ENVIRONMENTAL ASSESSMENT
FOR
2005 BASE REALIGNMENT AND CLOSURE ACTIONS
AT HOMESTEAD AIR RESERVE BASE, FLORIDA

HEADQUARTERS AIR FORCE RESERVE COMMAND

AF CENTER FOR ENVIRONMENTAL EXCELLENCE

AIR FORCE RESERVE COMMAND

482D FIGHTER WING

FEBRUARY 2007

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
FEB 2007		**00-00-2007 to 00-00-2007**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Environmental Assessment of 2005 Base Realignment and Closure Actions at Homestead Air Reserve Base, Florida	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **e2M Inc,4215 Walney Road, Suite 4,Chantilly,VA,20151**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

This EA evaluates the Proposed Action to implement the 2005 Defense Base Closure and Realignment Commission?s recommendations for Homestead ARB. The 482 FW would gain nine F-16 aircraft and an estimated 302 personnel (83 full-time civilian and Air Reserve Technicians [ARTs] and 219 part-time Traditional Reservists). The Proposed Action would also include three facility projects to support expanded operations. Under the No Action Alternative, Homestead ARB would not implement the recommendations, resulting in no change from existing conditions at the installation. This EA has been prepared to evaluate the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. Environmental and socioeconomic resource categories that were considered in the impact analysis include airspace management and aircraft safety, noise, land use, air quality, safety geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, and hazardous materials and wastes. The Draft EA and Draft Finding of No Significant Impact (FONSI) were made available to the public for a 30-day review period, beginning January 18, 2007, and concluding February 18, 2007. Written comments and inquiries regarding this document were directed to Mr. Michael J. Andrejko 482 MSG/CEV, 29350 Westover Street, Bldg. 232, Homestead ARB, Florida 33039-1299. No comments were received.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**164**	

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT OF 2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD ARB, FLORIDA

INTRODUCTION

Homestead Air Reserve Base (ARB) is in Miami-Dade County, located in the southeastern corner of Florida. Homestead ARB is headquarters for the 482nd Fighter Wing (482 FW). It is a fully combat-ready unit capable of providing F-16C multipurpose fighter aircraft, along with mission-ready pilots and support personnel, for short-notice worldwide deployment. As the host unit at Homestead ARB, the 482 FW maintains the installation facilities and provides all critical support functions to units at the installation. There are several military and governmental units at Homestead ARB in addition to the 482 FW, including the 125th Fighter Wing, Detachment 1 of the Florida Air National Guard; the Special Operations Command South; the Maritime Safety and Security Team 911-14 of the U.S. Coast Guard; the Miami Aviation Branch of the U.S. Customs and Border Protection; and the Florida Army National Guard unit. The F-15 aircraft, flown by the Florida Air National Guard, are also based at Homestead ARB in addition to aircraft used by the U.S. Customs and Border Protection.

On 8 September 2005, the 2005 Defense Base Realignment and Closure (BRAC) Commission issued recommendations that included specific actions for Homestead ARB. These recommendations were approved by the President on 15 September 2005, and forwarded to Congress. Congress did not alter any of the BRAC Commission's recommendations with respect to Homestead ARB and on 9 November 2005, the recommendations became law. The Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

Under the Proposed Action, the U.S. Air Force (USAF) will reassign nine F-16 aircraft from the 419th Fighter Wing (419 FW) at Hill Air Force Base (AFB), Utah to the 482 FW at Homestead ARB. To enable implementation of this recommendation, the USAF proposes to provide the necessary additional personnel and facilities to support the reassigned aircraft.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to implement the BRAC Commission's recommendations for BRAC actions pertaining to Homestead ARB. The need for the Proposed Action is to comply with the Defense Base Closure and Realignment Act of 1990 and to improve the ability of the nation to respond rapidly to the geopolitical challenges of the 21st century. The USAF needs to carry out the BRAC Commission's recommendations at Homestead ARB to achieve the objectives for which Congress established the BRAC process.

DESCRIPTION OF THE PROPOSED ACTION

In accordance with the BRAC Commission's recommendations, nine F-16 aircraft will be assigned to the 482 FW at Homestead ARB and added to the current 482 FW F-16 inventory to bring the total Primary Aircraft Authorization (PAA) to 24. In addition to the nine aircraft gained by Homestead ARB, associated ground support equipment for the aircraft will be relocated, and 302 additional personnel will be authorized (83 full-time civilian and Air Reserve Technicians and 219 part-time Traditional Reservists). In addition, approximately 38,599 square feet (ft^2) of renovation and new construction will be required.

The 482 FW will continue to carry out its current mission. All F-16 flight tracks and profiles will remain unchanged. The aircraft from the 482 FW will continue to use air-to-ground ranges proximate to Homestead ARB and other associated special use airspace.

Implementation of the Proposed Action will include three construction projects involving approximately 38,599 ft^2 of space. Existing buildings will be expanded by a total of 32,377 ft^2 and there will be approximately 6,222 ft^2 of renovations. These proposed construction projects are necessary to accommodate and support the proposed gain of

nine F-16 aircraft. Two construction projects will occur in fiscal year (FY) 2007 and the third in FY 2008. The USAF will construct a Squadron Operations Facility, will add on to a Weapons Release Shop, and will expand the Avionics/Electronic Counter Measures Facility. All of the proposed construction projects are in the existing area of Homestead ARB associated with the 482 FW, adjacent to the flightline. No additional ramp space will be needed on the flightline because the 24 F-16 aircraft will fit on the existing ramp.

Under the No Action Alternative, existing conditions would remain unchanged. No aircraft would be assigned to Homestead ARB and no related facility construction projects would occur.

SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED ACTION

Based on the analyses accomplished as a part of the preparation of the Environmental Assessment (EA), it was determined that no adverse effects on airspace management, geological resources, water resources, biological resources, cultural resources, infrastructure, or hazardous materials are expected at Homestead ARB resulting from the addition of the nine F-16 aircraft and the three facility construction projects.

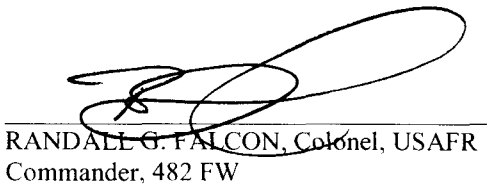
Negligible to minor short-term adverse effects on the noise environment and short-term minor adverse effects on air quality, safety, and hazardous wastes are expected as a result of construction activities. Adverse effects associated with construction activities will be localized to the immediate area of construction and will subside following the end of construction in that area. The generation of construction waste will be an unavoidable adverse impact but will be insignificant in scale. Long-term negligible to minor adverse effects are expected on aircraft safety, the noise environment, air quality, and land use from the increased F-16 aircraft operations. Approximately 13 acres of residential land (which could include low-income and minority residents) previously outside the 65 DNL (Day-Night Average Sound Level) noise zone would be affected by the slight (i.e., less than 2 decibels [dB]) increase in noise levels associated with aircraft operations under the Proposed Action. As a result of the Proposed Action, minor beneficial impacts on socioeconomic resources are expected associated with construction activities.

PUBLIC REVIEW AND INTERAGENCY COORDINATION

The Draft EA was made available to the public for a 30-day review period, beginning January 18, 2007, and concluding February 18, 2007. No comments were received.

FINDING OF NO SIGNIFICANT IMPACT

After a review of the EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and the USAF's Environmental Impact Analysis Process (32 Code of Federal Regulations 989, as amended), and the completion of the public review period, I have determined that the Proposed Action will not have a significant impact on the quality of the human or natural environment and, therefore, an Environmental Impact Statement does not need to be prepared. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that would meet project requirements and that are within the legal authority of the USAF.



RANDALL G. FALCON, Colonel, USAFR
Commander, 482 FW

3/5/07
Date

Abbreviations and Acronyms

µg/m^3	micrograms per cubic meter
125 FW	125th Fighter Wing
419 FW	419th Fighter Wing
482 FW	482nd Fighter Wing
ACM	asbestos-containing material
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFPD	Air Force Policy Directive
AFRC	Air Force Reserve Command
AGE	aerospace ground equipment
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
ANG	Air National Guard
APE	Area of Potential Effect
AQCR	Air Quality Control Region
AR	Air Refueling Anchor
ARB	Air Reserve Base
ARPA	Archaeological Resources Protection Act
ART	Air Reserve Technician
AST	aboveground storage tank
ATC	air traffic control
BASH	Bird/Wildlife Aircraft Strike Hazard
BMP	best management practice
BRAC	Base Realignment and Closure
BWC	Bird Watch Condition
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CSA	central storage area
CWA	Clean Water Act
CY	construction year
dB	decibels
dBA	A-weighted decibel
DERM	Department of Environmental Resources Management
DNL	day-night average A-weighted sound level
DOD	Department of Defense
EA	Environmental Assessment
ECM	Electronic Counter Measures
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
F.A.C.	Florida Administrative Code
FAA	Federal Aviation Administration
FANG	Florida Air National Guard
FDEP	Florida Department Of Environmental Protection
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FONSI	Finding of No Significant Impact
FPL	Florida Power and Light Company
FPL	Florida Power and Light Company
ft^2	square feet
FY	fiscal year
GOV	government-owned vehicle
HAZMART	Hazardous Materials Pharmacy
HAZMAT	Hazardous Materials
HRP	Homestead Recycling Program
HSWA	Hazardous and Solid Waste Amendments
HUD	U.S. Department of Housing and Urban Development
HWMP	Hazardous Waste Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IR	instrument route
ISWMP	Integrated Solid Waste Management Plan

continued on inside back cover →

← *continued from inside front cover*

JLUS	Joint Land Use Study
LBP	lead-based paint
LUC	Land Use Control
MDWSA	Miami-Dade Water and Sewer Authority
mg/m^3	milligrams per cubic meter
MOA	Military Operations Area
MSA	Metropolitan Statistical Area
MSDS	Material Safety Data Sheets
MSG/CEV	Mission Support Group/Civil Engineer Environmental Flight
MSL	mean sea level
MSW	municipal solid waste
MTR	Military Training Route
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMIM	National Mobile Inventory Model
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
OWS	oil-water separator
PAA	Primary Aircraft Authorization
Pb	lead
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
POL	petroleum, oil and lubricants
POV	privately owned vehicles
ppm	parts per million
PSD	Prevention of Significant Deterioration
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SAP	satellite accumulation point
SARA	Superfund Amendments and Reauthorization Act
SEFI	Southeast Florida Intrastate
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOCSOUTH	Special Operations Command South
SWPPP	Storm Water Pollution Prevention Plan
TCP	traditional cultural property
TGO	touch-and-go operation
tpy	tons per year
U.S. CBP	U.S. Customs and Border Protection
U.S.C.	United States Code
UCMS	Utility Central Management System
USACE	United States Army Corps of Engineers
USAF	U.S. Air Force
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VMC	visual meteorological conditions
VOC	volatile organic compounds
VR	visual route
WASD	Miami-Dade Water and Sewer Department

COVER SHEET

ENVIRONMENTAL ASSESSMENT OF 2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD AIR RESERVE BASE, FLORIDA

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Force Reserve Command (AFRC), Air Force Center for Environmental Excellence (AFCEE), and 482nd Fighter Wing (482 FW) at Homestead Air Reserve Base (ARB), Florida.

Affected Location: Homestead ARB, Florida.

Proposed Action: Implementation of base realignment and closure actions, to include the gain of nine additional F-16 aircraft and approximately 302 personnel, and construction of facilities.

Report Designation: Environmental Assessment (EA).

Abstract: This EA evaluates the Proposed Action to implement the 2005 Defense Base Closure and Realignment Commission's recommendations for Homestead ARB. The 482 FW would gain nine F-16 aircraft and an estimated 302 personnel (83 full-time civilian and Air Reserve Technicians [ARTs] and 219 part-time Traditional Reservists). The Proposed Action would also include three facility projects to support expanded operations. Under the No Action Alternative, Homestead ARB would not implement the recommendations, resulting in no change from existing conditions at the installation.

This EA has been prepared to evaluate the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. Environmental and socioeconomic resource categories that were considered in the impact analysis include airspace management and aircraft safety, noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, and hazardous materials and wastes.

The Draft EA and Draft Finding of No Significant Impact (FONSI) were made available to the public for a 30-day review period, beginning January 18, 2007, and concluding February 18, 2007. Written comments and inquiries regarding this document were directed to Mr. Michael J. Andrejko, 482 MSG/CEV, 29350 Westover Street, Bldg. 232, Homestead ARB, Florida 33039-1299. No comments were received.

ENVIRONMENTAL ASSESSMENT

OF

2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD AIR RESERVE BASE, FLORIDA

HEADQUARTERS AIR FORCE RESERVE COMMAND
ENVIRONMENTAL DIVISION
255 RICHARD RAY BOULEVARD
ROBINS AIR FORCE BASE, GEORGIA 31098-1637

FEBRUARY 2007

ENVIRONMENTAL ASSESSMENT OF 2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD AIR RESERVE BASE, FLORIDA

TABLE OF CONTENTS

APPENDICES

FIGURES

FIGURE **PAGE**

TABLES

TABLE **PAGE**

1. Purpose of and Need for the Proposed Action

1.1 Background

The 482nd Fighter Wing (482 FW) is the host unit at Homestead Air Reserve Base (ARB). Homestead ARB is located within southeastern Miami-Dade County and abuts the boundary for the City of Homestead on the installation's southwest and west side and on the western side by Speedway Boulevard (SW 137th Avenue). Homestead ARB is approximately 25 miles south of Miami and 20 miles north of the Florida Keys (see **Figure 1-1**). The 482 FW maintains the installation facilities by providing civil engineering, security, and air operations support in cooperation with 125th Fighter Wing (125 FW), Detachment 1, Florida Air National Guard (FANG), which is located at Homestead ARB. The 482 FW, Air Force Reserve Command (AFRC), maintains and operates Homestead ARB. It is a fully combat-ready unit capable of providing F-16C multipurpose fighter aircraft, along with mission-ready pilots and support personnel, for short-notice worldwide deployment. As the host unit at Homestead ARB, the 482 FW maintains the installation facilities and provides all critical support functions to units at the installation.

