18-2-606. Material Handling

No person shall cause, suffer, allow or permit crushing, screening, handling, transporting or conveying of materials or other operations likely to result in significant amounts of airborne dust without taking reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-606 renumbered from R18-2-406 effective November 15, 1993 (Supp. 93-4).

R18-2-607. Storage Piles

- A. No person shall cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.
- B. Stacking and reclaiming machinery utilized at storage piles shall be operated at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-607 renumbered from R18-2-407 effective November 15, 1993 (Supp. 93-4).

R18-2-608. Mineral Tailings

No person shall cause, suffer, allow, or permit construction of mineral tailing piles without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Reasonable precautions shall mean wetting, chemical stabilization, revegetation or such other measures as are approved by the Director.

Historical Note

Section R18-2-608 renumbered from R18-2-408, new Section R18-2-408 adopted effective November 15, 1993 (Supp. 93-4).

R18-2-609. Agricultural Practices

A person shall not cause, suffer, allow, or permit the performance of agricultural practices outside the Phoenix and Yuma planning areas, as defined in 40 CFR 81.303, which is incorporated by reference in R18-2-210, including tilling of land and application of fertilizers without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-609 renumbered from R18-2-409 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 6 A.A.R. 2009, effective May 12, 2000 (Supp. 00-2). Amended by final rulemaking at 11 A.A.R. 2210, effective July 18, 2005 (Supp. 05-2).

R18-2-610. Definitions for R18-2-611

The definitions in Article 1 of this Chapter and the following definitions apply to R18-2-611:

1. "Access restriction" means restricting or eliminating public access to noncropland with signs or physical obstruction.
2. "Aggregate cover" means gravel, concrete, recycled road base, caliche, or other similar material applied to noncropland.
3. "Artificial wind barrier" means a physical barrier to the wind.
4. "Best management practice" means a technique verified by scientific research, that on a case-by-case basis is practical, economically feasible, and effective in reducing PM₁₀ emissions from a regulated agricultural activity.
5. "Chemical irrigation" means applying a fertilizer, pesticide, or other agricultural chemical to cropland through an irrigation system.
6. "Combining tractor operations" means performing two or more tillage, cultivation, planting, or harvesting operations with a single tractor or harvester pass.
7. "Commercial farm" means 10 or more contiguous acres of land used for agricultural purposes within the boundary of the Maricopa PM₁₀ nonattainment area.
8. "Commercial farmer" means an individual, entity, or joint operation in general control of a commercial farm.
9. "Committee" means the Governor's Agricultural Best Management Practices Committee.
10. "Cover crop" means plants or a green manure crop grown for seasonal soil protection or soil improvement.
11. "Critical area planting" means using trees, shrubs, vines, grasses, or other vegetative cover on noncropland.
12. "Cropland" means land on a commercial farm that:
 - a. Is within the time-frame of final harvest to plant emergence;
 - b. Has been tilled in a prior year and is suitable for crop production, but is currently fallow; or
 - c. Is a turn-row.

- c. If the burning would occur at a solid waste facility in violation of 40 CFR 258.24 and the Director has not issued a variance under A.R.S. § 49-763.01.
- E. Open outdoor fires of dangerous material. A fire set for the disposal of a dangerous material is allowed by the provisions of this Section, when the material is too dangerous to store and transport, and the Director has issued a permit for the fire. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The Director shall permit fires for the disposal of dangerous materials only when no safe alternative method of disposal exists, and burning the materials does not result in the emission of hazardous or toxic substances either directly or as a product of combustion in amounts that will endanger health or safety.
- F. Open outdoor fires of household waste. An open outdoor fire for the disposal of household waste is allowed by provisions of this Section when permitted in writing by the Director or a delegated authority. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The permittee shall conduct open outdoor fires of household waste in an approved waste burner and shall either:
1. Burn household waste generated on-site on farms or ranches of 40 acres or more where no household waste collection or disposal service is available; or
 2. Burn household waste generated on-site where no household waste collection and disposal service is available and where the nearest other dwelling unit is at least 500 feet away.
- G. Permits issued by a delegated authority. The Director may delegate authority for the issuance of open burning permits to a county, city, town, air pollution control district, or fire district. A delegated authority may not issue a permit for its own open burning activity. The Director shall not delegate authority to issue permits to burn dangerous material under subsection (E). A county, city, town, air pollution control district, or fire district with delegated authority from the Director may assign that authority to one or more private fire protection service providers that perform fire protection services within the county, city, town, air pollution control district, or fire district. A private fire protection provider shall not directly or indirectly condition the issuance of open burning permits on the applicant being a customer. Permits issued under this subsection shall comply with the requirements in subsection (D)(3) and be in a format prescribed by the Director. Each delegated authority shall:
1. Maintain a copy of each permit issued for the previous five years available for inspection by the Director;
 2. For each permit currently issued, have a means of contacting the person authorized by the permit to set an open fire if an order to extinguish open burning is issued; and
 3. Annually submit to the Director by May 15 a record of daily burn activity, excluding household waste burn permits, on a form provided by the Director for the previous calendar year containing the information required in subsections (D)(3)(e) and (D)(3)(f).
- H. The Director shall hold an annual public meeting for interested parties to review operations of the open outdoor fire program and discuss emission reduction techniques.
- I. Nothing in this Section is intended to permit any practice that is a violation of any statute, ordinance, rule, or regulation.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Amended effective October 2, 1979 (Supp. 79-5). Correction, subsection (C) repealed effective October 2, 1979, not shown (Supp. 80-1). Former Section R9-3-602 renumbered without change as Section R18-2-602 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-602 renumbered to R18-2-802, new Section R18-2-602 renumbered from R18-2-401 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-603. Repealed

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-603 renumbered without change as Section R18-2-603 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-603 renumbered to R18-2-803, new Section R18-2-603 renumbered from R18-2-403 effective November 15, 1993 (Supp. 93-4). Repealed effective October 8, 1996 (Supp. 96-4).

R18-2-604. Open Areas, Dry Washes, or Riverbeds

- A. No person shall cause, suffer, allow, or permit a building or its appurtenances, or a building or subdivision site, or a driveway, or a parking area, or a vacant lot or sales lot, or an urban or suburban open area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Dust and other types of air contaminants shall be kept to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means.
- B. No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne. Dust shall be kept to a minimum by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means.
- C. No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area in such a way as to cause or contribute to visible dust emissions which then cross property lines into a residential, recreational, institutional, educational, retail sales, hotel or business premises. For purposes of this subsection "motor vehicles" shall include, but not be limited to trucks, cars, cycles, bikes, buggies and 3-wheelers. Any person who violates the provisions of this subsection shall be subject to prosecution under A.R.S. § 49-463.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-604 renumbered without change as Section R18-2-604 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-604 renumbered to R18-2-804, new Section R18-2-604 renumbered from R18-2-404 and amended effective November 15, 1993 (Supp. 93-4).

ARTICLE 8. EMISSIONS FROM MOBILE SOURCES (NEW AND EXISTING)

R18-2-801. Classification of Mobile Sources

- A. This Article is applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations.
- B. Unless otherwise specified, no mobile source shall emit smoke or dust the opacity of which exceeds 40%.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-801 renumbered to Section R18-2-901, new Section R18-2-801 renumbered from R18-2-601 effective November 15, 1993 (Supp. 93-4).

R18-2-802. Off-road Machinery

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.
- B. Off-road machinery shall include trucks, graders, scrapers, rollers, locomotives and other construction and mining machinery not normally driven on a completed public roadway.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-802 renumbered to Section R18-2-902, new Section R18-2-802 renumbered from R18-2-602 effective November 15, 1993 (Supp. 93-4).

R18-2-803. Heater-planer Units

No person shall cause, allow or permit to be emitted into the atmosphere from any heater-planer operated for the purpose of reconstructing asphalt pavements smoke the opacity of which exceeds 20%. However three minutes' upset time in any one hour shall not constitute a violation of this Section.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-803 renumbered to Section R18-2-903, new Section R18-2-803 renumbered from R18-2-603 effective November 15, 1993 (Supp. 93-4).