There are several military and governmental units at Homestead ARB in addition to the 482 FW, including 125 FW, Detachment 1 of the FANG; the Special Operations Command South (SOCSOUTH); the Maritime Safety and Security Team 911-14 of the U.S. Coast Guard; the Miami Aviation Branch of the U.S. Customs and Border Protection (U.S. CBP); and the Florida Army National Guard unit. The F-15 aircraft, flown by the FANG, are also based at Homestead ARB in addition to aircraft used by the U.S. CBP.

On 8 September 2005, the 2005 Defense Base Realignment and Closure (BRAC) Commission issued recommendations that included specific actions for Homestead ARB. These recommendations were approved by the President on 15 September 2005 and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations with respect to Homestead ARB and on 9 November 2005, the recommendations became law. The Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

The BRAC Commission made the following recommendations concerning Homestead ARB:

- Realign Hill Air Force Base (AFB), Utah. Distribute the 15 F-16 aircraft assigned to the 419th Fighter Wing to meet the Primary Aircraft Authorizations (PAA) requirements established by the BRAC recommendations of the Secretary of Defense, as amended by the Defense BRAC
- Realign Richmond International Airport Air Guard Station, Virginia. Distribute the 15 F-16 aircraft assigned to the 192nd Fighter Wing (Air National Guard [ANG]) to meet the PAA requirements established by the BRAC recommendations of the Secretary of Defense, as amended by the Defense BRAC
- Establish 24 PAA F-16 aircraft at the 482d Fighter Wing, Homestead ARB, Florida.

The USAF made the following recommendations based on the Commissions' recommendations:

- Relocate nine F-16s from the 419th Fighter Wing (419 FW) Hill AFB, Utah to the 482 FW at Homestead ARB Florida.
- Provide the necessary additional personnel and facilities to support the reassigned aircraft at Homestead ARB.

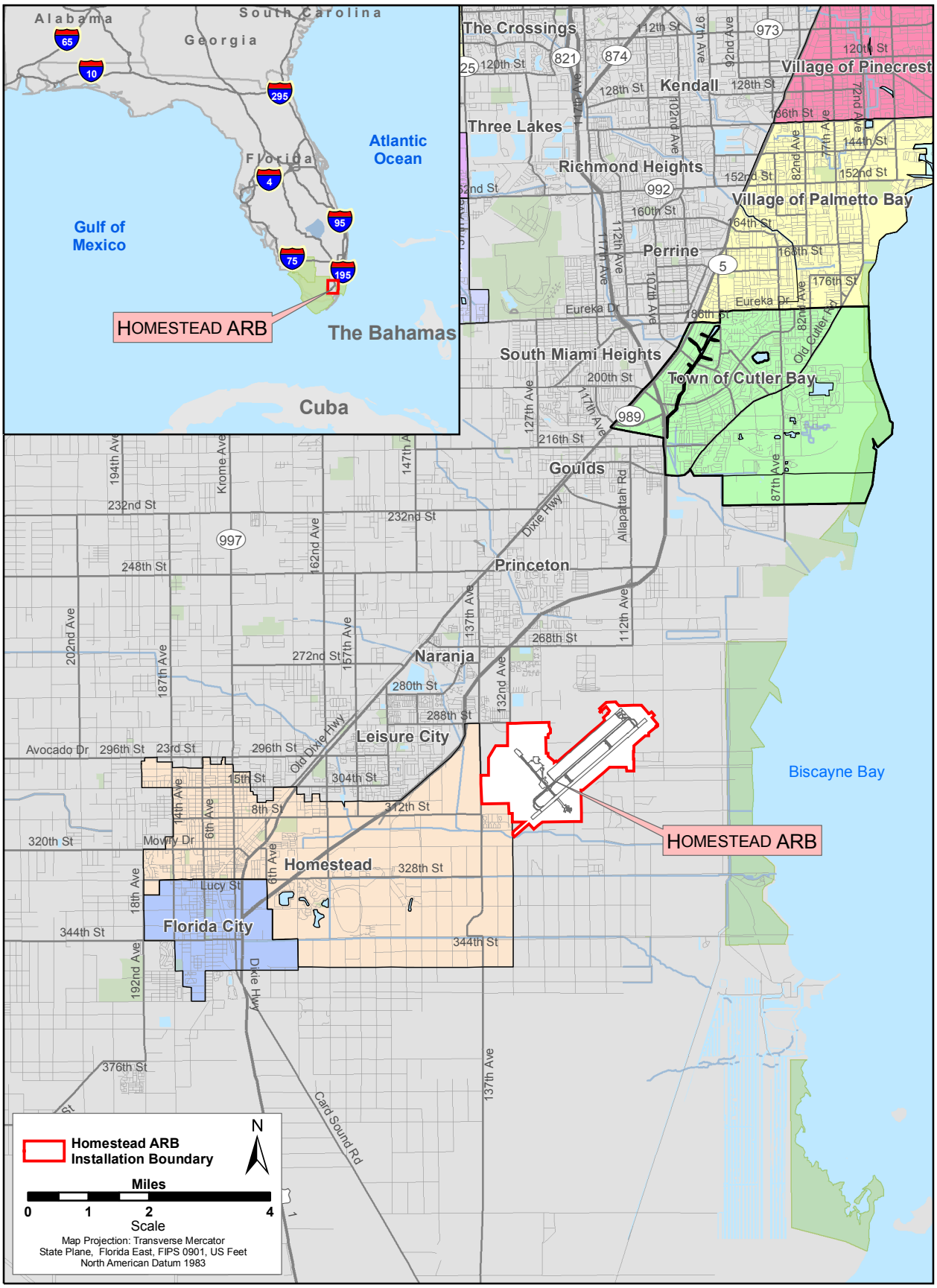


Figure 1-1. Vicinity Map for Homestead ARB with Surrounding Cities

Based on the final decisions of the Commission, the foregoing recommendations resulted in the assignment of a total of nine F-16 aircraft to the 482 FW at Homestead ARB. To enable implementation of this recommendation, the U.S. Air Force (USAF) proposes to provide necessary additional personnel and facilities to support the reassigned aircraft.

This Environmental Assessment (EA) addresses potential environmental consequences associated with the Proposed Action and reasonable alternatives to the Proposed Action to implement the BRAC Commission's recommendations for Homestead ARB. Details on the Proposed Action are presented in **Section 2**.

If the analyses presented in the EA were to indicate that implementation of the Proposed Action would not result in significant environmental or socioeconomic impacts, a Finding of No Significant Impact (FONSI) would be prepared. A FONSI briefly presents the reasons why a Proposed Action would not have a significant impact on the human environment and explains why the preparation of an Environmental Impact Statement (EIS) would not be required. If significant environmental issues were to be identified that cannot be mitigated to insignificant levels, an EIS would be prepared or the Proposed Action would be abandoned and no action would be taken.

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to implement the BRAC Commission's recommendations for BRAC actions pertaining to Homestead ARB.

The need for the Proposed Action is to comply with the Base Closure and Realignment Act of 1990 and to improve the ability of the nation to respond rapidly to the geopolitical challenges of the 21st century. In the 2005 BRAC cycle, the Department of Defense (DOD) and the USAF sought to reorganize its installation infrastructure to support forces more efficiently, increase operational readiness, and facilitate new ways of doing business. BRAC supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The USAF needs to carry out the Commission's recommendations at Homestead ARB to achieve the objectives for which Congress established the BRAC process.

1.3 Summary of Key Environmental Compliance Requirements

1.3.1 National Environmental Policy Act

The National Environmental Policy Act (commonly referred to as "NEPA") (42 United States Code [U.S.C.] Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed, structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a Proposed Action and considers alternative courses of action.

The process for implementing NEPA is codified in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental*

Policy Act. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to briefly provide evidence and analysis for determining whether to prepare a FONSI or whether the preparation of an EIS is necessary. The EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is its *Environmental Impact Analysis Process (EIAP)* is detailed in 32 CFR Part 989, as amended.

1.3.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decisionmaking process for Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of major environmental issues and requirements associated with a Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

This EA examines potential effects of the Proposed Action and alternatives on 12 resource categories:

- Airspace management and aircraft safety
- Noise
- Land use
- Air quality
- Safety
- Geological resources
- Water resources
- Biological resources
- Cultural resources
- Socioeconomics and environmental justice
- Infrastructure
- Hazardous materials and wastes.

These resource categories were identified as being potentially affected by the Proposed Action and include applicable critical elements of the human environment whose review is mandated by Executive Order (EO), regulation, or policy.

Appendix A contains examples of relevant laws, regulations, and other requirements that are often considered part of the analysis. Only those laws, regulations or other requirements relevant to resource categories analyzed in this EA are included in **Appendix A**. In addition, Federal, state, and local permits could be required for construction activities. This EA is not a substitute for those permit requirements.

1.4 Interagency Coordination and Public Involvement

The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs,* require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning* (IICEP), requires the USAF, and thus AFRC, to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements (i.e., to determine the scope of

issues to be addressed in detail in the EA). Through the IICEP process, the USAF notifies relevant Federal, state, and local agencies of the Proposed Action and alternatives and provides them sufficient time to make known their environmental concerns specific to the Proposed Action. IICEP materials are included in **Appendix B**.

NEPA requirements also help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if Federal proponents of an action provide information to state and local governments and the public and involve them in the planning process. CEQ guidance in 40 CFR 1501.7 specifically states, "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to proposed actions. This process shall be termed scoping." The public involvement process augments the USAF opportunity to cooperate with and consider state and local views in implementing a Federal proposal. A Notice of Availability for the Draft EA and Draft FONSI was published in *The Miami Herald* on January 18, the *South Dade News Leader* on January 19*,* and the *Keynoter* on January 20, 2007 prior to the documents being placed at the Homestead Branch of the Miami-Dade County Library. The Notice of Availability as it appeared in *The Miami Herald, South Dade News Letter,* and the *Keynoter* is in **Appendix B.**

1.5 Organization of the EA

This EA is organized into six sections. **Section 1** contains background information on Homestead ARB, a statement of the purpose of and need for the Proposed Action, a summary of applicable regulatory requirements, a discussion of agency coordination and public involvement, and an introduction to the organization of the EA. **Section 2** provides a detailed description of the Proposed Action and a discussion of the alternatives considered, including the No Action Alternative; and a description of the decision to be made and identification of the preferred alternative. **Section 3** contains a characterization of the affected environment, or baseline environmental conditions, and addresses potential environmental consequences associated with the Proposed Action and No Action Alternative. **Section 4** provides an analysis of the potential cumulative impacts on Homestead ARB. **Section 5** presents the preparers of the document. **Section 6** lists the reference documents used in the preparation of the EA. Various appendices support these six sections of the EA and provide additional data and information.

THIS PAGE INTENTIONALLY LEFT BLANK

2. Description of Proposed Action and Alternatives

This section provides detailed information on the Proposed Action and alternatives that were considered in preparing the EA.

2.1 Detailed Description of the Proposed Action

In accordance with the BRAC Commission's recommendations, nine F-16 aircraft from the 419 FW at Hill AFB, Utah would be assigned to the 482 FW at Homestead ARB. The location of 482 FW facilities at Homestead ARB is shown on **Figure 2-1**. Under the Proposed Action, a total of nine F-16 aircraft would be added to the current 482 FW F-16 inventory to bring the total to 24 PAA. In addition to the nine aircraft gained by Homestead ARB, associated ground support equipment for the aircraft would be relocated, 302 additional personnel (83 full-time civilian and Air Reserve Technicians [ARTs] and 219 part-time Traditional Reservists) would be authorized, and approximately 38,599 square feet (ft^2) of renovation and new construction would be required.

2.1.1 Aircraft Descriptions

The F-16 "Fighting Falcon" is a single-seat fighter aircraft capable of supersonic flight. Approximately 49 feet long with a wingspan of nearly 33 feet, the single-engine jet has a range of more than 2,000 miles. The F-16 is armed with a 20-millimeter multibarrel cannon; external stations can carry up to six air-to-air missiles, conventional air-to-air and air-to-surface munitions, and electronic countermeasures pods. The F-16 performs multiple roles, including precision strike, night attack, and beyond-visual-range interception missions.

2.1.2 Proposed Aircraft Operations

Under the Proposed Action, nine additional aircraft would operate from Homestead ARB, increasing the 482 FW F-16 aircraft from 15 to 24 PAA. It is anticipated that the number of flying hours and sorties would increase comparatively. The additional F-16 aircraft would use the same flight tracks, profiles, and airspace as the existing F-16 aircraft. The majority of the flight tracks around Homestead ARB are routed to avoid the heavily populated regions to the north and west of the airfield. It is estimated that the aircraft would arrive during the fourth quarter of fiscal year (FY) 2007. **Table 2-1** presents current and proposed aircraft sorties for the 482 FW. The number of flying days and sorties are estimated. Under Current Conditions, 12 daily sorties reflects the best estimation of an average daily sortie. As shown, the number of based F-16 aircraft would increase by 60 percent, however it is anticipated that the number of sorties

Table 2-1. Current and Proposed Annual Aircraft Sorties for the 482 FW

	Current (2005)	Proposed Action	Percent Change
Number of F-16 aircraft	15	24	60%
Total annual flying hours	3,800	6,336	66%
Total mission and local sorties	3,168	5,280	66%
Average airfield daily sorties [a]	12	20	66%

Note: [a] Based on 250 flying days per year for current conditions and 264 flying days per year for the Proposed Action, 22 days per month as specified from information provided by Lt. Col. Hunt from the 482 Operations Group.

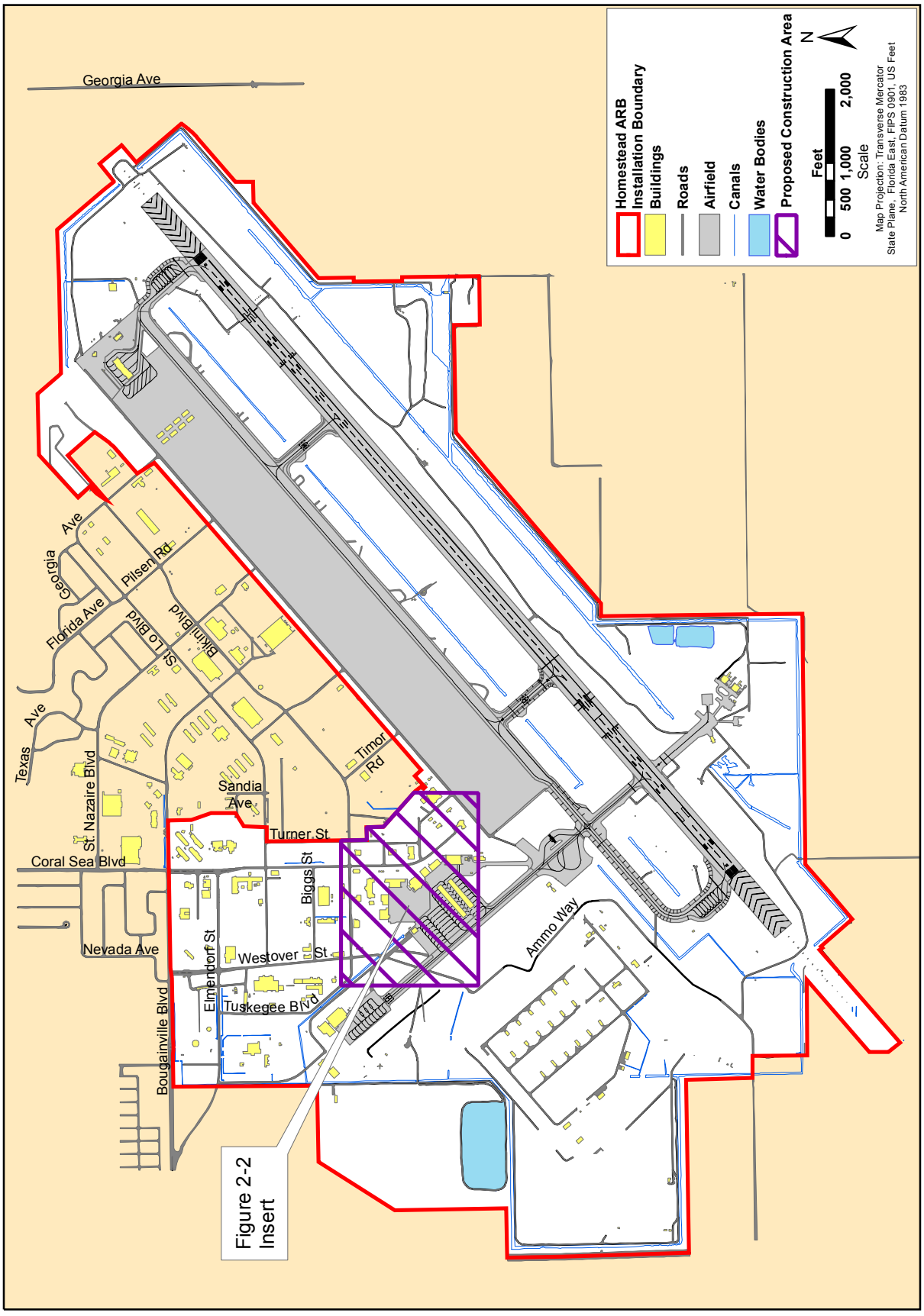


Figure 2-1. Location of Proposed Construction Site at Homestead ARB

would increase by 66 percent. An operation is defined as a single aircraft movement, such as an arrival or a departure. A sortie is defined as at least two operations (arrival and departure). Therefore, 12 sorties per day equals 24 operations per day.

2.1.3 Proposed Construction Projects

Implementation of the Proposed Action would include three construction projects (including renovation) involving approximately 38,599 ft^2. Two projects would occur in FY 2007 and the third in FY 2008. Existing buildings would be expanded by 32,377 ft^2 and there would be approximately 6,222 ft^2 of renovations. These proposed construction projects are necessary to accommodate and support the proposed gain of nine F-16 aircraft. The projects are described as follows and their locations at Homestead ARB are shown on **Figure 2-2**.

- ***Project No. 1. Squadron Operations and Aircraft Maintenance Squadron Facility Modification and Addition (Building 191).*** This project would consist of a 13,702-ft^2 addition to the existing squadron operations and aircraft maintenance squadron facility and the renovation of 6,222 ft^2. This project would be scheduled for construction in FY 2007.
- ***Project No. 2. Weapons Release Shop Addition (Building 192).*** This project would expand the weapons release shop building by 8,826 ft^2. This project would be scheduled for construction in FY 2007.
- ***Project No. 3. Avionics/Electronic Counter Measures (ECM) Building Addition (Building 187).*** This project would expand the existing Avionics/ECM facility by 9,849 ft^2. This project would be scheduled for construction in FY 2008.

The proposed additions would include antiterrorism/force protection requirements identified in DOD unified facilities criteria and all necessary support.

2.1.4 Proposed Personnel Changes

Programmed manpower authorizations to operate and maintain the nine additional F-16 aircraft would increase by an estimated 302 additional personnel (i.e., 83 full-time civilian and ARTs and 219 part-time Traditional Reservists). Traditional Reservists serve one weekend a month and two weeks per year. It is estimated that there are 2,500 full- and part-time personnel at Homestead ARB. Approximately 1,000 personnel work full-time and 1,500 personnel are Traditional Reservists. Under the Proposed Action, the number of full-time personnel would increase to 1,083 and the number of reservists would increase to 1,719. This is an increase of approximately 8 percent and 15 percent, respectively. It is anticipated that personnel would begin to arrive in FY 2007 and be fully complemented by the third quarter of FY 2008.

2.2 Alternatives to the Proposed Action

2.2.1 Introduction

Under NEPA, reasonable alternatives to the Proposed Action must be considered in the EA. Considering alternatives helps to avoid unnecessary impacts and allows analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be "ripe" for decisionmaking (i.e., any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and the need for the action. The following discussion identifies alternatives considered by the USAF and identifies whether they are reasonable and, hence, subject to detailed evaluation in the EA.

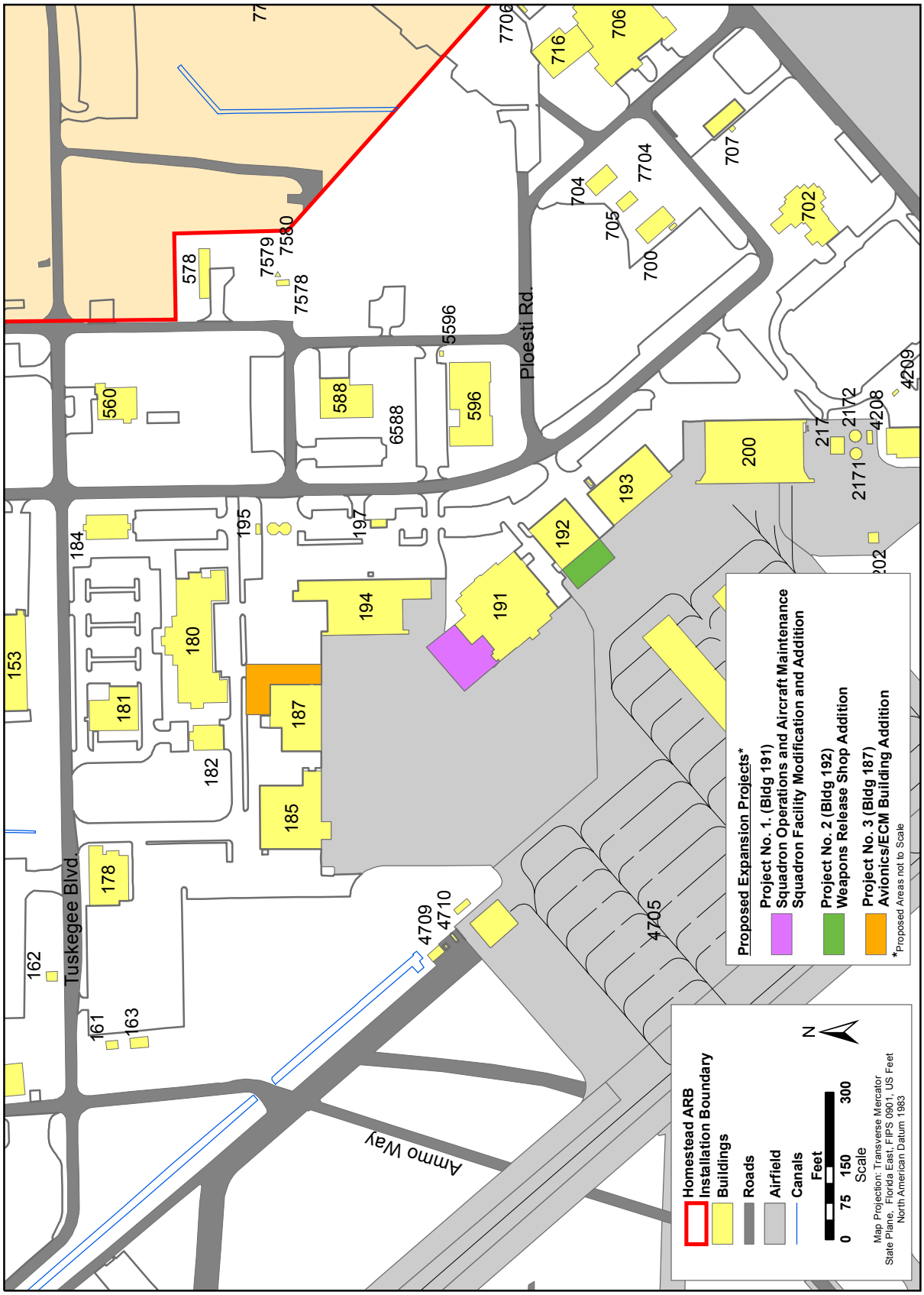


Figure 2-2. Proposed Construction Projects

2.2.2 Alternatives for Reassignment of Aircraft

Through the Defense Base Closure and Realignment Act of 1990, Congress directed the BRAC Commission to recommend the closure and realignment of military installations based on specified evaluation criteria. During 2005, the BRAC Commission carried out its function, resulting in its recommendations becoming law on 9 November 2005. For Homestead ARB, there is no alternative other than the No Action Alternative to the gain of the specified F-16 aircraft to the 482 FW without further Congressional action. Accordingly, alternatives for reassignment of aircraft are neither developed nor evaluated in detail in this EA, with the exception of the No Action Alternative.

2.2.3 Alternatives for Providing and Siting Facilities

The proposed gain of aircraft and associated personnel involves ensuring that Homestead ARB has adequate physical assets to accommodate this action. There are generally five means for providing facilities: (1) use of existing underutilized facilities "as is," (2) modernization or renovation of existing facilities to meet specific requirements, (3) providing pre-fabricated buildings, (4) leasing of off-base facilities (e.g. the empty hangars along the flightline that are owned by Miami-Dade County), or (5) construction of new facilities. USAF policy is to maximize use of existing facilities. However, Homestead ARB does not currently have adequate facilities to meet the maintenance requirements or additional equipment storage associated with the proposed gain of aircraft. Leasing off-base facilities is not feasible because of the military nature of the assets and the difficulties that would arise regarding efficiency of the maintenance program. Accordingly, the proposed construction projects at Homestead ARB, as described in **Section 2.1.3**, present the only feasible alternative for meeting the facilities requirements, and alternatives to providing facilities are not further evaluated in detail in **Section 3** of this EA.

The USAF considers both general and specific siting criteria for construction of new facilities. General siting criteria include consideration of compatibility between the functions to be performed and the installation land use designation for the site, adequacy of the site for the function required, proximity to related activities, distance from incompatible activities, availability and capacity of roads, efficient use of property, development density, potential future mission requirements, and special site characteristics including environmental incompatibilities. Specific siting criteria include consideration of the location of the workforce and efficient management of functions. Collocation of similar types of functions, as opposed to dispersion, typically permits more efficient use of equipment, vehicles, and other assets.

The flightline at Homestead ARB consists almost entirely of facilities for the F-16 aircraft assigned to the 482 FW. The locations selected for the proposed construction projects under the Proposed Action are the only feasible locations due to the need for collocation with other existing assets of the 482 FW, proximity to the flight line, and availability of adequately sized parcels of space at Homestead ARB to meet the purpose of and need for the action. Therefore, alternatives to siting facilities are not further evaluated in **Section 3** of this EA.

2.3 No Action Alternative

As previously mentioned, CEQ regulations require consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated.

Under the No Action Alternative the Proposed Action would not be implemented. Homestead ARB would continue to operate with the current present inventory of F-16 aircraft and would maintain the current workforce. Homestead ARB would continue to use the current facilities, though routine

replacement or renovation actions could occur through normal military maintenance and construction procedures, as circumstances might independently warrant. The No Action Alternative is further evaluated in detail in **Section 3** of this EA.

2.4 Identification of Preferred Alternative

Upon completion of the EA, the USAF will determine whether the Proposed Action would result in significant impacts. If such impacts are predicted, the USAF would provide mitigation to reduce impacts below the level of significance, undertake an EIS, or abandon the Proposed Action. The EA will also be used as a guide in implementing the Proposed Action in a manner consistent with the USAF standards for environmental stewardship. The preferred alternative is the Proposed Action, as described in **Section 2.1.**

3. Affected Environment and Environmental Consequences

In compliance with NEPA, CEQ regulations, and 32 CFR Part 989, the description of the affected environment focuses on those resource areas and conditions potentially subject to impacts. These resource areas and conditions include the following:

- Airspace management and aircraft safety
- Noise
- Land use
- Air quality
- Safety
- Geological resources
- Water resources
- Biological resources
- Cultural resources
- Socioeconomics and environmental justice
- Infrastructure
- Hazardous materials and wastes.

When a determination has been made that detailed analysis of a particular resource area is not necessary and can be eliminated, the resource area text describes the rationale for its exclusion. The information on existing conditions given for a resource area is considered the baseline against which potential effects of implementing either the Proposed Action or the No Action Alternative can be evaluated.