R18-2-804. Roadway and Site Cleaning Machinery

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.
- B. In addition to complying with subsection (A), no person shall cause, allow or permit the cleaning of any site, roadway, or alley without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions may include applying dust suppressants. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-804 renumbered to Section R18-2-904, new Section R18-2-804 renumbered from R18-2-604 effective November 15, 1993 (Supp. 93-4).

R18-2-805. Asphalt or Tar Kettles

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any asphalt or tar kettle smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%.
- B. In addition to complying with subsection (A), no person shall cause, allow or permit the operation of an asphalt or tar kettle without minimizing air contaminant emissions by utilizing all of the following control measures:
 1. The control of temperature recommended by the asphalt or tar manufacturer;
 2. The operation of the kettle with lid closed except when charging;
 3. The pumping of asphalt from the kettle or the drawing of asphalt through cocks with no dipping;
 4. The dipping of tar in an approved manner;
 5. The maintaining of the kettle in clean, properly adjusted, and good operating condition;
 6. The firing of the kettle with liquid petroleum gas or other fuels acceptable to the Director.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-805 renumbered to Section R18-2-905, new Section R18-2-805 renumbered from R18-2-605 effective November 15, 1993 (Supp. 93-4).



October 6, 2011

Ms. Leslie Wagner
North State Resources
1321 20th Street
Sacramento, CA 95811

Re: Davis-Monthan Air Force Base Proposed Action

Dear Ms. Wagner:

Thank you for your letter giving Pima Association of Governments (PAG) the opportunity to review the Davis-Monthan Air Force Base Proposed Action planned for FY12-14. We have found the Proposed Action to be consistent with our 2040 Regional Transportation Plan (RTP). To our knowledge, this project does not conflict with any existing regional transportation projects.

Sincerely,

Jennifer O'Connor, M.P.A.
Senior Transportation Planner

Draft EA Review



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Notice of Availability

U.S. Air Force Draft Environmental Assessment (EA) for Infrastructure Improvements at Davis-Monthan Air Force Base (AFB), Arizona.

The U.S. Air Force has prepared a Draft Environmental Assessment and Draft Finding of No Significant Impact analyzing the potential impacts of implementing the Capital Improvements Program for Davis-Monthan Air Force Base in fiscal years 2012-14. The CIP identifies construction and demolition projects proposed to improve facilities at Davis-Monthan AFB, to ensure that Davis-Monthan AFB has the upgrades necessary to support its mission to protect and preserve the national interests of the United States of America.

A copy of the Draft EA and FONSI will be available January 19, 2012 at the Joel D. Valdez Main Library at 101 N Stone Avenue, Tucson, Ariz. An electronic copy of the document is also located on the Davis-Monthan AFB www.dm.af.mil. Alternatively, you may request a copy of the document from Davis-Monthan AFB Public Affairs at (520) 228-3406.

Please provide any comments on the Draft EA by February 21, 2012 to the mailing or email address below:

North State Resources

1321 20th Street

Sacramento, CA 95811

Attn: Ms. Leslie Wagner or

wagner@nsrnet.com

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Capital improvements Program Draft Environmental Assessment available soon

1/18/2012 - **DAVIS-MONTHAN AIR FORCE BASE, Ariz.** -- The U.S. Air Force has prepared a Draft Environmental Assessment and Draft Finding of No Significant Impact analyzing the potential impacts of implementing the Capital Improvements Program for Davis-Monthan Air Force Base in fiscal years 2012-14. The CIP identifies construction and demolition projects proposed to improve facilities at Davis-Monthan AFB, to ensure that Davis-Monthan AFB has the upgrades necessary to support its mission to protect and preserve the national interests of the United States of America.

A copy of the Draft EA will be available January 19, 2012 at the Joel D. Valdez Main Library at 101 N Stone Avenue, Tucson, Ariz. An electronic copy of the document is also located [here](#).

Please provide any comments on the Draft EA by February 21, 2012 to the mailing or email address below:

North State Resources
1321 20th Street
Sacramento, CA 95811
Attn: Ms. Leslie Wagner

or:

wagner@nsrnet.com

2012-14 CIP Projects Draft EA Distribution List

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The Honorable Jan Brewer
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Sells, AZ 85634

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Marana, AZ 85653

Bob Conant
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11000 N La Canada Drive
Oro Valley, AZ 85737

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David Duffy
U of A Planning
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Tucson, AZ 85721

United States Environmental Protection
Agency - Region 9
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San Francisco, CA 94105

Ms. Marjory Blaine
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Glendale, AZ 85306

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201 N Bonita Avenue, Suite 141
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Librarian
Pima County Public Library
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Anna Martin, Air Compliance Inspector
Pima County Department of Environmental
Quality
33 N. Stone Avenue, Suite 700
Tucson, AZ 85701

Linda Taut, Deputy Director
Arizona Department of Environmental Quality
– Water Quality Division
1110 West Washington Street
Phoenix, Arizona 85007

2012-14 CIP Projects Draft EA Distribution List

Diane Arnst, Manager

Arizona Department of Environmental Quality

– Air Quality Division

1110 West Washington Street

Phoenix, Arizona 85007

SAMPLE LETTER



DEPARTMENT OF THE AIR FORCE

355TH CIVIL ENGINEER SQUADRON (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

James B. Barker, P.E.
Deputy Base Civil Engineer
3791 South 3rd Street
Davis-Monthan AFB, AZ 85707-3012

Arizona Department of Agriculture
1688 W. Adams
Phoenix, AZ 85007

Dear Sir/Madam

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) that evaluates the potential environmental impacts associated with implementing its three-year Capital Improvement Program (CIP) for Davis-Monthan Air Force Base (AFB), Arizona (AZ). The environmental analysis for the Proposed Action and No Action alternative is being conducted in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969 (NEPA).

The Proposed Action consists of nine representative construction, renovation, and demolition projects deemed necessary to fully support the Davis-Monthan AFB mission in FY12-14. The nine projects evaluated in the EA include a new dormitory; new dining facility, including demolition of the existing facility; new chilled water distribution lines and thermal storage; upgrades to the Airman Leadership School; a T-10 hush house; a new headquarters facility for the 214th Reconnaissance Group; demolition of the former holding area munitions storage yard; dormitory upgrades; and paving of roads and parking areas. In addition to the Proposed Action, the No Action alternative has been analyzed in the EA.

This letter has been sent to you in accordance with the public comment process required by the Council on Environmental Quality regulations implementing NEPA and for the purpose of interagency and intergovernmental coordination and notification for environmental planning. The Air Force invites you to review the attached copy of the Draft EA and provide any comments and concerns you may have regarding this Proposed Action.

If you have any specific items of interest about the EA, we would like to hear from you by February 21, 2012. Please forward your written comments to our environmental consultant, Ms. Leslie Perry, North State Resources, 1321 20th Street, Sacramento, California, 95833. Thank you for your assistance.

Sincerely

A handwritten signature in black ink, appearing to read "James B. Barker", is written over a circular stamp or seal.

JAMES B. BARKER, P.E., GS-13
Deputy Base Civil Engineer

Attachment:

1. Draft Environmental Assessment for 2012-14 Capital Improvements Program (CIP) Davis-Monthan AFB, Tucson, Arizona



Janice K. Brewer
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov



Henry R. Darwin
Director

January 27, 2012

Ms. Leslie Perry
North State Resources
1321 20th Street
Sacramento, CA 95833

RE: Pima County: Scoping Letter for the Davis-Monthan Air Force Base Capital Improvement Program, Environmental Assessment

Dear Ms. Perry:

The ADEQ Air Quality Division has reviewed your letter requesting a Scoping Letter for the Davis-Monthan Air Force Base Capital Improvement Program. Your project is located in a maintenance area for carbon monoxide. It is also within an area subject to pending litigation asking EPA to designate portions of Pima County to 10-micron particulate matter (PM₁₀) nonattainment. As described, it may have a de minimis impact on air quality. Disturbance of asbestos and particulate matter is anticipated during construction. Considering prevailing winds, to comply with other applicable air pollution control requirements and minimize adverse impacts on public health and welfare, the following information is provided for consideration:

PREVENT RELEASE OF REGULATED ASBESTOS FIBERS

Title 40 Code of Federal Regulations § 61.145 contains requirements to survey for the presence of asbestos at each demolition or renovation activity prior to demolition or renovation (Asbestos National Emission Standards for Hazardous Air Pollutants. A 10-business days advance notification of demolition is required for every demolition project (unless at an exempt facility) and for any renovation project that would disturb at least 260 linear feet, on pipes, at least 160 square feet on other components, or at least 35 cubic feet where length or area cannot be measured. A permit may be required. To determine applicability of asbestos survey and work practice standards, please contact the Pima County Department of Environmental Quality, Air Program at air.permits@deq.pima.gov or by phone at 520-243-7400.