The specific criteria for evaluating potential environmental effects of the Proposed Action or the No Action Alternative are also presented under each resource area. The significance of an action is measured in terms of its context and intensity. The following elaborates on the nature of characteristics that might relate to various environmental effects. Individual resource area presentations provide more subject-specific evaluation criteria.

Short-term or long-term. In general, short-term effects are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term effects are those that are more likely to be persistent and chronic.

Direct or indirect. A direct effect is caused by an action and occurs around the same time at or near the location of the action. An indirect effect is caused by an action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.

Negligible, minor, moderate, or significant. These relative terms are used to characterize the magnitude or intensity of an impact. Negligible effects are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate effect is readily apparent. Significant effects are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation in order to fulfill the policies set forth in NEPA.

Adverse or beneficial. An adverse effect is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial effect is one having positive outcomes on the man-made or natural environment.

3.1 Airspace Management and Aircraft Safety

3.1.1 Definition of the Resource

Airspace management and aircraft safety are interrelated topics associated with the Proposed Action. Airspace management addresses in what types of military airspace the proposed F-16 aircraft would fly and the airspace traffic management procedures that would be used to ensure separation of military training sorties and civilian air traffic. Aircraft safety evaluations include airspace operations, traffic management issues, and the potential for bird/wildlife-aircraft strikes.

Airspace Management

The management of airspace within the United States and its territories is the responsibility of the Federal Aviation Administration (FAA) and is governed by Federal legislation and by military regulations and procedures. The ultimate authority in assigning and managing airspace is the FAA, which has acknowledged the need for military aircraft to conduct certain training operations within airspace that is separated from other types of civilian and commercial aircraft and sets aside such airspace for military operations.

The USAF describes airspace management as the coordination, integration, and regulation of the use of airspace of defined dimensions. Airspace is defined in physical terms (i.e., vertically and horizontally) and also by duration of use. Because airspace is a finite resource, it must be managed and used equitably to serve general, commercial, and military aviation needs. The FAA manages all airspace and has established various airspace designations to protect aircraft while operating near and between airports, or operating within airspace identified for defense-related purposes. The FAA establishes rules of flight and air traffic control (ATC) procedures to govern safe operations within each type of designated airspace. Military operations are generally conducted within designated airspace and follow specific procedures to maximize flight safety for nonparticipating civilian or military aircraft.

The objective of airspace management is to meet military training requirements through the safe and efficient use of available navigable airspace. This is to be accomplished in a peacetime environment, while minimizing the impact on other aviation users and the public (AFI 13-201, *U.S. Air Force Airspace Management*). Chapter 3 of the Aeronautical Information Manual defines and provides the operational requirements for each of the various types or classes of airspace (FAA 2006).

There are two categories of airspace, or airspace areas: regulatory (i.e., Classes A, B, C, D, and E airspace areas; restricted; and prohibited areas) and nonregulatory (i.e., military operations areas [MOAs], warning areas, alert areas, and controlled firing areas). These two categories are further divided into four classifications: controlled, uncontrolled, special use airspace, and airspace for special use. The categories and types of airspace are dictated by the following:

- The complexity or density of aircraft movement
- The nature of the operations conducted within the airspace
- The level of safety required
- National and public interest in the airspace.

Controlled Airspace. Controlled airspace is a generic term that encompasses the different classifications (Classes A, B, C, D, and E) of airspace and defines dimensions within which ATC service is provided to flights under instrument meteorological conditions and visual meteorological conditions (VMC). All

military and civilian aircraft are subject to Federal Aviation Regulations. **Figure 3-1** provides a graphical representation of controlled airspace.

Class A airspace includes all operating altitudes of 18,000 feet above mean sea level (MSL) and higher. Class A airspace is most frequently utilized by commercial aircraft at altitudes between 18,000 and 45,000 feet above MSL.

Class B airspace typically comprises contiguous cylinders of airspace, stacked one upon another and extending from the surface up to 10,000 feet above ground level (AGL). To operate in Class B airspace, pilots must contact appropriate controlling agencies and receive clearance to enter the airspace. In addition, aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to track aircraft speed, altitude, and position accurately. Class B airspace is typically associated with major airport complexes such as Miami International Airport and Tampa International Airport.

Class C airspace can generally be described as controlled airspace that extends from the surface or a given altitude to a specified higher altitude. Class C airspace is designed and implemented to provide additional ATC into and out of primary airports where aircraft operations are periodically at high-density levels, such as Fort Lauderdale/Hollywood International Airport. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local ATC facilities.

Class D airspace encompasses a 5-statute-mile radius of an operating ATC-controlled airport. It extends from the ground to 2,500 feet AGL or higher. All aircraft operating within Class D airspace must be in two-way communication with the ATC facility.

Class E airspace can be described as a general controlled airspace. It includes designated Federal airways consisting of the high-altitude (J or "Jet" Route) system and the low-altitude (V or "Victor" Route) system.

Federal airways have a width of 4 statute miles on either side of the airway centerline and can be structured between the altitudes of 700 feet AGL and 18,000 feet above MSL. These airways frequently intersect approach and departure paths from both military and civilian airfields. Class E airspace might range from ground level at nontowered airfields up to 18,000 feet above MSL. The majority of Class E airspace is where more stringent airspace control has not been established.

Uncontrolled Airspace. Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the surface to 700 feet AGL in urban areas, and from the surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet above MSL if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating under VMC. **Figure 3-1** provides a graphical representation of uncontrolled airspace.

Special Use Airspace. Special use airspace consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas, special use airspace is depicted on aeronautical charts. Chart depictions include hours of operation, altitudes, and the agency controlling the airspace. All special use airspace descriptions are contained in FAA Order 7400.8. Examples of special use airspace in the Homestead ARB local flying area are Restricted Areas (R-2901 and R-2910), Warning Areas (W-465A/B/C) and MOAs (Lake Placid and Avon North).

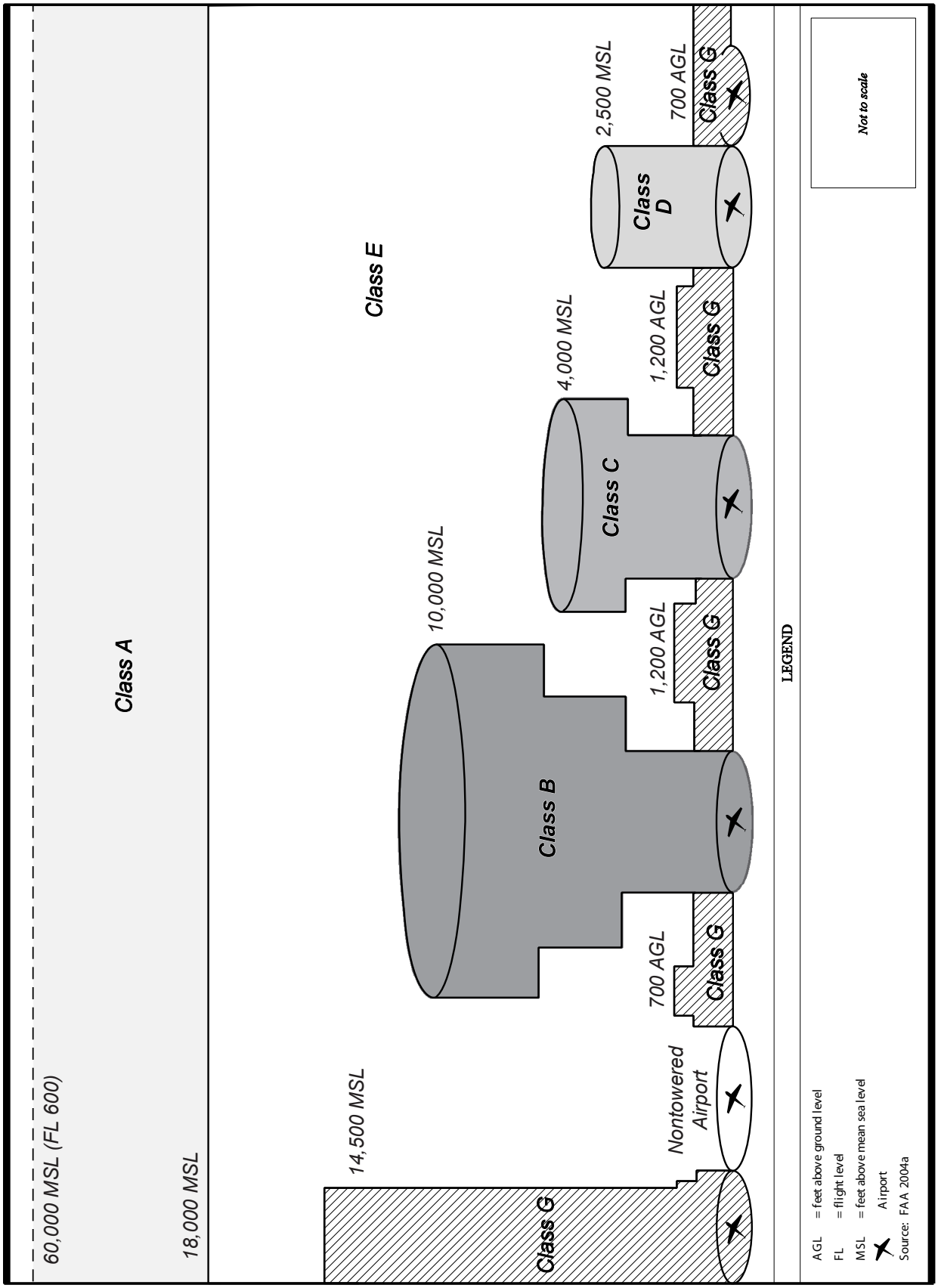


Figure 3-1. FAA Airspace Classifications

Airspace for Special Use. Airspace for special use includes areas used by military aircraft, but where no restrictions are placed on nonparticipating aircraft. They are designated as such for informational purposes for general aviation. Examples of airspace for special use are military training routes (MTRs), slow routes, and aerial refueling tracks.

To train realistically and safely, the military and FAA have developed MTRs. There are two types of MTRs: instrument routes (IRs) and visual routes (VRs). MTRs are flight corridors that range from 4 to 10 nautical miles wide and have altitude structures from 100 feet AGL to 5,000 feet above MSL or higher. The center lines of MTRs are depicted on aeronautical charts. At Homestead ARB, seven MTRs are used regularly; five of these serve as entry into R-2901.

Slow routes are similar to MTRs in structure but are used by aircraft that normally operate at low-level airspeeds of less than 250 knots indicated air speed. Slower aircraft, such as the C-5 aircraft, can fly safely in the same airspace environment with civilian or commercial air traffic by practicing see-and-avoid techniques under VMC. Slow routes are designated through military approval channels and do not require FAA coordination. The maximum altitude that can be flown in slow routes is 1,500 feet AGL.

Aerial refueling tracks and anchors are airspace designated by the FAA for aerial refueling operations. Aerial refueling tracks have designated entry points (initial points), altitude blocks, and exit points. Aerial refueling tracks are normally flown from point A to point B on a straight line. Refueling anchors have the same restrictions as aerial refueling tracks. Refueling anchors are flown using a racetrack pattern to remain within designated airspace. Anchor tracks also might be associated with other designated airspace, such as ATC Assigned Airspace or warning areas (over water). Air refueling anchor AR-638 is directly over Homestead ARB and is used frequently. Additional air refueling anchors include AR-617 over the Florida Keys and AR-618 over the Gulf of Mexico.

The region of influence (ROI) for airspace management includes the controlled and uncontrolled airspace in the vicinity of Homestead ARB. However, utilization of special use airspace (i.e., MTRs) and airspace for special use (i.e., MOAs) were not analyzed in this EA because all such airspace has been previously analyzed at utilization levels adequate to account for the proposed increase in F-16 aircraft operations.

Aircraft Safety

Aircraft safety is based on the physical risks associated with aircraft flight and current military operation procedures concerning aircraft safety. Obstructions to flights, which include towers, power transmission lines, and birds represent safety concerns for aircrews, especially those engaged in low-altitude flight training. Hazardous weather conditions can pose safety hazards and influence a pilot to alter flight. Pilots consult the National Weather Service or weather services at local airports to obtain preflight weather information. Adverse weather conditions of concern include tornadoes, thunderstorms, hail, severe turbulence, dust storms, and wind shear. The evaluation of potential hazards of weather conditions, towers, and power transmission lines rests in a pilot's sound discretion based on knowledge of available information, experience, and the operational limits of the aircraft.

AFI 91-202, *The USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It establishes mishap prevention program requirements, assigns responsibilities for program elements, and contains program management information.

Bird and wildlife strikes are a safety concern due to the potential damage that a strike might have on the aircraft or injury to aircrews. Birds can be encountered at altitudes of 30,000 feet MSL and higher. However, strike rates rise substantially as altitude decreases. Most birds fly close to ground level and 95 percent of all reported incidents in which a USAF aircraft has struck a bird have been at altitudes of less

than 3,000 feet AGL. Approximately half of these bird strikes occur in the airport environment and about one-third occur during low-altitude training. The USAF devotes considerable attention to avoiding the possibility of bird/wildlife-aircraft strikes. It has conducted a worldwide program for decades to study bird migrations, bird flight patterns, and past strikes to develop predictions of where and when bird/wildlife-aircraft strikes might occur so as to minimize such occurrences.

3.1.2 Existing Conditions

Homestead ARB is approximately 20 miles southwest of the Miami International Airport. The installation has one runway, Runway 05/23, which is constructed of concrete and is 11,200 feet long by 300 feet wide. Runway 05 is located on the southwest side of the airfield and Runway 23 is located on the northeast side of the airfield. Using Runway 05 aircraft depart and land heading northeast and using Runway 23 depart and land heading southwest (see **Figure 2-1**). There is an area used for helicopter landings, north of Runway 05, which is used by the U.S. CBP.

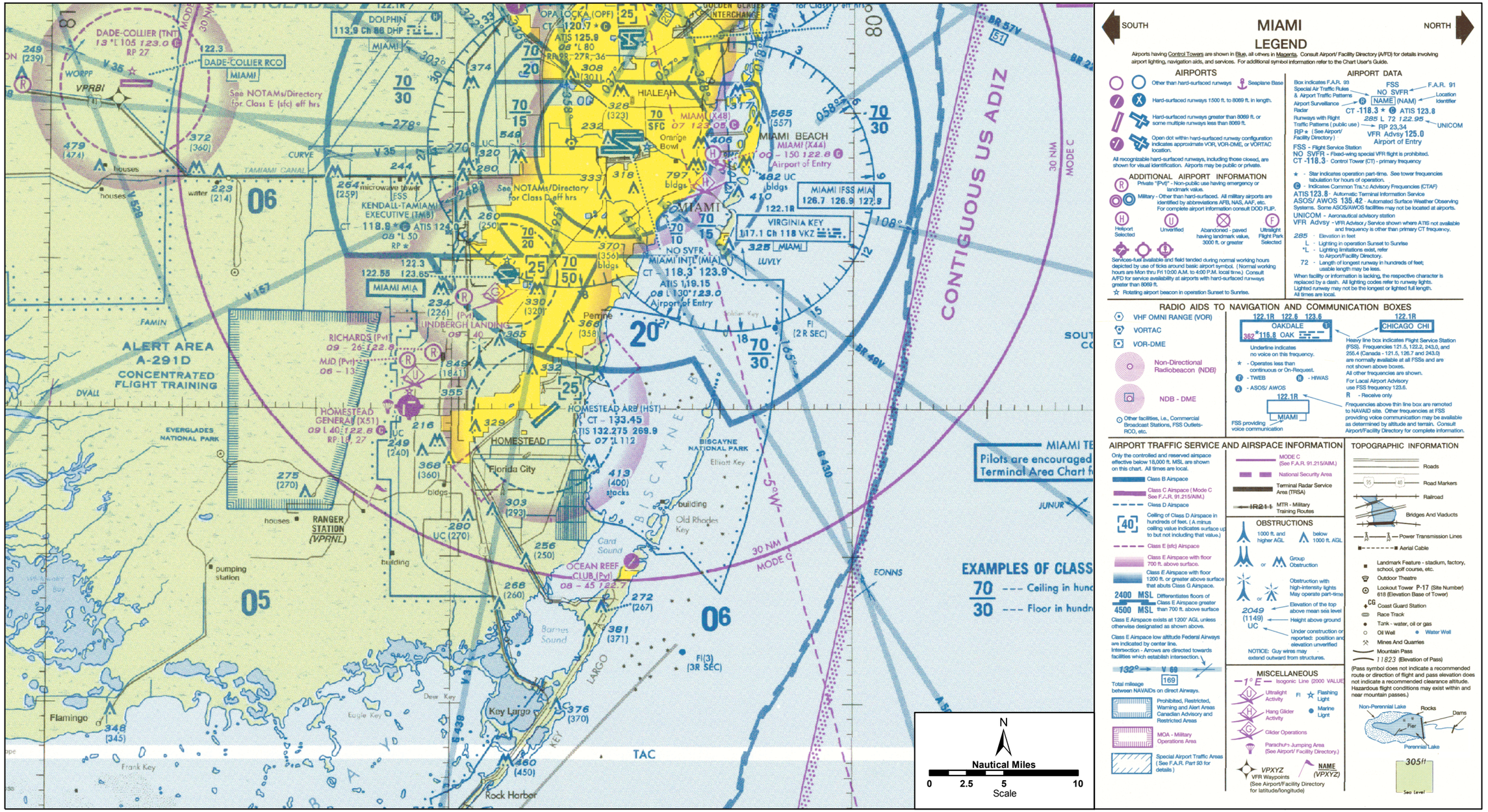
Airspace Management

As shown in **Figure 3-2**, Homestead ARB lies approximately 5 miles south of Miami International Airport Class B airspace. Homestead ARB is a private-use, military airport that bases F-16 Fighting Falcon and F-15 Eagle aircraft. The airspace and airfield operating environment differ around each installation. The Class D airspace that surrounds the installation out to 5.5 nautical miles and from the surface to 2,500 feet above MSL is defined as the affected environment for this EA. This "cylinder" defines the region of most concern to the FAA regarding operational issues with civilian and commercial aviation in the vicinity of the installation. Within 20 nautical miles, airports (i.e., public, corporate, and private), Victor Routes, MTRs, and special use airspace exist.

The Miami Approach Control Area encompasses the airspace 30 nautical miles around Miami International Airport. Homestead ARB is within the Miami Approach Control Area. The Miami Air Route Traffic Control Center delegates the approach area to the Terminal Radar Approach Control facility at Miami International Airport, which provides ATC services to aircraft in the Miami Approach Control Area. ATC services within Homestead ARB Class D airspace are provided by the Homestead ARB control tower.

The Baseline Scenario noise contours as presented in this EA were derived from the *Air Installation Compatible Use Zone Study for the 482 FW at Homestead ARB, June 2004* (HARB 2004b). The *2004 Air Installation Compatible Use Zone* (AICUZ) noise contours were developed using the approved version of NOISEMAP, BaseOps Version 5.0. Since release of the 2004 AICUZ Study there have been modifications to the NOISEMAP software program. The difference between the 2004 AICUZ Study and the Baseline Scenario noise contours can be attributed to how the new noise model accounts for the F-16 engine run-ups. Therefore, the Baseline Scenario, as presented in this EA, represents the 2004 AICUZ Study noise contour updated to NOISEMAP, BaseOps Version 7.299 noise model.

Aircraft operations consist of arrivals, departures, and touch-and-go operations (TGOs). Since a pilot performing a TGO essentially performs a landing and a takeoff, TGOs are counted as two aircraft operations. Currently, the 482 FW bases 15 PAA F-16 aircraft. In 2004, 27,053 aircraft operations were flown at Homestead ARB, of which 13,435 were F-16 aircraft associated with the 482 FW.



Source: FAA 2004b

Figure 3-2. Local Controlled Airspace in the Vicinity of Homestead ARB

Aircraft Safety

DOD has developed regulations for military airfields to protect aircraft operational capacities. DOD analysis determined that the areas immediately beyond the ends of the runways and along the approach and departure flight paths have significant potential for accidents. Based on this analysis, DOD developed three accident potential zones: the Clear Zone, the Accident Potential Zone I, and Accident Potential Zone II. In addition, DOD and FAA have developed height and obstruction criteria. Homestead ARB adheres to DOD regulations; detailed information concerning these regulations can be found in the *Air Installation Compatible Use Zone for Homestead ARB, June 2004* (HARB 2004b).

Homestead ARB is about 2 miles west of Biscayne Bay and the Atlantic Ocean, approximately 11 miles east of the Everglades, and within the confines of the South Dade Wildlife Conservation Area. The installation is bordered by farmland on the south side. There are two Miami-Dade County landfills about 2 miles northeast of the installation; the Homestead Landfill and Recycling is approximately 2 miles south. The average elevation at Homestead ARB is about 7 feet above MSL. These habitats typically attract high numbers of birds. Consequently, the 482 FW at Homestead ARB has implemented a Bird/Wildlife Aircraft Strike Hazard (BASH) Reduction Program.

The BASH Reduction Program for the 482 FW establishes procedures to identify and avoid high risk situations, helps disseminate information to pilots, establishes guidelines to discourage bird habitat on the airfield, provides dispersal procedures, establishes a bird hazard working group, and compiles data to track bird concentration patterns.

Homestead ARB has contracted two U.S. Department of Agriculture Wildlife Biologists to assist with BASH activities. The first biologist monitors the airfield before and during the scheduled flying times for the 482 FW. The second biologist works at the Miami-Dade County landfill approximately 2 miles north of the installation to control birds. This directly affects the number of birds migrating to Homestead ARB. Both biologists utilize the same methods for controlling birds.

The BASH Reduction Program discusses the types of birds that are commonly involved in collisions with aircraft, their regular food sources, and control measures to discourage bird habitat. Some of the species of birds regularly found at Homestead ARB include cattle egrets (*Bubulcus ibis*), mourning doves (*Zenaida macroura*), common nighthawks (*Chordeiles minor*), common ravens (*Corvus corax*), gulls, terns, long-legged waders, migrating waterfowl, and raptors. In addition, other wildlife such as rodents, alligators, and turtles are sometimes found on the airfield.

The 482 FW utilizes the Bird Watch Condition (BWC), which is an advisory code that is used to communicate hazardous bird activity at or adjacent to Homestead ARB and includes the following categories:

- *Low*–Reflects normal bird activity on or above the airfield with a low probability of hazard. This condition is consistent with low numbers of birds and limited bird activity.
- *Moderate*–Reflects increased bird populations and activity. Flights are restricted to a single aircraft takeoff and recovery. Low approaches or formations are not permitted. Aircrew risk assessment reevaluation is required.
- *Severe*–This condition reflects a high bird population in the area and high levels of bird activity. Only mission-essential flights are conducted. Aircrew risk assessment reevaluation is required.

Table 3-1 presents the number of the bird strikes that occurred at Homestead ARB from 2002 through 2005. The total number of bird strikes has steadily declined through the years with the largest number (24) in 2002 and the smallest number (8) in 2005. The greatest number of strikes normally takes place in the late summer-early fall months. There have only been 2 bird strikes in 2006 from January through April (HARB 2006c).

The 482 FW actively implements the BASH Reduction Program, thereby reducing the potential for a bird strike to occur. Aircrews are briefed and familiarized with potential obstructions along their routes before undertaking a mission. Furthermore, the DOD Flight Information Publication and aeronautical charts identify the locations of such hazards and indicate the required horizontal or vertical separation distances necessary to ensure safety. Strike rates rise significantly as altitude decreases mainly because birds are commonly active close to the ground. At this time the 482 FW are restricted from flying the local low-level routes. However, this decision can be rescinded if mission requirements change.

Table 3-1. Annual Bird Strikes at Homestead ARB

Year	Number of Bird Strikes
2002	24
2003	22
2004	16
2005	8

Source: HARB 2006c

3.1.3 Evaluation Criteria

Airspace Management

Effects on airspace management were assessed by comparing the projected military flight operations with existing conditions and with civil aviation activities in the defined ROI. This assessment included analyzing the capability of affected airspace elements to accommodate projected military activities and determining whether such increases would have any adverse impacts on overall airspace use in the area. Also included are considerations of factors such as the interaction of the proposed use of specific airspace with adjacent controlled, uncontrolled, or other military training airspace; possible impacts on other nonparticipating civil and military aircraft operations; and possible impacts on civil airports that underlie or are proximate to the airspace involved in the proposal.

Airspace Safety

Impacts were assessed based on direct effects from aircraft crashes (i.e., damage to aircraft and points of impact). If implementation of the Proposed Action were to substantially increase risks associated with the safety of Homestead AFB personnel, contractors, or the local community; or substantially hinder the ability to respond to an emergency, it would represent a significant impact. Furthermore, if implementation of the Proposed Action would result in incompatible land use with respect to safety criteria, impacts on safety would be significant.

3.1.4 Environmental Consequences of the Proposed Action

Airspace Management

Significant impacts on airspace management are not anticipated. Effects on airspace management are predicated on the extent to which the Proposed Action would affect air traffic in the vicinity of Homestead ARB and the navigable airspace in an en route environment.

Homestead ARB supports several military and governmental units. Based aircraft include F-16s, which are flown by the 482 FW and F-15 aircraft, which are flown by the Florida ANG. The U.S. CBP operates the Cessna Citation 550, Cessna 206, C-12 Huron, Dash-8, and the UH-60 Black Hawk and AS-350 helicopters.

Table 2-1 provides baseline (current) and proposed operations for 482 FW. **Table 3-2** shows the anticipated change in operations associated with the Proposed Action. The baseline scenario and the Proposed Action were used to analyze impacts at Homestead ARB. Aircraft operations for the baseline scenario were taken from the *Air Installation Compatible Use Zone Study for the 482 FW at Homestead ARB, June 2004* (HARB 2004b). Operations for the Proposed Action were estimated from the potential increase in based F-16 aircraft that would occur at Homestead ARB under the BRAC Action. The number of based F-16 aircraft under the baseline scenario is 15, under the Proposed Action the number of based F-16 aircraft would increase to 24. As shown, the number of F-16 operations would increase by 66 percent. The number of operations from the F-15, U.S. CBP, and transient aircraft would not change under the Proposed Action. Transient aircraft operations are aircraft operations (i.e., arrivals, departures, closed patterns) performed by an organization not assigned to HARB. The total number of operations at Homestead ARB would increase under the Proposed Action.

Under the Proposed Action, the additional F-16s would use the same flight tracks and routes as the current F-16 aircraft. The additional operations under the Proposed Action could be conducted without adverse impacts on airspace management practices or control tower procedures since the new aircraft would be using the same operating procedures as existing F-16 aircraft. The airspace areas surrounding Homestead ARB are of sufficient size to support the proposed aircraft operations, therefore, no adverse impacts would be associated with implementation of the Proposed Action.

Table 3-2. Current and Proposed Annual Aircraft Operations at Homestead ARB

Aircraft	Annual Operations		Percent Change
	Baseline Scenario	Proposed Action	
F-16	13,435	22,302	66%
F-15	2,600	2,600	0
Military Based Aircraft	*16,035*	*24,902*	*55%*
U.S. CBP	7,430	7,430	0
Transient Aircraft	4,097	4,097	0
Total	**27,562**	**36,429**	**32%**

Aircraft Safety

Minor adverse effects would be anticipated under the Proposed Action. Implementation of the Proposed Action would increase the total number of F-16 operations by 66 percent and, therefore, it is anticipated that the risk of operational mishaps would increase proportionally. However, military training flights are completed by pilots who are already fully-trained in order to maintain their flying skills. There is no student training at Homestead ARB. The continued implementation of AFI 91-202, *The USAF Mishap Prevention Program*, would also reduce the potential for mishaps.