REDUCE DISTURBANCE of PARTICULATE MATTER during CONSTRUCTION

This action, plan or activity may temporarily increase ambient particulate matter (dust) levels. Particulate matter 10 microns in size and smaller can penetrate the lungs of human beings and animals and is subject to a National Ambient Air Quality Standard (NAAQS) to protect public health and welfare. Particulate matter 2.5 microns in size and smaller is difficult for lungs to expel and has been linked to increases in death rates; heart attacks by disturbing heart rhythms

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and increasing plaque and clotting; respiratory infections; asthma attacks and cardiopulmonary obstructive disease (COPD) aggravation. It is also subject to a NAAQS.

The following measures are recommended to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site:

- I. Site Preparation and Construction
 - A. Minimize land disturbance;
 - B. Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air;
 - C. Cover trucks when hauling soil;
 - D. Minimize soil track-out by washing or cleaning truck wheels before leaving construction site;
 - E. Stabilize the surface of soil piles; and
 - F. Create windbreaks.
- II. Site Restoration
 - A. Revegetate any disturbed land not used;
 - B. Remove unused material; and
 - C. Remove soil piles via covered trucks.

The following rules applicable to reducing dust from open areas, dry washes or riverbeds, roadways and streets are enclosed:

- ☐ Arizona Administrative Code R18-2-604 and R18-2-605
- ☐ Arizona Administrative Code R18-2-804

Should you have further questions, please do not hesitate to call me at (602) 771-2375, or Lhamo LeMoine at (602) 771-2373.

Very truly yours,



Diane L. Arnst, Manager
Air Quality Planning Section

Enclosures (2)

cc: Bret Parke, EV Administrative Counsel
Lhamo LeMoine, Administrative Secretary
Files 277342 and 277442

- c. If the burning would occur at a solid waste facility in violation of 40 CFR 258.24 and the Director has not issued a variance under A.R.S. § 49-763.01.
- E. Open outdoor fires of dangerous material. A fire set for the disposal of a dangerous material is allowed by the provisions of this Section, when the material is too dangerous to store and transport, and the Director has issued a permit for the fire. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The Director shall permit fires for the disposal of dangerous materials only when no safe alternative method of disposal exists, and burning the materials does not result in the emission of hazardous or toxic substances either directly or as a product of combustion in amounts that will endanger health or safety.
- F. Open outdoor fires of household waste. An open outdoor fire for the disposal of household waste is allowed by provisions of this Section when permitted in writing by the Director or a delegated authority. A permit issued under this subsection shall contain all provisions in subsection (D)(3) except for subsections (D)(3)(e) and (D)(3)(f). The permittee shall conduct open outdoor fires of household waste in an approved waste burner and shall either:
1. Burn household waste generated on-site on farms or ranches of 40 acres or more where no household waste collection or disposal service is available; or
 2. Burn household waste generated on-site where no household waste collection and disposal service is available and where the nearest other dwelling unit is at least 500 feet away.
- G. Permits issued by a delegated authority. The Director may delegate authority for the issuance of open burning permits to a county, city, town, air pollution control district, or fire district. A delegated authority may not issue a permit for its own open burning activity. The Director shall not delegate authority to issue permits to burn dangerous material under subsection (E). A county, city, town, air pollution control district, or fire district with delegated authority from the Director may assign that authority to one or more private fire protection service providers that perform fire protection services within the county, city, town, air pollution control district, or fire district. A private fire protection provider shall not directly or indirectly condition the issuance of open burning permits on the applicant being a customer. Permits issued under this subsection shall comply with the requirements in subsection (D)(3) and be in a format prescribed by the Director. Each delegated authority shall:
1. Maintain a copy of each permit issued for the previous five years available for inspection by the Director;
 2. For each permit currently issued, have a means of contacting the person authorized by the permit to set an open fire if an order to extinguish open burning is issued; and
 3. Annually submit to the Director by May 15 a record of daily burn activity, excluding household waste burn permits, on a form provided by the Director for the previous calendar year containing the information required in subsections (D)(3)(e) and (D)(3)(f).
- H. The Director shall hold an annual public meeting for interested parties to review operations of the open outdoor fire program and discuss emission reduction techniques.
- J. Nothing in this Section is intended to permit any practice that is a violation of any statute, ordinance, rule, or regulation.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Amended effective October 2, 1979 (Supp. 79-5). Correction, subsection (C) repealed effective October 2, 1979, not shown (Supp. 80-1). Former Section R9-3-602 renumbered without change as Section R18-2-602 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-602 renumbered to R18-2-802, new Section R18-2-602 renumbered from R18-2-401 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 10 A.A.R. 388, effective March 16, 2004 (Supp. 04-1).

R18-2-603. Repealed

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-603 renumbered without change as Section R18-2-603 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-603 renumbered to R18-2-803, new Section R18-2-603 renumbered from R18-2-403 effective November 15, 1993 (Supp. 93-4). Repealed effective October 8, 1996 (Supp. 96-4).

R18-2-604. Open Areas, Dry Washes, or Riverbeds

- A. No person shall cause, suffer, allow, or permit a building or its appurtenances, or a building or subdivision site, or a driveway, or a parking area, or a vacant lot or sales lot, or an urban or suburban open area to be constructed, used, altered, repaired, demolished, cleared, or leveled, or the earth to be moved or excavated, without taking reasonable precautions to limit excessive amounts of particulate matter from becoming airborne. Dust and other types of air contaminants shall be kept to a minimum by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means.
- B. No person shall cause, suffer, allow, or permit a vacant lot, or an urban or suburban open area, to be driven over or used by motor vehicles, trucks, cars, cycles, bikes, or buggies, or by animals such as horses, without taking reasonable precautions to limit excessive amounts of particulates from becoming airborne. Dust shall be kept to a minimum by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means.
- C. No person shall operate a motor vehicle for recreational purposes in a dry wash, riverbed or open area in such a way as to cause or contribute to visible dust emissions which then cross property lines into a residential, recreational, institutional, educational, retail sales, hotel or business premises. For purposes of this subsection "motor vehicles" shall include, but not be limited to trucks, cars, cycles, bikes, buggies and 3-wheelers. Any person who violates the provisions of this subsection shall be subject to prosecution under A.R.S. § 49-463.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-604 renumbered without change as Section R18-2-604 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-604 renumbered to R18-2-804, new Section R18-2-604 renumbered from R18-2-404 and amended effective November 15, 1993 (Supp. 93-4).

R18-2-605. Roadways and Streets

- A. No person shall cause, suffer, allow or permit the use, repair, construction or reconstruction of a roadway or alley without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Dust and other particulates shall be kept to a minimum by employing temporary paving, dust suppressants, wetting down, detouring or by other reasonable means.
- B. No person shall cause, suffer, allow or permit transportation of materials likely to give rise to airborne dust without taking reasonable precautions, such as wetting, applying dust suppressants, or covering the load, to prevent particulate matter from becoming airborne. Earth or other material that is deposited by trucking or earth moving equipment shall be removed from paved streets by the person responsible for such deposits.

Historical Note

Adopted effective May 14, 1979 (Supp. 79-1). Former Section R9-3-605 renumbered without change as Section R18-2-605 (Supp. 87-3). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-605 renumbered to R18-2-805, new Section R18-2-605 renumbered from R18-2-405 effective November 15, 1993 (Supp. 93-4).

R18-2-606. Material Handling

No person shall cause, suffer, allow or permit crushing, screening, handling, transporting or conveying of materials or other operations likely to result in significant amounts of airborne dust without taking reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-606 renumbered from R18-2-406 effective November 15, 1993 (Supp. 93-4).

R18-2-607. Storage Piles

- A. No person shall cause, suffer, allow, or permit organic or inorganic dust producing material to be stacked, piled, or otherwise stored without taking reasonable precautions such as chemical stabilization, wetting, or covering to prevent excessive amounts of particulate matter from becoming airborne.
- B. Stacking and reclaiming machinery utilized at storage piles shall be operated at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents, as to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-607 renumbered from R18-2-407 effective November 15, 1993 (Supp. 93-4).

R18-2-608. Mineral Tailings

No person shall cause, suffer, allow, or permit construction of mineral tailing piles without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne. Reasonable precautions shall mean wetting, chemical stabilization, revegetation or such other measures as are approved by the Director.

Historical Note

Section R18-2-608 renumbered from R18-2-408, new Section R18-2-408 adopted effective November 15, 1993 (Supp. 93-4).

R18-2-609. Agricultural Practices

A person shall not cause, suffer, allow, or permit the performance of agricultural practices outside the Phoenix and Yuma planning areas, as defined in 40 CFR 81.303, which is incorporated by reference in R18-2-210, including tilling of land and application of fertilizers without taking reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne.

Historical Note

Section R18-2-609 renumbered from R18-2-409 effective November 15, 1993 (Supp. 93-4). Amended by final rulemaking at 6 A.A.R. 2009, effective May 12, 2000 (Supp. 00-2). Amended by final rulemaking at 11 A.A.R. 2210, effective July 18, 2005 (Supp. 05-2).

R18-2-610. Definitions for R18-2-611

The definitions in Article 1 of this Chapter and the following definitions apply to R18-2-611:

1. "Access restriction" means restricting or eliminating public access to noncropland with signs or physical obstruction.
2. "Aggregate cover" means gravel, concrete, recycled road base, caliche, or other similar material applied to noncropland.
3. "Artificial wind barrier" means a physical barrier to the wind.
4. "Best management practice" means a technique verified by scientific research, that on a case-by-case basis is practical, economically feasible, and effective in reducing PM₁₀ emissions from a regulated agricultural activity.
5. "Chemical irrigation" means applying a fertilizer, pesticide, or other agricultural chemical to cropland through an irrigation system.
6. "Combining tractor operations" means performing two or more tillage, cultivation, planting, or harvesting operations with a single tractor or harvester pass.
7. "Commercial farm" means 10 or more contiguous acres of land used for agricultural purposes within the boundary of the Maricopa PM₁₀ nonattainment area.
8. "Commercial farmer" means an individual, entity, or joint operation in general control of a commercial farm.
9. "Committee" means the Governor's Agricultural Best Management Practices Committee.
10. "Cover crop" means plants or a green manure crop grown for seasonal soil protection or soil improvement.
11. "Critical area planting" means using trees, shrubs, vines, grasses, or other vegetative cover on noncropland.
12. "Cropland" means land on a commercial farm that:
 - a. Is within the time-frame of final harvest to plant emergence;
 - b. Has been tilled in a prior year and is suitable for crop production, but is currently fallow; or
 - c. Is a turn-row.

ARTICLE 8. EMISSIONS FROM MOBILE SOURCES (NEW AND EXISTING)

R18-2-801. Classification of Mobile Sources

- A. This Article is applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations.
- B. Unless otherwise specified, no mobile source shall emit smoke or dust the opacity of which exceeds 40%.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-801 renumbered to Section R18-2-901, new Section R18-2-801 renumbered from R18-2-601 effective November 15, 1993 (Supp. 93-4).

R18-2-802. Off-road Machinery

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.
- B. Off-road machinery shall include trucks, graders, scrapers, rollers, locomotives and other construction and mining machinery not normally driven on a completed public roadway.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-802 renumbered to Section R18-2-902, new Section R18-2-802 renumbered from R18-2-602 effective November 15, 1993 (Supp. 93-4).

R18-2-803. Heater-planer Units

No person shall cause, allow or permit to be emitted into the atmosphere from any heater-planer operated for the purpose of reconstructing asphalt pavements smoke the opacity of which exceeds 20%. However three minutes' upset time in any one hour shall not constitute a violation of this Section.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-803 renumbered to Section R18-2-903, new Section R18-2-803 renumbered from R18-2-603 effective November 15, 1993 (Supp. 93-4).

R18-2-804. Roadway and Site Cleaning Machinery

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first 10 minutes.
- B. In addition to complying with subsection (A), no person shall cause, allow or permit the cleaning of any site, roadway, or alley without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions may include applying dust suppressants. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Amended effective February 3, 1993 (Supp. 93-1). Former Section R18-2-804 renumbered to Section R18-2-904, new Section R18-2-804 renumbered from R18-2-604 effective November 15, 1993 (Supp. 93-4).

R18-2-805. Asphalt or Tar Kettles

- A. No person shall cause, allow or permit to be emitted into the atmosphere from any asphalt or tar kettle smoke for any period greater than 10 consecutive seconds, the opacity of which exceeds 40%.
- B. In addition to complying with subsection (A), no person shall cause, allow or permit the operation of an asphalt or tar kettle without minimizing air contaminant emissions by utilizing all of the following control measures:
 1. The control of temperature recommended by the asphalt or tar manufacturer;
 2. The operation of the kettle with lid closed except when charging;
 3. The pumping of asphalt from the kettle or the drawing of asphalt through cocks with no dipping;
 4. The dipping of tar in an approved manner;
 5. The maintaining of the kettle in clean, properly adjusted, and good operating condition;
 6. The firing of the kettle with liquid petroleum gas or other fuels acceptable to the Director.

Historical Note

Adopted effective February 26, 1988 (Supp. 88-1). Amended effective September 26, 1990 (Supp. 90-3). Former Section R18-2-805 renumbered to Section R18-2-905, new Section R18-2-805 renumbered from R18-2-605 effective November 15, 1993 (Supp. 93-4).



CEA

January 27, 2012

James B. Barker, P.E.
Deputy Base Civil Engineer
3791 South 3rd Street
Davis-Monthan AFB, AZ 85707-3021

Dear Mr. Barker,

Thank you for your notification of public comment for the Capital Improvement Project (CIP) for Davis Monthan Air Force Base. Upon review, the Town of Marana and the Community Development office has no comments on the 2012-2014 Capital Improvements Program Draft Environmental Assessment.

Sincerely,

A handwritten signature in blue ink, appearing to read "T VanHook".

T VanHook

Community Development Director
Town of Marana
11555 West Civic Center Drive
Marana, AZ 85653-7006



**PIMA COUNTY
DEPARTMENT OF ENVIRONMENTAL QUALITY**

33 N. Stone Avenue, Suite 700
Tucson, Arizona 85701-1429
www.deq.pima.gov

Ursula Kramer, P.E.
Director

(520) 243-7400
FAX (520) 838-7432

February 8, 2012

North State Resources
Attn: Ms. Leslie Perry
1321 20th Street
Sacramento, CA 95833

Dear Ms. Perry,

In response to your letter received January 20, 2012, requesting the identification of any issues or concerns regarding the proposed three-year Capital Improvement Program (CIP) for Davis-Monthan Air Force Base (AFB) located in Tucson, Arizona, the Pima County Department of Environmental Quality (PDEQ) is providing the following information.

Fugitive Dust Activity Permits

Title 17 of the Pima County Code, Section 17.12.470.A states in part, "*No person shall conduct, cause, suffer, allow land stripping, earthmoving, blasting, trenching or road construction without first obtaining an activity permit from the Control Officer.*" Section 17.12.470.B states that a single activity permit is required for land stripping and/or earthmoving activities totaling more than one acre in size, trenching activities totaling more than 300 feet in length, and road construction activities totaling more than 50 feet in length. Details on obtaining a fugitive dust activity permit may be found at the PDEQ website:

<http://www.deq.pima.gov/air/FugitiveDustProgram.htm>

Storm Water Permits for Construction Sites

The Arizona Department of Environmental Quality (ADEQ) regulates storm water discharges from construction sites, including clearing, grading and excavation activities. Construction activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity. If a construction activity is undertaken at an industrial facility that already holds an industrial storm water permit, also known as a Multi-Sector General Permit (MSGP 2010), a separate permit must be obtained for the construction activity.