Minor adverse effects would be anticipated from the potential increase in BASH incidents. Because of the increase in operations, there is an associated proportional increased potential for aircraft mishaps associated with BASH incidents. There is always a possibility of bird/wildlife strikes whenever aircraft operate, and Homestead ARB is in a low-lying area in the confines of the South Dade Wildlife Conservation Area near the Everglades and Biscayne Bay. These habitats typically attract high numbers of birds. However, as discussed in **Section 3.1.2**, there were 16 bird strikes in 2004 and 8 bird strikes in 2005. This accounts for about 0.06 percent and 0.03 percent, respectively, of the total number of baseline operations at Homestead ARB. As shown on **Table 3-1**, the number of annual bird strikes has declined from 24 to 8 during the past 3 years. It is anticipated that the continued implementation of the BASH Reduction Program at Homestead ARB would minimize conditions giving rise to incidents involving bird/wildlife-aircraft strikes.

3.1.5 No Action Alternative

Under the No Action Alternative, baseline conditions would remain unchanged at Homestead ARB and aircraft operations would not increase. No impacts on airspace management or aircraft safety would be expected as a result of the No Action Alternative.

3.2 Noise

3.2.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on the roof. Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency content of a sound-producing event to represent the way in which the average human ear responds to the audible event. All sound levels analyzed in this EA are A-weighted.

Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (i.e., schools, churches, or hospitals) or broad areas (e.g., nature preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Regulations and Metrics. Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other

adverse physiological, psychological, and social effects associated with noise. The following paragraphs describe the guidelines and regulations that are relevant to the project.

According to the USAF, the FAA, and the U. S. Department of Housing and Urban Development (HUD) criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the day-night average sound level (DNL) noise exposure exceeds DNL 75 dBA, "normally unacceptable" in regions exposed to noise between the DNL 65 and 75 dBA, and "normally acceptable" in areas exposed to noise of DNL 65 dBA or under. The Federal Interagency Committee on Noise developed land-use compatibility guidelines for noise in terms of DNL (FICON 1992). For outdoor activities, the U.S. Environmental Protection Agency (USEPA) recommends 55 DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974). DNL is the metric recognized by the U.S. government for measuring noise and its impacts on humans.

Ambient Sound Levels. Noise levels in residential areas vary depending on the housing density and location. As shown in **Figure 3-3**, a quiet urban area in the daytime is about 50 dBA, which increases to 65 dBA for a commercial area, and 80 dBA for a noisy urban daytime area.

Aircraft Sound Levels. Noise levels, resulting from multiple single-events, are used to characterize community noise effects from aircraft or sustaining road and building construction activity and are measured in the DNL. This noise metric incorporates a "penalty" for evening and nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging sound exposure level values for a given 24-hour period. DNL is the preferred noise metric of FAA, HUD, USEPA, and DOD for modeling airport environs.

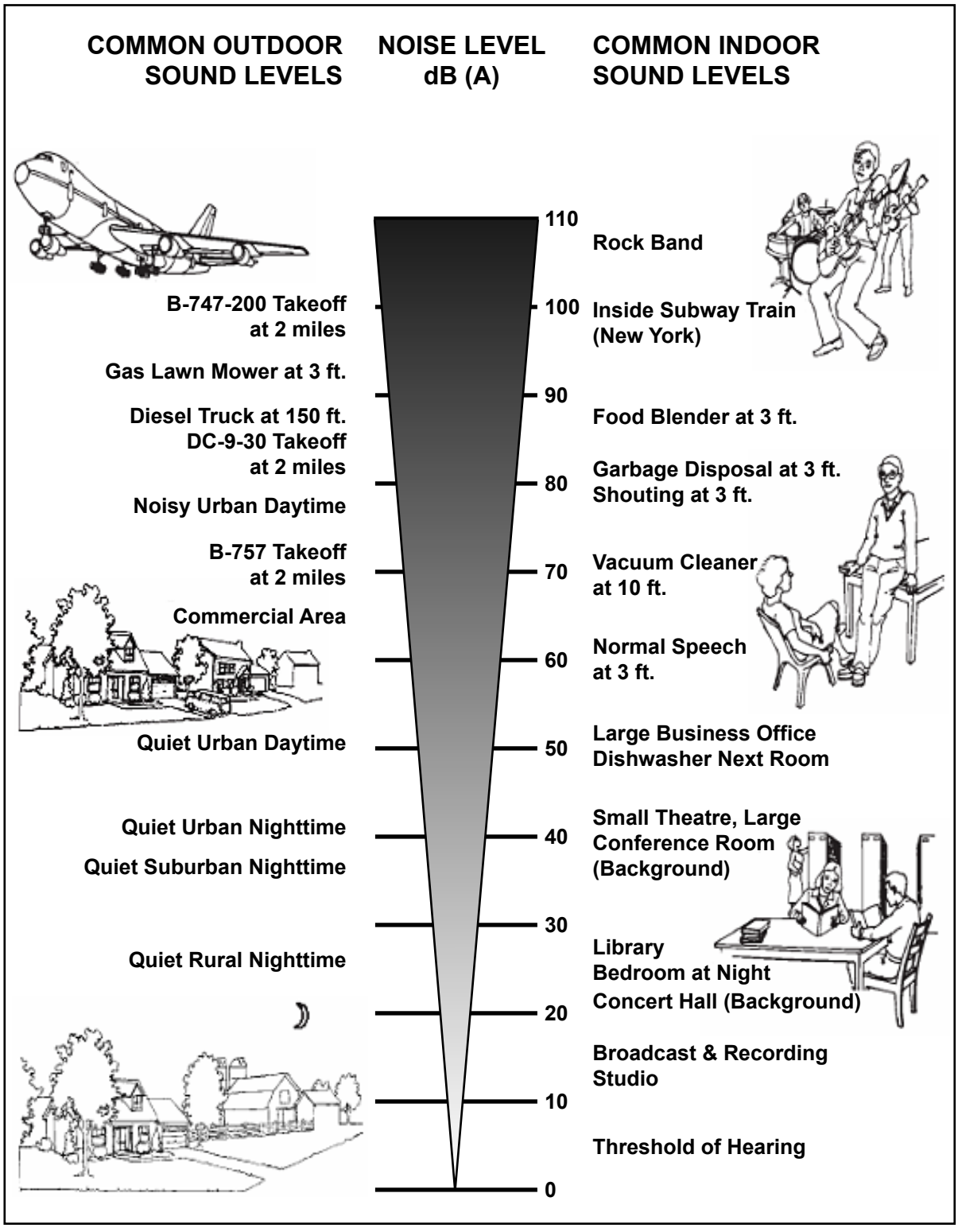
Most people are exposed to sound levels of 50 to 55 DNL or higher on a daily basis. Studies specifically conducted to determine noise impacts on various human activities show that about 90 percent of the population is not significantly bothered by outdoor sound levels below 65 DNL (USDOT 1984). Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments and that there is a consistent relationship between DNL and the level of annoyance.

Construction Sound Levels. Building construction, modification, and demolition work can cause an increase in sound that is well above the ambient level. A variety of sounds come from graders, pavers, trucks, welders, and other work processes. **Table 3-3** lists sound levels associated with common types of construction equipment that are likely to be used under the Proposed Action. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

3.2.2 Existing Conditions

Ambient sound levels around Homestead ARB are typical of an urban environment. Vehicle traffic, aircraft, commercial buildings, public facilities, and residential suburbs are prevalent around Homestead ARB.

Major transportation routes around Homestead ARB include the Florida Turnpike (State Route 821), which lies in a northeast/southwest direction on the north side of the installation and Old Dixie Highway (U.S. Route 1) which parallels the Florida Turnpike to the north. Numerous residential homes are situated between Homestead ARB and these transportation routes.



Source: Landrum & Brown 2002

Figure 3-3. Comparisons of Common Noise Levels

Table 3-3. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Grading	
Bulldozer	87
Grader	85
Water Truck	88
Paving	
Paver	89
Roller	74
Demolition	
Loader	85
Haul Truck	88
Building Construction	
Generator Saw	81
Industrial Saw	83
Welder	74
Truck	80
Forklift	67
Crane	83

Source: COL 2001

The Homestead-Miami Speedway is about 1 mile south of Homestead ARB. The Speedway has been open since 1995 and currently has a seating capacity of 80,000 (NASCAR 2006). There are two main race weekends at the Homestead-Miami Speedway per year; however, race car testing occurs at various times. During race times, it is likely that noise from the racetrack increases the ambient noise level in the immediate area by a considerable amount. In addition, traffic from the spectators traveling to and from the speedway adds to the ambient noise level before and after the race takes place.

Airports near Homestead ARB include the Miami International Airport, which is approximately 20 miles north; the Homestead General Aviation Airport, about 9 miles west; the Kendall-Tamiami Executive Airport which is 10 miles north; and the Ocean Reef Club Airport which is approximately 11 miles southeast. There are additional general aviation and regional airports in the region, particularly north of Miami International Airport and south towards the Florida Keys.

Aircraft operations at Homestead ARB were analyzed using two scenarios: the baseline scenario and the Proposed Action. Aircraft operations for the baseline scenario were taken from the *Air Installation Compatible Use Zone Study for the 482nd Fighter Wing, June 2004 (2004 AICUZ)* (HARB 2004b). As previously mentioned, the noise analysis for the *2004 AICUZ* was completed using NOISEMAP, BaseOps Version 5.0. Since that time, there have been modifications to the software program (see **Section 3.1.2**). For the baseline scenario the noise files were taken from the *2004 AICUZ* and analyzed using NOISEMAP, BaseOps Version 7.299.

Under the baseline scenario, it was estimated that F-16 aircraft are flown approximately 250 days a year. On an annual basis there are about 3,168 sorties flown by F-16s at Homestead ARB. A sortie is the entire flight path of a military aircraft which includes the arrival, departure, and any closed-pattern activities the aircraft might fly. These data were used to determine the average number of sorties per day. As shown in the calculation below, there are approximately 12 sorties per day at Homestead ARB.

$$\frac{3{,}168 \text{ sorties}}{\text{year}} \times \frac{\text{year}}{250 \text{ days}} = 12 \text{ F-16 sorties per day}$$

A single sortie generates at least two operations (arrival and departure). An operation is defined as a single aircraft movement, such as an arrival, departure, or one closed-pattern. Therefore, 12 sorties equals 24 operations per day.

As shown on **Figure 3-4**, noise contours from existing airport operations at Homestead ARB indicate that there is an area of residential land use inside of the 65 DNL contour southwest of the installation. The acreage for the entire area west of the airfield near Runway 05 (located at the southwest end of the installation) is approximately 55 acres (see **Section 3.3.4**). Of the 55 acres in this residential area, only 22 acres are within the 65 DNL contour under the Baseline Scenario. Generally, residential land use is considered incompatible inside of noise contours that are 65 DNL or higher.

3.2.3 Evaluation Criteria

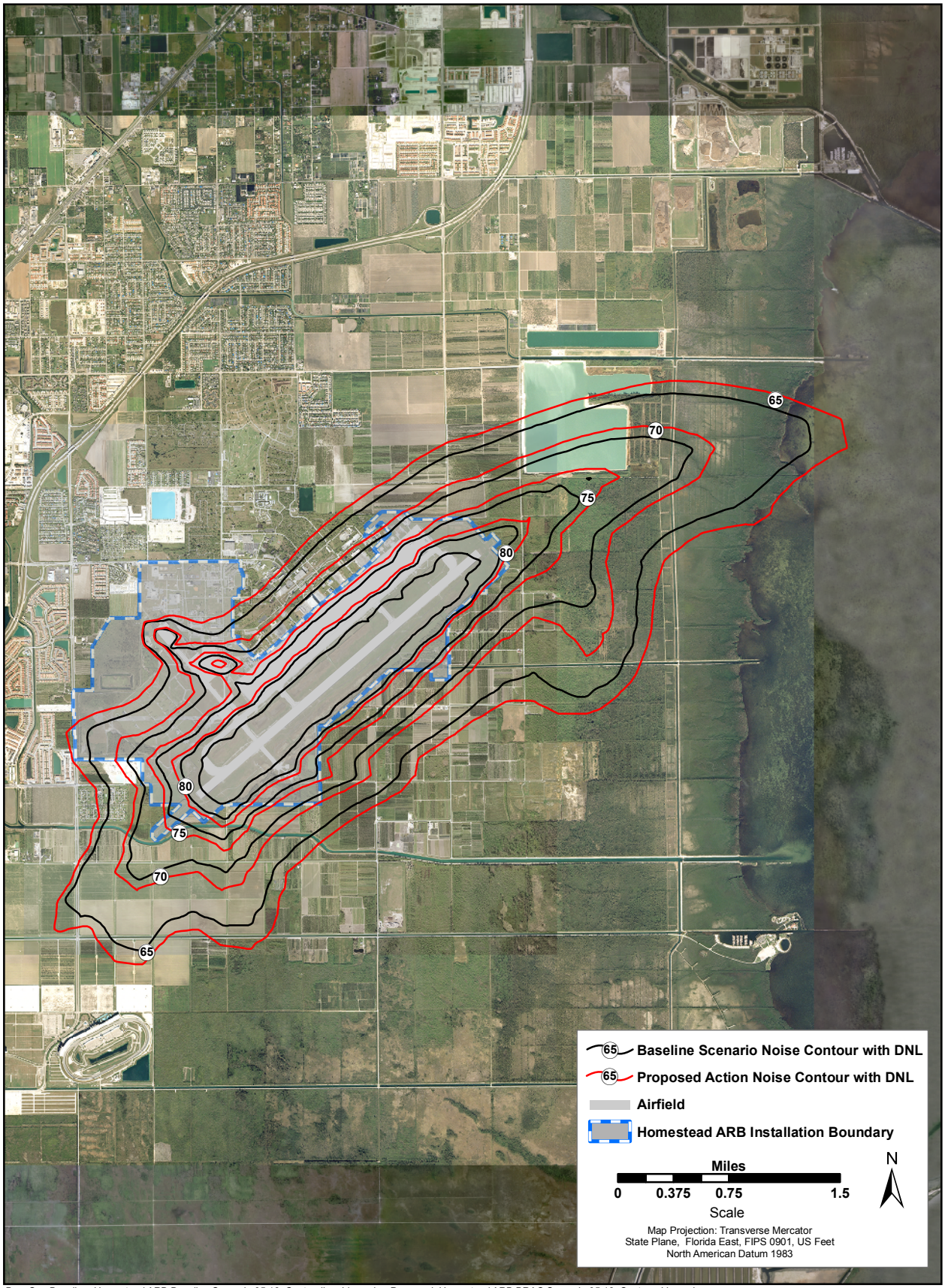
Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the alternatives considered.