The ADEQ Stormwater Construction General Permit requires the submittal of a Notice of Intent (NOI) at least two days before the start of construction. The construction site operator must also prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to submitting the NOI, and implement it before construction activities begin. After completion of a construction project, site operator(s) must submit a Notice of Termination (NOT) to ADEQ. The NOT certifies that specific activities in the SWPPP have ended and that one of the following conditions is true:

- Final stabilization is complete and the temporary erosion and sediment controls have been removed.
- All discharges from the construction area have been eliminated.
- The operator has changed, and the new operator is responsible for compliance. The new operator is responsible for submitting an NOI if activities continue.

The ADEQ website provides more information on the new Construction General Permit:
<http://www.azdeq.gov/environ/water/permits/cgp.html>


Asbestos NESHAP Regulations

40 CFR, Part 61 – National Emission Standards for Hazardous Air Pollutants, Subpart M – National Emission Standard for Asbestos § 61.145(a) requires that the owner or operator thoroughly inspect a facility for the presence of asbestos prior to renovation or demolition activity. Furthermore, a NESHAP activity permit may be required from PDEQ and further standards may apply based on the findings of the asbestos inspection. Additional information about the asbestos NESHAP regulations may be found at the PDEQ website:

<http://www.deq.pima.gov/air/asbestos/AsbestosProgram.htm>

I hope that this information is helpful as you move forward with this project. Please call our department at (520) 243-7400 if you have any questions regarding this correspondence.

Sincerely,



Anna Martin
Air Compliance Inspector

cc: PDEQ Air Agency Response Letters - DMAFB

Leslie Perry

From: Wendy S. LeStarge [LeStarge.Wendy@azdeq.gov]
Sent: Monday, February 13, 2012 9:17 AM
To: Leslie Wagner
Cc: Linda C. Taunt
Subject: Draft Environmental Assessment for Capital Improvements Program at Davis-Monthan Air Force Base

On behalf of Linda Taunt, Deputy Division Director of the Water Quality Division, Arizona Department of Environmental Quality:

Thank you for the opportunity to comment on the Draft Environmental Assessment for the 2012-2014 Capital Improvements Program at Davis-Monthan Air Force Base. The Arizona Department of Environmental Quality, Water Quality Division (ADEQ) appreciates the opportunity to assist in the review. After reviewing the Draft Environmental Assessment, ADEQ does not see any impact related to water quality that was not addressed.

If you need further information, please contact Wendy LeStarge of my staff at 602.771.4836 or via e-mail at w11@azdeq.gov, or myself at 602.771.4416 or via e-mail at lc1@azdeq.gov.

*Wendy LeStarge
Environmental Rules Specialist
Arizona Department of Environmental Quality
Water Quality Division
(602) 771-4836*

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DEPARTMENT OF THE AIR FORCE

355TH CIVIL ENGINEER SQUADRON (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

SHPO-2011-1245 (98424) GC

RECEIVED

JAN 20 2012

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James B. Barker, P.E.
Deputy Base Civil Engineer
3791 South 3rd Street
Davis-Monthan AFB, AZ 85707-3012

James Garrison
SHPO
1300 W. Washington
Phoenix, AZ 85007

Dear Mr. Garrison

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) that evaluates the potential environmental impacts associated with implementing its three-year Capital Improvement Program (CIP) for Davis-Monthan Air Force Base (AFB), Arizona (AZ). The environmental analysis for the Proposed Action and No Action alternative is being conducted in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969 (NEPA).

The Proposed Action consists of nine representative construction, renovation, and demolition projects deemed necessary to fully support the Davis-Monthan AFB mission in FY12-14. The nine projects evaluated in the EA include a new dormitory; new dining facility, including demolition of the existing facility; new chilled water distribution lines and thermal storage; upgrades to the Airman Leadership School; a T-10 hush house; a new headquarters facility for the 214th Reconnaissance Group; demolition of the former holding area munitions storage yard; dormitory upgrades; and paving of roads and parking areas. In addition to the Proposed Action, the No Action alternative has been analyzed in the EA.

This letter has been sent to you in accordance with the public comment process required by the Council on Environmental Quality regulations implementing NEPA and for the purpose of interagency and intergovernmental coordination and notification for environmental planning. The Air Force invites you to review the attached copy of the Draft EA and provide any comments and concerns you may have regarding this Proposed Action.

If you have any specific items of interest about the EA, we would like to hear from you by February 21, 2012. Please forward your written comments to our environmental consultant, Ms. Leslie Perry, North State Resources, 1321 20th Street, Sacramento, California, 95833. Thank you for your assistance.

Sincerely,

JAMES B. BARKER, P.E., GS-13
Deputy Base Civil Engineer

This NEPA submittal does not constitute consultation under Section 106 of the National Hist. Preservation Act. Provisions at 36 CFR Part 800.8 must be followed in order for this Office to accept NEPA documentation as Section 106 compliance consultation.

Attachment:

1. Draft Environmental Assessment for 2012-14 Capital Improvements Program (CIP) Davis-Monthan AFB, Tucson, Arizona

Global Power for America

We look forward to your
Section 106 consultation.
Thank you. Ann G. Howard 2/16/12
for AZSHPO



THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT

5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

REGION V, 555 N. GREASEWOOD ROAD, TUCSON, AZ 85745

GOVERNOR

JANICE K. BREWER

COMMISSIONERS

CHAIRMAN, ROBERT R. WOODHOUSE, ROLL
NORMAN W. FREEMAN, CHINO VALLEY
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LARRY D. VOYLES

DEPUTY DIRECTORS

GARY R. HOVATTER
BOB BROSCHEID



February 21, 2012

Ms. Leslie Perry
North State Resources
1321 20th Street
Sacramento, CA 95833

Dear Ms. Perry:

Thank you for the opportunity to review the *Environmental Assessment for 2012-14 Capital Improvements Program (CIP) for Davis-Monthan Air Force Base, Tucson, Arizona*. We appreciate your taking into consideration appropriate pre-construction surveys for sensitive species, and your acknowledgement of possible disturbance to western burrowing owls and other potentially occurring species identified through the Heritage Data Management System (HDMS). Information presented in the EA appears to adequately address potential impacts to sensitive biological resources and avoidance measures to minimize such impacts. We have no concerns regarding this project upon our review of the EA.

Please address any future project review requests to:

Arizona Game and Fish Department
Region V Habitat Program
555 N. Greasewood Road
Tucson, Arizona 85745

or

Arizona Game and Fish Department
Project Evaluation Program
5000 W. Carefree Highway
Phoenix, AZ 85086-5000

Respectfully,

Kristin Terpening, Region V Habitat Specialist

cc: Ms. Laura Canaca, Project Evaluation Program Manager

APPENDIX B

Species Lists

Pima County

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
California Least Tern	<i>Sterna antillarum browni</i>	Endangered	Smallest of the North American terns. Body length is 21-24 cm (8-9 inches) with a wingspan of 45-51 cm (18-20 inches). Has black crown and loreal stripe on head, snowy white forehead and underside, and gray upperparts. Outer two primaries black, yellow or orange bill with black tip, and orange legs. Males have a wider dark loreal stripe but sexes mostly distinguished by behavior.	Maricopa, Mohave, Pima	< 2,000 ft	Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems.	Breeding occasionally documented in Arizona; migrants may occur more frequently. Feeds primarily on fish in shallow waters and secondarily on invertebrates. Nests in a simple scrape on sandy or gravelly soil.
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>	Threatened	Cream colored tubercles (spots) on a dark background on the rear of the thigh, dorsolateral folds that are interrupted and deflected medially, and a call given out of water distinguish this spotted frog from other leopard frogs.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Navajo, Pima, Santa Cruz, Yavapai	3,300-8,900 ft	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs.	Requires permanent or nearly permanent water sources. On March 15, 2011, critical habitat was proposed in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai counties in Arizona; and Catron, Hidalgo, Grant, Sierra, and Socorro counties in New Mexico (76 FR 14125).
Desert pupfish	<i>Cyprinodon macularius</i>	Endangered	Small (2 inches) smoothly rounded body shape with narrow vertical bars on the sides. Breeding males blue on head and sides with yellow on tail. Females and juveniles tan to olive colored back and silvery sides.	Cochise, Graham, Maricopa, Pima, Pinal, Santa Cruz, Yavapai	< 4,000 ft	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Two subspecies are recognized: Desert Pupfish (<i>C.m. macularis</i>) and Quitobaquito Pupfish (<i>C.m. eremus</i>). Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.
Gila chub	<i>Gila intermedia</i>	Endangered	Deep compressed body, flat head. Dark olive-gray color above, silver sides. Endemic to Gila River Basin.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, Yavapai	2,000-5,500 ft	Pools, springs, cienegas, and streams.	Occurs on Federal, State, and private lands, including the Nature Conservancy and the Audubon Society. Also occurs in Sonora, Mexico. Critical habitat includes Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties (70 FR 66664).

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Gila topminnow	<i>Poeciliopsis occidentalis occidentalis</i>	Endangered	Small (2 inches), guppy-like, live bearing, lacks dark spots on its fins. Breeding males are jet black with yellow fins.	Cochise, Gila, Graham, Maricopa, Pima, Santa Cruz, Yavapai	< 4,500 ft	Small streams, springs, and cienegas vegetated shallows.	Species historically also occurred in backwaters of large rivers but is currently isolated to small streams and springs.
Huachuca water umbel	<i>Lilaeopsis schaffneriana ssp. recurva</i>	Endangered	Herbaceous, semi-aquatic perennial in the parsley family (Umbelliferae) with slender erect, hollow, leaves that grow from the nodes of creeping rhizomes. Flower: 3 to 10 flowered umbels arise from root nodes.	Cochise, Pima, Santa Cruz	3,500-6,500 ft	Cienegas, perennial low gradient streams, wetlands.	Species also occurs in adjacent Sonora, Mexico, west of the continental divide. Critical habitat includes Cochise and Santa Cruz counties (64 FR 37441).
Jaguar	<i>Panthera onca</i>	Endangered	Largest species of cat native to Southwest. Muscular, with relatively short, massive limbs, and a deep-chested body. Usually cinnamon-buff in color with many black spots. Weights ranges from 90-300 lbs.	Cochise, Pima, Santa Cruz	1,600-9,000 ft	Found in Sonoran desertscrub up through subalpine conifer forest.	Also occurs in New Mexico. A jaguar recovery team was formed in 2010 and is currently developing a recovery plan for the species.
Kearney's blue star	<i>Amsonia kearneyana</i>	Endangered	A herbaceous perennial about 2 feet tall in the dogbane family (Apocynaceae). Thickened woody root and many pubescent (hairy) stems that rarely branch. Flowers: white terminal inflorescence in April and May.	Pima	3,600-3,800 ft	West-facing drainages in the Baboquivari Mountains.	Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains. Range is extremely limited. Protected by Arizona Native Plant Law.
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>	Endangered	Elongated muzzle, small leaf nose, and long tongue. Yellowish brown or gray above and cinnamon brown below. Tail minute and appears to be lacking. Easily disturbed.	Cochise, Gila, Graham, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, Yuma	1,600-11,500 ft	Desert scrub habitat with agave and columnar cacti present as food plants.	Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Masked bobwhite	<i>Colinus virginianus ridgewayi</i>	Endangered	Males have a brick-red breast and black head and throat. Females are generally nondescript but resemble other races such as the Texas bobwhite.	Pima	1,000-4,000 ft	Desert grasslands with diversity of dense native grasses, forbs, and brush.	Species is closely associated with Prairie acacia (<i>Acacia angustissima</i>). Formerly occurred in Altar and Santa Cruz valleys, as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires NWR.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened	Medium sized with dark eyes and no ear tufts. Brownish and heavily spotted with white or beige.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	4,100-9,000 ft	Nests in canyons and dense forests with multi-layered foliage structure.	Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type, in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182) in Arizona in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties.
Nichol Turk's head cactus	<i>Echinocactus horizonthalonius var. nicholii</i>	Endangered	Blue-green to yellowish-green, columnar, 18 inches tall, 8 inches in diameter. Spine clusters have 5 radial and 3 central spines; one curves downward and is short; 2 spines curve upward and are red or pale gray. Flowers: pink; fruit: woolly white.	Pima, Pinal	2,400-4,100 ft	Sonoran desertscrub.	Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides.
Ocelot	<i>Leopardus pardalis</i>	Endangered	Medium-sized spotted cat that is yellowish with black streaks and stripes running from front to back. Tail is spotted and about 1/2 the length of head and body. Face is less heavily streaked than the back and sides.	Cochise, Gila, Graham, Pima, Pinal, Santa Cruz	< 8,000 ft	Desert scrub in Arizona. Humid tropical and sub-tropical forests, and savannahs in areas south of the U.S.	Little is known about ocelot habitat use in Arizona; however, ocelots are typically associated with areas of dense cover. Four confirmed reports of ocelots have been received from Gila (one) and Cochise (three) counties since 2009. Based on photographic evidence, two of the reports from Cochise County were most likely of the same ocelot.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Pima pineapple cactus	<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Endangered	Hemispherical stems 4-7 inches tall 3-4 inches diameter. Central spine 1 inch long straw colored hooked surrounded by 6-15 radial spines. Flower: yellow, salmon, or rarely white narrow floral tube.	Pima, Santa Cruz	2,300-5,000 ft	Sonoran desertscrub or semi-desert grassland communities.	Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils. This species can be confused with juvenile barrel cactus (<i>Ferocactus</i>). However, the spines of the later are flattened, in contrast with the round cross-section of the <i>Coryphantha</i> spines. About 80-90% of individuals occur on state or private land.
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	Endangered	Upperparts tan; underparts, rump, and two bands across the neck are white. Male has two black cheek pouches. Hoofed with slightly curved black horns having a single prong. Smallest and palest of the pronghorn subspecies.	Maricopa, Pima, Yuma	2,000-4,000 ft	Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations.	Typically, bajadas are used as fawning areas and sandy dune areas provide food seasonally. Cacti (jumping cholla) appears to make up substantial part of diet. This subspecies also occurs in Mexico.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Small passerine (about 6 inches) grayish-green back and wings, whitish throat, light olive-gray breast and pale yellowish belly. Two wingbars visible. Eye-ring faint or absent.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 8,500 ft	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Riparian-obligate bird that occupies migratory/breeding habitat from late April-Sept. Critical habitat was finalized on October 19, 2005 in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pima, Pinal, and Yavapai counties (70 FR 60886). Revised critical habitat was proposed August 15, 2011 (76 FR 50542) and includes river segments in counties currently designated plus those in La Paz, Santa Cruz, and Yuma counties. The 2005 critical habitat designation remains in effect until the current proposal is finalized. Training seminar/permits required for those conducting call playback surveys.
Acuna cactus	<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	Candidate	Less than 12 inches tall; spine clusters borne on tubercles, each with a groove on the upper surface. 2-3 central spines and 12 radial spines. Radial spines are dirty white with maroon tips. Flowers pink to purple.	Pima, Pinal	1,300-2,000 ft	Well drained knolls and gravel ridges in Sonoran desertscrub.	Immature plants distinctly different from mature plants. Immatures are disc-shaped or spherical and have no central spines until they are about 1.5 inches.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Desert tortoise, Sonoran population	<i>Gopherus agassizii</i>	Candidate	Large herbivorous reptile with domed shell and round stumpy hind legs. The carapace is a dull brown or grey color and the plastron is unhinged, often pale yellow in coloration. Sonoran desert tortoises generally have a flatter carapace than tortoises in the Mohave population. Active in spring and during the monsoon; dormant in winter and mid-summer months.	Cochise, Gila, Graham, La Paz, Maricopa, Mohave, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 7,800 ft	Primarily rocky (often steep) hillsides and bajadas of Mohave and Sonoran desertscrub but may encroach into desert grassland, juniper woodland, interior chaparral habitats, and even pine communities. Washes and valley bottoms may be used in dispersal.	Desert tortoises that occur east and south of the Colorado River in Arizona are referred to as the Sonoran population. Individuals are found throughout their historic range; but populations are becoming increasingly fragmented due to threats to their habitat in valley bottoms, which are used for dispersal and exchange of genetic material.
Northern Mexican Gartersnake	<i>Thamnophis eques megalops</i>	Candidate	Background color ranges from olive, olive-brown, to olive-gray. Body has three yellow or light colored stripes running down the length of the body, darker towards tail. Species distinguished from other native gartersnakes by the lateral stripes reaching the 3rd and 4th scale rows. Paired black spots extend along dorsolateral fields.	Apache, Cochise, Coconino, Gila, Graham, Navajo, Pima, Pinal, Santa Cruz, Yavapai	130-8,500 ft	Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests.	Core population areas in the U.S. include mid/upper Verde River drainage, mid/lower Tonto Creek, and the San Rafael Valley and surrounding area. Status on tribal lands unknown. Distributed south into Mexico along the Sierra Madre Occidental and Mexican Plateau. Strongly associated with the presence of a native prey base including leopard frogs and native fish.
Rosemont talussnail	<i>Sonorella rosemontensis</i>	Candidate	Terrestrial snail with shell height of 0.5 inches, diameter of 0.85 inches, and has about 4.5 whorls. The shell is polished, moderately solid, pale brown, fading around the umbilicus (belly button), with a light-bordered chestnut brown band. Positive identification of the species depends on examination of soft body parts.	Pima	~5,500 ft	Inhabits talus slopes comprised of volcanic rock and limestone.	The species is vulnerable to any disturbance that would remove talus, increase interstitial sedimentation, or change moisture conditions. The entire range of the species is located on lands designated for the purpose of hard rock mining.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	Candidate	Aquatic; dark, medium-sized; shell up to 7 inches long; head, neck, and limbs mottled; carapace is olive brown to dark brown; plastron hinged; long barbels on chin, webbed feet.	Pima	1,100 ft	Ponds and streams.	Found only in Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona. Species also occurs in Rio Sonoyta, Sonora, Mexico.
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	Candidate	Small snake (10-17 inches total length) in the family Colubridae, with a shovel-shaped snout and an inset lower jaw. Overall coloring mimics coral snakes, with pale yellow to cream-colored body, 21 or more black or brown saddle-like bands across the back, and orange-red saddle-like bands in between. The subspecies is distinguished from the other subspecies in that these secondary orange-red crossbands are suffused with dark pigment, making them appear brown or partly black, and the black and red crossbands do not encircle the entire body.	Maricopa, Pima, Pinal	785-1,662 ft	Sonoran Desertscrub; associated with soft, sandy soils having sparse gravel.	Found in creosote-mesquite floodplain environments, finds refuge under desert shrubs, active during crepuscular (dawn and dusk) and daylight hours.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Candidate	Medium-sized bird with a slender, long-tailed profile, slightly down-curved bill that is blue-black with yellow on the lower half. Plumage is grayish-brown above and white below, with rufous primary flight feathers.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 6,500 ft	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Neotropical migrant that winters primarily in South America and breeds primarily in the U.S. (but also in southern Canada and northern Mexico). As a migrant it is rarely detected; can occur outside of riparian areas. Cuckoos are found nesting statewide, mostly below 5,000 feet in central, western, and southeastern Arizona. Concern for cuckoos are primarily focused upon alterations to its nesting and foraging habitat. Nesting cuckoos are associated with relatively dense, wooded, streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees.
Gooddings onion	<i>Allium gooddingii</i>	Conservation Agreement	Herbaceous perennial plant; broad, flat, rather blunt leaves; flowering stalk 14-18 inches tall, flattened, and narrowly winged toward apex; fruit is broader than long; seeds are short and thick.	Apache, Greenlee, Pima	7,500-11,250 ft	Shaded sites on north-trending drainages, on slopes, or in narrow canyons, within mixed conifer and spruce fir forests.	Known from the White, Santa Catalina, and Chuska Mountains. Also found in New Mexico on the Lincoln and Gila National Forests. A Conservation Agreement between the Service and the Forest Service signed in February 1998.
San Xavier talussnail	<i>Sonorella eremita</i>	Conservation Agreement	Land snail, less than one inch in diameter (about .75 inches); round shell with 4.5 whorls; white to pinkish tint and chestnut-brown shoulder band.	Pima	3,850-3,920 ft	Inhabits a deep, northwest-facing limestone rockslide.	Restricted to 50 by 100 foot area of land privately owned in southeastern Arizona. A Conservation Agreement was finalized in 1995 and renewed in May 2008.