Annoyance. Noise annoyance is defined by USEPA as any negative subjective reaction to noise by an individual or group. DNL is an accepted metric for quantifying community annoyance to general environment noise, including aircraft noise. **Table 3-4** presents the percentages of people that would be projected to be "highly annoyed" when exposed to various levels of noise measured in DNL. This table presents the results of more than a dozen studies of the relationship between noise and annoyance levels. Initial studies were conducted in 1977 by the National Academy of Sciences and were re-evaluated in 1994 to include people's reaction to semicontinuous (transportation) noise (Finegold et al. 1994). The data shown provides a perspective on the level of annoyance that might be anticipated by aircraft over-flights. For example, 12 to 22 percent of persons exposed on a long-term basis to a DNL of 65 to 69 dBA are expected to be highly annoyed by noise events.

3.2.4 Environmental Consequences of the Proposed Action

Sources of noise at Homestead ARB which could impact populations under the Proposed Action include aircraft and temporary construction noise.

Aircraft Noise. Long-term minor adverse effects would be expected. The Proposed Action at Homestead ARB would increase the number of F-16 aircraft from 15 to 24 PAA. Although implementation of the Proposed Action would have a long-term negative effect, Homestead ARB has attempted to reduce this impact by limiting the increase in aircraft operations to daytime hours. Daytime operations occur



BaseOps Baseline: Homestead ARB Baseline Scenario.05.18_Contourline_Lines.shp; Proposed: Homestead ARB BRAC Scenario.05.18_Contour_Lines.shp
Aerial Photography: Homestead ARB December 2005

Figure 3-4. Baseline Scenario and Proposed Action Noise Contours on Aerial Photo

Table 3-4. Percentage of Population Highly Annoyed by Noise Zones

DNL Noise Zones	Percentage of Persons Highly Annoyed	
	Low	High
65–69 dBA	12	22
70–74 dBA	22	36
75–79 dBA	36	54
80+ dBA	> 54	

Source: Finegold et al. 1994

between 7 a.m. and 10 p.m.; nighttime operations occur between 10 p.m. and 7 a.m. Flight tracks and training profiles would remain consistent with current procedures. The mission of the 482 FW would remain the same. It is not anticipated that runway end use, flight track percentages, or day and night operations would change from existing conditions.

The Proposed Action would increase the number of sorties to approximately 5,280 per year, as shown on **Table 2-1**, which is approximately 20 sorties per day (see calculation below). The number of F-16 aircraft operations would increase to approximately 22,302 per year (based on a 66 percent increase over the baseline scenario). In order for all of the pilots to remain proficient, it was estimated that the F-16 aircraft would fly approximately 22 days per month, or 264 days per year, as specified from information provided by the 482 Operations Group. Aircraft data were entered into NOISEMAP, which is a DOD-approved noise modeling software program. To model the Proposed Action in NOISEMAP, the aircraft operations for the F-16 sorties were increased by 66 percent to reflect the increase from 15 to 24 PAA.

$$\frac{5{,}280 \text{ sorties}}{\text{year}} \times \frac{\text{year}}{264 \text{ days}} = 20 \text{ F-16 sorties per day}$$

Under the Proposed Action the 65 to 69 DNL noise zone would increase by 341 acres and 15 percent from the baseline scenario, as shown on **Table 3-5**. The largest percentage increase under the Proposed Action would occur in the 75 to 79 DNL noise zone by about 26 percent. The smallest acreage increase would occur in the 80+ DNL noise zone by 125 acres. The noise zones under the Proposed Action increase by a total of approximately 861 acres or 18 percent as compared to the baseline scenario.

Table 3-5. Change in Noise Zones at Homestead ARB with Proposed Action

DNL Noise Zones	Baseline Scenario	Proposed Action	Change in Acres	Percent Change
65–69 dBA	2,255	2,596	341	15%
70–74 dBA	1,222	1,465	243	20%
75–79 dBA	581	733	152	26%
80+ dBA	795	920	125	16%
Total	**4,853**	**5,714**	**861**	**18%**

As shown on **Figure 3-4,** the noise contours for the Proposed Action would increase as compared to the baseline scenario. The largest increases would occur at the eastern end of the contours where the majority of the land consists of parks and vacant areas. The smallest increase would occur on the southwestern side of the installation where residential property and agricultural land is present.

Construction Noise. Negligible impacts are anticipated as a result of the construction activities under the Proposed Action. Construction activities under the Proposed Action would involve three facilities on the installation. Project 1 would expand the Avionics/ECM facility, project 2 would expand and renovate the squadron operations and aircraft maintenance squadron facility, and project 3 would expand the weapons release shop. Specific details regarding construction activities can be found in **Section 2.1.3**. The location of the proposed construction projects can be seen on **Figure 2-2**.

Noise from construction activities varies depending on the type of construction being done, the area that the project would occur in, and the distance from the source. The construction projects under the Proposed Action include mainly building activities. To predict how these activities would impact adjacent populations, noise from the probable construction was estimated. For example, as shown on **Table 3-3**, building construction usually involves several pieces of equipment (such as saws and haul trucks) which can be used simultaneously. Under the Proposed Action the cumulative noise from the construction equipment, during the busiest day, was estimated to determine the total impact of noise from building activities at a given distance. Examples of expected construction noise during daytime hours are as follows:

- The closest residents would be approximately 4,800 feet away from the construction site near Bougainville Boulevard and SW 132nd Avenue. Populations would experience noise levels from building of approximately 53 dBA.
- Residents approximately 5,600 feet away from the construction site, west of SW 137th Avenue, would experience noise levels of approximately 51 dBA.
- Military employees could experience noise levels of 94 dBA if they were working on the airfield adjacent to the construction site.

Implementation of the Proposed Action would have short-term minor adverse effects on the noise environment from the use of heavy equipment during construction activities. Noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). Noise impacts from increased traffic due to construction vehicles would also be temporary in nature.

3.2.5 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be implemented. There would be no change to existing baseline conditions or aircraft operations at Homestead ARB. No adverse impacts on the ambient noise environment would occur under the No Action Alternative.

3.3 Land Use

3.3.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. There is, however, no nationally recognized convention or uniform terminology for

describing land use categories. As a result, the meanings of various land use descriptions, "labels," and definitions vary among jurisdictions.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning include written master plans/management plans and zoning regulations. In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its "permanence."

3.3.2 Existing Conditions

Homestead ARB is in southeastern Florida about 25 miles south of Miami. Florida City is about 6 miles southwest; the City of Homestead abuts the installation boundary on the west side. Homestead ARB covers approximately 1,940 acres.

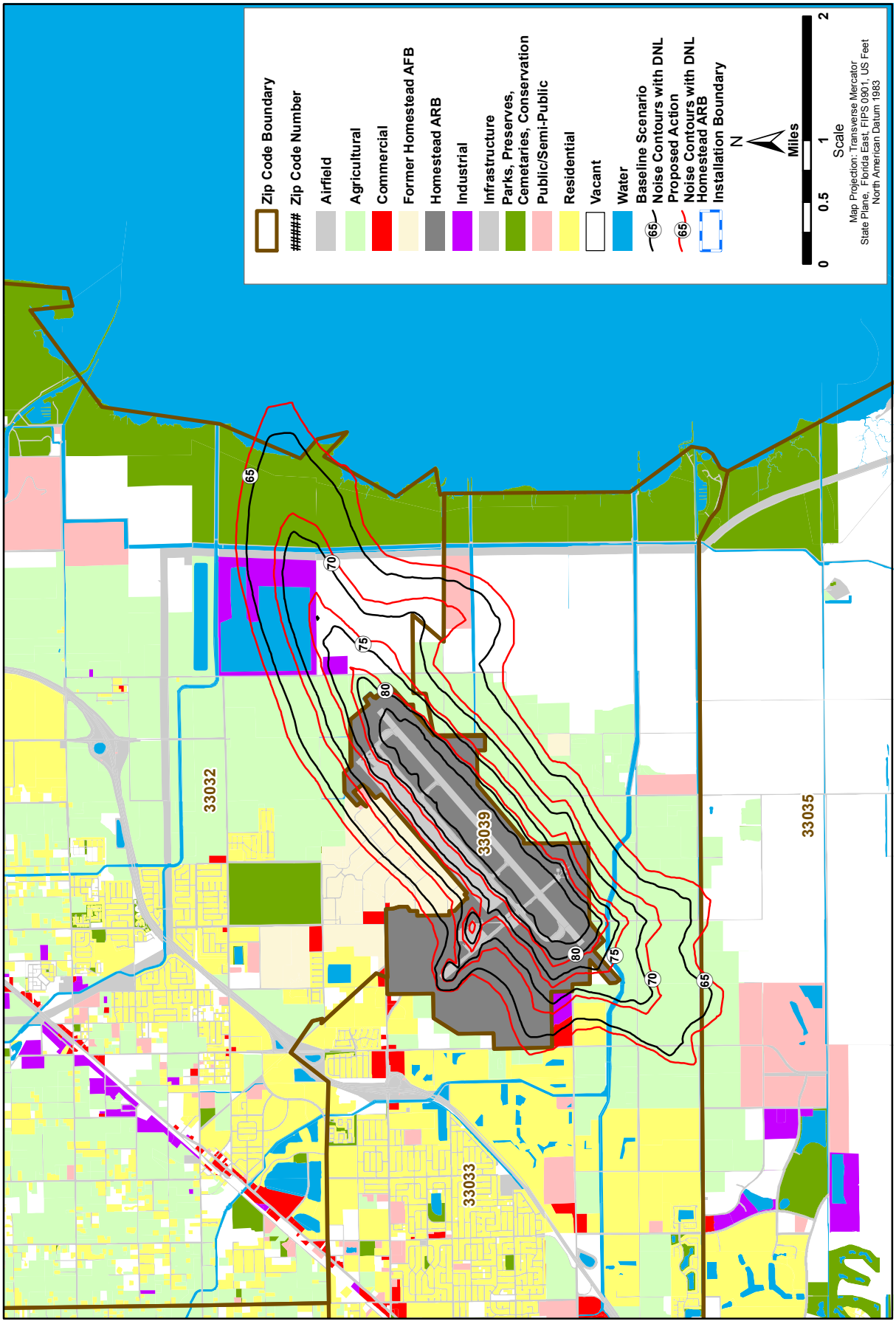
Land Use at Homestead ARB. The land use categories found at Homestead ARB include the following:

- Airfield pavements
- Aircraft operations and maintenance
- Industrial
- Administrative
- Community Support
- Medical
- Outdoor Recreation
- Open Space.

Airfield operations and maintenance facilities directly support the flying mission and are subsequently located on the flightline. Most of the industrial facilities are on the northwestern section of the installation. These facilities include warehouses, equipment complexes, munitions storage, and transportation buildings. Community services, medical buildings, outdoor recreation, and administrative facilities are also on the northwestern side of the installation. At this time there are no occupied housing units at Homestead ARB (HARB 2006a).

Local Land Use. A verification survey of information on the categorization of existing land use around Homestead ARB was conducted by Mr. Michael Andrejko (482 Mission Support Group/Environmental Flight [MSG/CEV]) and Mr. Stuart Gottlieb (e^2M, Inc) on 22 August 2006. This land use survey was completed to provide up-to-date information for use in this EA addressing the BRAC actions and for the Air Installation Compatible Use Zone (AICUZ) study that will be completed for Homestead ARB following the completion of the EA. **Figure 3-5** provides the updated land use information.

The most heavily developed areas around Homestead ARB are to the northwest, west, and southwest. These areas consist mostly of residential developments, however commercial, public, vacant, and agricultural properties are interspersed throughout this region. Land use to the northeast, east, and south of the installation consists mainly of agricultural land with some public and industrial uses scattered in the region. The public and semi-public land use category includes schools (public and private), hospitals, churches, cemeteries, and all facilities of local, state, and federal governments including landfills, mental institutions, and penal facilities maintained by any level of government. A large portion of vacant land lies southeast of Homestead ARB just past a zone of agricultural property. The Biscayne National Park lies beyond the vacant land approximately 2 miles east of the installation. The area that comprises the former Homestead AFB lies to the north of the current installation boundary.



Source: Updated 22 August 2006 from Miami-Dade County, Florida, Department of Planning & Zoning, Research Section

Figure 3-5. Baseline Scenario and Proposed Action Noise Contours on Land Use Map

As discussed in **Section 3.2,** noise contours from existing airport operations at Homestead ARB indicate that residences are inside of the 65 DNL noise contours southwest of the installation. Under the Baseline Scenario there are approximately 22 acres of residential land in the 65 DNL contour. The entire residential area southwest of the installation is approximately 55 acres and is surrounded by agricultural, commercial, and industrial property. Generally, residential land use in the 65 DNL noise contour or higher is considered incompatible.

3.3.3 Evaluation Criteria

Land use impact analyses monitor the potential for impact on residential communities, as well as the potential for buildings and other obstructions to intrude into safeguarded airspace. New construction should be compatible with current land use guidelines. Land use can remain compatible, become compatible, or become incompatible. Projected compatibility issues were measured both qualitatively and quantitatively. The level of potential land use impacts is based on the degree of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. In general, a land use impact would be adverse if it met any of the following criteria:

- Was inconsistent or in noncompliance with existing land use plans or policies
- Precluded the viability of existing land use
- Precluded continued use or occupation of an area
- Was incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflicted with planning criteria established to ensure the safety and protection of human life and property.

3.3.4 Environmental Consequences of the Proposed Action

Long-term, minor adverse impacts are anticipated with the implementation of the Proposed Action.

Currently, the *Homestead Air Reserve Base General Plan* is in the process of being updated. The most recent version of the *General Plan* addresses the additional F-16 aircraft that would arrive at Homestead ARB under the Proposed Action. The *General Plan* discusses where the new aircraft would be parked and what building modifications would be necessary to accommodate new personnel and equipment (HARB 2006a). Homestead ARB has adequate resources to accommodate the additional aircraft and equipment under the Proposed Action. Some additional personnel would be expected under the Proposed Action. There are no housing facilities at Homestead ARB, thus additional personnel would reside off-base.