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	A crow-sized falcon with slate blue-gray on the back and wings, and white on the underside; a black head with vertical "bandit's mask" pattern over the eyes; long pointed wings; and a long wailing call made during breeding. Very adept flyers and hunters, reaching diving speeds of 200 mph.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	3,500-9,000 ft	Areas with rocky, steep cliffs, primarily near water, where prey (primarily shorebirds, songbirds, and waterfowl) concentrations are high. Nests are found on ledges of cliffs, and sometimes on man-made structures such as office towers and bridge abutments.	Species recovered with over 1,650 breeding birds in the US and Canada.
Cactus ferruginous pygmy-owl	<i>Glaucidium brasilianum cactorum</i>	Delisted; petitioned for relisting	Small reddish-brown owl with a cream-colored belly streaked with reddish-brown. Males average 2.2 oz and females average 2.6 oz. Length is approximately 6.5 in., including a relatively long tail. Lacks ear tufts, and has paired black spots on the back of the head.	Pima, Pinal	< 4,000 ft	Areas of desert woodlands with tall canopy cover. Primarily found in Sonoran desert scrub and occasionally in riparian drainages and woodlands within semi-desert grassland communities. Prefers to nest in cavities in saguaro cacti but has been found in low-density suburban developments that include natural open spaces.	Not recognized as a protected taxonomic entity under the Act, but protected from direct take of individuals and nests/eggs under the Migratory Bird Treaty Act. A 2006 petition for relisting under the Act is currently being evaluated. Due to low population numbers, captive breeding research was initiated in 2006 with some success.

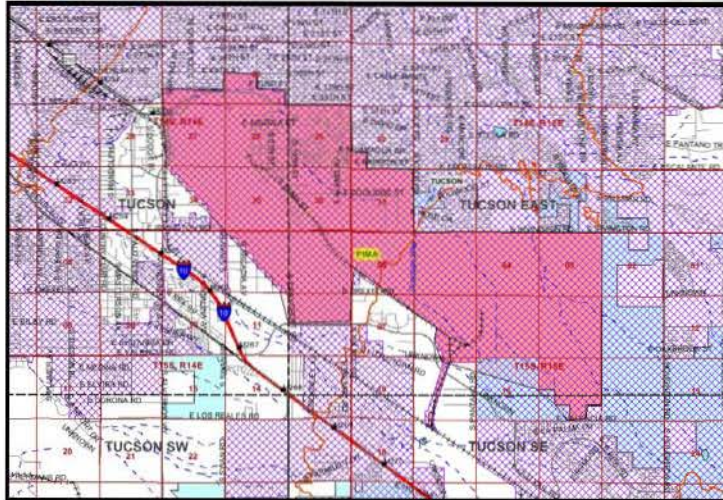
Arizona's On-line Environmental Review Tool

Search ID: 20111018016359

Project Name: Davis-Monthan CIP EA

Date: 10/18/2011 4:04:51 PM

Project Location



Project Name: Davis-Monthan CIP EA

Submitted By: Heather Kelly

On behalf of: CONSULTING

Project Search ID: 20111018016359

Date: 10/18/2011 4:04:46 PM

Project Category: Military Activities, Development (new buildings, roads, etc.)

Project Coordinates (UTM Zone 12-NAD 83): 514284.159, 3558264.229

meter

Project Area: 11026.172 acres

Project Perimeter: 38275.933 meter

County: PIMA

USGS 7.5 Minute Quadrangle ID: 1768

Quadrangle Name: TUCSON

Project locality is currently being scoped

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Bat Colony					
Buteo swainsoni	Swainson's Hawk		S		
Choeronycteris mexicana	Mexican Long-tongued Bat	SC	S	S	WSC
Coryphantha scheeri var. robustispina	Pima Pineapple Cactus	LE			HS
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	C	S		WSC
Heloderma suspectum suspectum	Reticulate Gila Monster		S		
Myotis velifer	Cave Myotis	SC		S	

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

Arizona's On-line Environmental Review Tool

Search ID: 20111018016359

Project Name: Davis-Monthan CIP EA

Date: 10/18/2011 4:04:51 PM

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: <http://arizonaes.fws.gov/>.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Military Activities, Development (new buildings, roads, etc.)

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with State Historic Preservation Office may be required
<http://azstateparks.com/SHPO/index.html>

Consider designs and tower modifications that reduce or eliminate impacts to migratory birds. Please refer to the U.S. Fish and Wildlife Service's page on cellular towers in Arizona
<http://www.fws.gov/arizonaes/CellTower.htm>. On this page there are guidelines for tower siting, construction, operation, and decommissioning. Also see the Service's Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning,
<http://www.fws.gov/habitatconservation/communicationtowers.htm>.

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants

<http://www.azda.gov/PSD/quarantine5.htm>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control:

<http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a

variety of wildlife.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

Recommendations will be dependant upon goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located at <http://www.azgfd.gov/hgis/guidelines.aspx>.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project

activities outside of breeding seasons.

Project Location and/or Species recommendations:

Heritage Data Management System records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:

Ecological Services Office
US Fish and Wildlife Service
2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

Heritage Data Management System records indicate that Sonoran desert tortoise have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the Tortoise Handling Guidelines found on the Environmental Review Home Page: <http://www.azgfd.gov/hgis/guidelines.azpx>.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our

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opportunity to review and evaluate additional project information and/or new project proposals.

5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.

6. Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).

7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

**Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366**

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.

2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .

3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.

4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.

5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to

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Project Name: Davis-Monthan CIP EA

Date: 10/18/2011 4:04:51 PM

be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature: _____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

APPENDIX C

Air Emission Calculations

2011 CIP Projects - Emissions Calculations

			Emission Factor (lbs/yr-build; lbs/day-demo)					Calculation (lbs/yr)					Conversion (tons/yr)				
Activity	SF/SF3	Timeframe (yr)	ROC	CO	NOx	PM10	ROC	CO	NOx	PM10	ROC	CO	NOx	PM10			
Build Dorm	42600	1	55.44	177.17	814.72	57.85	2361.744	7547.442	34707.072	2464.41	1.18	3.77	17.35	1.23			
Demo Ramada	6225	0.083333333				0.00042				79.52437468				0.04			
Build Dining Facility	20580	0.5	55.44	177.17	814.72	57.85	2281.9104	7292.3172	33533.8752	2381.106	1.14	3.65	16.77	1.19			
Demo Dining Facility	239250	0.083333333				0.00042				3056.41875				1.53			
Build storage facility	2000	0.5	32.79	104.79	481.88	34.22	131.16	419.16	1927.52	136.88	0.07	0.21	0.96	0.07			
Install Pipelines	18900	1	32.79	104.79	481.88	34.22	619.731	1980.531	9107.532	646.758	0.31	0.99	4.55	0.32			
Renovate School	12080	0.5	55.44	177.17	814.72	57.85	1339.4304	4280.4272	19683.6352	1397.656	0.67	2.14	9.84	0.70			
Demo School (part)	432000	0.083333333				0.00042				5518.8				2.76			
Build hush house	12225	0.5	32.79	104.79	481.88	34.22	801.7155	2562.1155	11781.966	836.679	0.40	1.28	5.89	0.42			
Build HQ	2200	1	55.44	177.17	814.72	57.85	121.968	389.774	1792.384	127.27	0.06	0.19	0.90	0.06			
Demo HAMS	682500	0.083333333				0.00042				8718.9375				4.36			
Renovate Dorm	26500	0.5	55.44	177.17	814.72	57.85	2938.32	9390.01	43180.16	3066.05	1.47	4.70	21.59	1.53			
Pave roads/parking (acres)	300	5				55				3300				1.65			
Asbestos Removal (lbs/day)	671250		0.00006				1208.25				0.60						
Threshold:											n/a	100 n/a	n/a				
E in daily emissions=((Project square footage/1000)x(Emission Factor))/(number of days to construct))																	
E in annual emissions=((Project square footage/1000)x(Emission Factor))/(timeframe)											Totals	5.30	16.93	77.86	15.87	115.95	

Extracted from the CEQA Air Quality Handbook, South Coast Air Quality Management District 1993

Table 9-1. Screening Table for Estimating Total Construction Emissions**

LAND USE	UNIT OF MEASURE	EMISSION FACTORS LBS/CONSTRUCTION PERIOD			
		ROC	NO _x	CO	PM10
RESIDENTIAL					
Single Family Housing	1,000 sq. ft. GFA*	23.66	347.74	75.62	24.69
Apartments	1,000 sq. ft. GFA	21.97	322.90	70.22	22.93
Condominiums	1,000 sq. ft. GFA	21.30	312.97	68.06	22.22
Mobile Homes	1,000 sq. ft. GFA	21.30	312.97	68.06	22.22
EDUCATION					
Schools	1,000 sq. ft. GFA	46.99	690.52	150.16	49.03
COMMERCIAL					
Business Park	1,000 sq. ft. GFA	55.44	814.72	177.17	57.85
Day Care Center	1,000 sq. ft. GFA	31.87	466.97	101.55	33.16
Discount Store	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Fast Food	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Government Office Complex	1,000 sq. ft. GFA	55.44	814.72	177.17	57.85
Hardware Store	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Hotel	1,000 sq. ft. GFA	41.58	611.04	132.87	43.39
Medical Office	1,000 sq. ft. GFA	55.44	814.72	177.17	57.85
Motel	1,000 sq. ft. GFA	41.58	611.04	132.87	43.39
Movie Theatre	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Office	1,000 sq. ft. GFA	55.44	814.72	177.17	57.85
Resort Hotel	1,000 sq. ft. GFA	41.58	611.04	132.87	43.39
Restaurant	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Shopping Center	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
Supermarket	1,000 sq. ft. GFA	31.78	466.97	101.55	33.16
INDUSTRIAL	1,000 sq. ft. GFA	32.79	481.88	104.79	34.22
* GFA = GROSS FLOOR AREA					

**Construction emissions include on-site construction equipment and workers' travel.

$$E = (((\text{Project square footage}/1,000) \times (\text{Table 9-1 emission factor})) / (\text{Number of days to construct}))$$

E = Daily construction emissions

For on-site construction equipment and material handling construction emissions, subtract emissions obtained by using screening Table 9-3.

For on-site construction equipment emissions, subtract emissions obtained by using screening Tables 9-3 and 9-4.

Refer to Appendix 9 for methodologies and assumptions used in preparing this table.

These emissions were estimated using energy consumption values provided in Energy and Labor in the Construction Sector, B. Hannon, R. Stein, and D. Serber, Science, 1978, 202:837-847.

Table 9-2. Screening Table for Estimating Construction PM10 Emissions – Fugitive Dust

LAND USE	UNIT OF MEASURE	EMISSION FACTORS LBS/DAY
		LBS OF PM10
UNPAVED ROADS Passenger Vehicle Loaded Truck	Vehicle Miles Traveled ⁽¹⁾ Vehicle Miles Traveled ⁽¹⁾	5.56 23.00
PAVED ROADS Local Road Construction Road	Vehicle Miles Traveled ⁽¹⁾ Vehicle Miles Traveled ⁽¹⁾	0.33 2.00
DEMOLITION	Cubic Foot	0.00042
GRADING	Acres/Day	55.00
ASBESTOS	Cubic Foot	0.00006
Refer to Appendix 9, Table 9-18 for methodologies and assumptions used in preparing this table.		

NOTES:

⁽¹⁾ VMT is a function of linear road length and average daily trips. Any combination that equals or exceeds the daily *and* quarterly thresholds could be significant.