Noise impacts that were discussed in **Section 3.2** were evaluated to assess the effects on noise-sensitive receptors. **Table 3-6** shows the number of land use acres in each noise zone for the baseline scenario and the Proposed Action. Within the 65 to 69 DNL noise zone there would be large increases in the number of acres of agricultural, open water, and park land. Agricultural land use increases by a large amount in every noise zone, however it is usually seen as compatible use. If personnel are present in the 80+ DNL noise zone, it is recommended that they wear hearing protection devices.

The noise contours on **Figure 3-5** show that the largest increase would occur at the southwest and northeast end of the contours. The majority of the land in the southwest section of the contours consists of agricultural property. Land use in the west section of the contours consists of property owned by Homestead ARB as well as industrial, commercial, and residential use. Land in the northeast section consists of parks, water, industrial, and vacant use.

Table 3-6. Changes to Land Use Acreage in Each Noise Zone

DNL Noise Zones	Land Use Category	Baseline Scenario	Proposed Action	Acreage Change	Percent Increase
65–69 dBA	Homestead ARB	206	222	16	8%
	Former Homestead ARB	144	150	6	4%
	Agricultural	860	959	99	12%
	Industrial	72	72	0	---
	Infrastructure	76	93	17	22%
	Parks, Conservation areas	320	399	79	25%
	Public/Semi-Public	63	57	-6	-10%
	Commercial	6	17	11	183%
	Residential	22	35	13	59%
	Vacant	306	334	28	9%
	Water/Canals	180	258	78	43%
	Subtotal	*2,255*	*2,596*	*341*	15%
70–74 dBA	Homestead ARB	306	259	-47	-15%
	Former Homestead ARB	61	98	37	61%
	Agricultural	408	531	123	30%
	Industrial	69	75	6	9%
	Infrastructure	38	50	12	32%
	Parks, Conservation areas	11	48	37	336%
	Public/Semi-Public	2	23	21	1,050%
	Vacant	242	266	24	10%
	Water/Canals	85	115	30	35%
	Subtotal	*1,222*	*1,465*	*243*	20%
75–79 dBA	Homestead ARB	313	337	24	8%
	Agricultural	174	213	39	22%
	Industrial	14	29	15	107%
	Infrastructure	7	11	4	57%
	Vacant	64	130	66	103%
	Water/Canals	9	13	4	44%
	Subtotal	*581*	*733*	*152*	26%
80+ dBA	Homestead ARB	753	835	82	11%
	Agricultural	41	78	37	90%
	Infrastructure	1	3	2	200%
	Vacant	0	3	3	---
	Water/Canals	0	1	1	---
	Subtotal	*795*	*920*	*125*	16%
Total		**4,853**	**5,714**	**861**	**18%**

The total increase in acreage within noise zones of 65 DNL or greater under the Proposed Action would be about 861 acres. This would equate to a 21 percent increase over the baseline scenario. While a majority of this land use would be compatible with the corresponding noise levels, 13 additional acres of residential land would be within the 65 to 69 DNL noise zone. There is no residential land use in the baseline scenario, nor would there be with the Proposed Action, in noise zones of 70 DNL or higher.

Possible mitigation measures for the 35 acres of incompatible land use include zoning changes or designations, or building code modifications. Noise-impacted areas that contain incompatible uses can be zoned to more compatible categories, such as commercial or industrial. Local building codes can address the noise levels to which the structures are subjected. Codes can include acoustical treatment standards or new or modified noise-sensitive structures and sound-attenuating construction techniques.

The Homestead Joint Land Use Study (JLUS) is currently in the process of being completed. This study will provide compatibility tools to help achieve land use compatibility around the installation (City of Homestead 2006). Some of these could include the following:

- Noise Easement Program. New residential permits or platting of subdivisions in a noise zone should be contingent upon the signing of a noise easement by the property owner.
- Real Estate Disclosure. Disclosure of the building's location within a noise contour or hazard zone at the initial advertisement and showing of property.
- Require new houses in noise zones to be constructed with the recommended level of noise reduction.
- Promote modifications of existing housing in noise zones to achieve recommended level of noise reduction.
- Land Use Regulations. Create a military installation zoning overlay district around the boundaries of noise and land use planning zones. Land inside the noise zones should be subject to requirements necessary to promote compatibility between permitted uses and installation operations.
- Military Operational Changes. Restrict nighttime flying activities or re-route aircraft to avoid populated areas.
- Height restrictions. Prohibit placement of cell phone towers and other tall structures in proximity to base and within flight approach corridors.

Construction activities created from the Proposed Action would have no significant impacts on land use. Construction would be limited to modifications of existing buildings and all construction would be contained on installation property.

3.3.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions and the number of F-16 aircraft based at Homestead ARB would not increase. Additional equipment and personnel would not be necessary and construction activities would not occur. Thus, the noise contours and land use compatibility would remain the same.

3.4 Air Quality

3.4.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

The CAA directed USEPA to develop, implement, and enforce environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. **Table 3-7** presents the primary and secondary USEPA NAAQS (USEPA 2004).

Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O_3 precursors." These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2.

The CAA and USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA. The USEPA has delegated the authority for ensuring compliance with the NAAQS to the Florida Department of Environmental Protection (FDEP) with the Department of Environmental Research Management (DERM) acting as their local agent. Therefore, the Proposed Action is subject to rules and regulations developed by the FDEP and DERM.

USEPA classifies the air quality in an air quality control region (AQCR) or in subareas of an AQCR according to whether the concentration of criteria pollutants in ambient air exceeds the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that

Table 3-7. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
CO			
8-hour Average [a]	9 ppm	(10 mg/m^3)	Primary and Secondary
1-hour Average [a]	35 ppm	(40 mg/m^3)	Primary
NO_2			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
O_3			
8-hour Average [b]	0.08 ppm	(157 µg/m^3)	Primary and Secondary
1-hour Average [c]	0.12 ppm	(240 µg/m^3)	Primary and Secondary
Pb			
Quarterly Average		1.5 µg/m^3	Primary and Secondary
PM_{10}			
Annual Arithmetic Mean [d]		50 µg/m^3	Primary and Secondary
24-hour Average [a]		150 µg/m^3	Primary and Secondary
$PM_{2.5}$			
Annual Arithmetic Mean [e]		15 µg/m^3	Primary and Secondary
24-hour Average [f]		65 µg/m^3	Primary and Secondary
SO_2			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m^3)	Primary
24-hour Average [a]	0.14 ppm	(365 µg/m^3)	Primary
3-hour Average [a]	0.5 ppm	(1,300 µg/m^3)	Secondary

Source: USEPA 2004

Notes: Parenthetical values are approximate equivalent concentrations.

[a] Not to be exceeded more than once per year.

[b] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[c] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. (b) As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the 14 8-hour ozone nonattainment Early Action Compact Areas.

[d] To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

[e] To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[f] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and an unclassified air quality designation by USEPA means that there is not enough information to appropriately classify an AQCR, so the area is considered attainment.

The General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA Conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, base, or activity) that can emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant, or 25 tpy of any combination of hazardous air pollutants. However, lower pollutant-specific "major source" permitting thresholds apply in nonattainment areas. For example, the Title V permitting threshold for an "extreme" O_3 nonattainment area is 10 tpy of potential VOC or NO_x emissions. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more [40 CFR 52.21(b)(23)(iii)]. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's designation as Class I, II, or III [40 CFR 52.21(c)].

3.4.2 Existing Conditions

Homestead ARB is in Miami-Dade County in the Southeast Florida Intrastate (SEFI) AQCR, which comprises eight counties. The SEFI AQCR is in attainment for all criteria pollutants; therefore, the General Conformity Rule does not apply to the Proposed Action (USEPA 2005).

Homestead ARB is classified as a synthetic minor source by the FDEP and DERM and has voluntary limits on air emissions. There are various stationary combustion sources on base that have the potential to emit, including the base's boilers and generators. VOCs are emitted primarily from handling of organic liquids (i.e., refueling activities). Miscellaneous particulate matter sources at Homestead ARB include abrasive blasting units and woodworking equipment (HARB 2005a). There is no routine requirement to monitor pollutant emissions from aircraft operations, government-owned or privately owned vehicles (GOVs and POVs), aircraft engine testing, aerospace ground equipment (AGE), and other sources not included in the state's stationary source permitting program.

Each calendar year, Homestead ARB is required to prepare and submit an annual emissions inventory to Headquarters AFRC and the DERM. The purpose of this annual emissions inventory is to estimate and document air pollutant emissions from stationary sources. Stationary source categories include external combustion sources, internal combustion sources, fuel transfer/dispensing, storage tanks, surface coating operations, degreasers/solvent cleaners, aircraft fuel cell maintenance, off-aircraft engine testing,

miscellaneous chemical usage, and dust collectors. Air quality emissions inventories for Homestead ARB for reporting years 2004 and 2005 are presented in **Table 3-8**.

Table 3-8. Annual Air Quality Emissions Inventories for Reporting Years 2004 and 2005

Calendar Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
2005	2	2	0.6	0.04	0.1
2004	2	0.5	0.7	0.04	< 0.01

Sources: 2004 is from HARB 2005a; 2005 is from Vespe 2006.

3.4.3 Evaluation Criteria

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment" areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any Evaluation Criteria established by a SIP.

Effects on air quality in NAAQS "nonattainment" areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP.

In addition to the *de minimis* emissions thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area, and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more (40 CFR 52.21(b)(23)(iii)).

3.4.4 Environmental Consequences of the Proposed Action

Short-term minor adverse impacts on air quality would be expected as a result of the proposed construction activities and long-term minor adverse impacts are expected from the increase in aircraft operations under the Proposed Action. As discussed in **Section 3.4.2**, Homestead ARB is in attainment for all criteria pollutants. Regulated pollutant emissions from the Proposed Action would not contribute to or affect local or regional attainment status with the NAAQS. The construction of the additions to the Squadron Operations and Aircraft Maintenance Facility, Weapons Release Shop Addition, and Avionics/ECM Building Addition would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would

not be expected to generate any off-site effects. It is estimated that a total of 0.31 acres of land would be graded during construction.

The construction projects would generate total suspended particulate and PM_{10} emissions as fugitive dust from ground-disturbing activities (e.g., grading, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 (USEPA 2006b). These estimates assume that 230 working days are available per year for construction (accounting for weekends, weather, and holidays). Using data from the National Oceanic and Atmospheric Administration (NOAA), the average soil percent moisture was estimated to be 25 percent (NOAA 2006). Wind speed of greater than 12 miles per hour is recorded 30 percent of the time during O_3 season (1 April to 31 October), which is based on average wind rose data and measured speed for Miami, Florida (NRCS 2006).

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment. However, these emissions would be of a temporary nature. The emissions factors and estimates were generated based on guidance provided in USEPA's AP-42 (USEPA 2006b). Proposed construction emissions estimates from construction year (CY) 2007 and CY 2008 are included in the total proposed emissions estimates presented in **Table 3-9**.

As shown in **Table 2.1**, the estimated number of F-16 aircraft sorties would increase from 3,168 to 5,280 sorties per year. **Table 3-10** shows the change in air emissions resulting from F-16 sorties between the baseline scenario and the Proposed Action. Aircraft-specific data and emissions factors from the *AF IERA Air Emissions Inventory Guidance for Mobile Sources* (IERA 2001) were used to estimate aircraft emissions.

Table 3-9. Total Construction Emissions Estimates Associated with the Proposed Action

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
CY 2007					
Proposed Construction Combustion	0.4	0.2	0.5	0.01	0.01
Proposed Construction Fugitive Dust	--	--	--	--	0.6
Total Construction Emissions (CY 2007)	**0.4**	**0.2**	**0.5**	**0.01**	**0.7**
CY 2008					
Proposed Construction Combustion	0.2	0.1	0.2	0.005	0.006
Proposed Construction Fugitive Dust	--	--	--	--	0.3
Total Construction Emissions (CY 2008)	**0.2**	**0.1**	**0.2**	**0.005**	**0.3**

Table 3-10. Change in Emissions Estimates from Aircraft Sorties

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
Baseline F-16 Aircraft Emissions (2005)	16	7	30	ND	3
Proposed F-16 Aircraft Emissions	28	12	53	ND	5
Increase in F-16 Aircraft Emissions	**+12**	**+5**	**+23**	**ND**	**+2**

Note: ND = No data available

Mobile sources such as vehicle emissions are not regulated at Homestead ARB and are not covered under existing permitting requirements by the FDEP. For the private-owned vehicle (POV) baseline conditions it is assumed that HARB has 1,000 full-time employees and 1,500 reservists. The full-time personnel work 230 days a year and drive an average of 40 miles round trip each day. The 1,500 reservists work three days per month plus a full two week period each year. The increase in military and civilian personnel associated with the Proposed Action would be 302 (83 full-time civilian and ARTs and 219 part-time Traditional Reservists), which is only an 8 percent increase from the current full-time personnel at Homestead ARB staff (1,000). It was assumed that all new personnel would commute an average of 40 miles round trip working 230 days per year. For this analysis, we have assumed that the commuter fleet corresponding to these additional employees would reflect the passenger vehicle fleet on the roads using a national average vehicle mix. Miles traveled by passenger vehicles are estimated from the USEPA MOBILE6 and National Mobile Inventory Model (NMIM) modeling program (MOBILE6 2006 and NMIM 2006). Emissions factors from the *AF IERA Air Emissions Inventory Guidance for Mobile Sources* (IERA 2001) were used to estimate commuter emissions. Air emissions from vehicles under the baseline conditions and the proposed action are presented in **Table 3-11**.

Tables 3-12 and 3-13 show the air quality emissions from the proposed construction, increase in aircraft operations, and additional commuters in CY 2007 and CY 2008. Since the SEFI AQCR, including Homestead ARB, is in attainment for all criteria pollutants, General Conformity Rule requirements are not applicable. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventory for the SEFI AQCR (see **Tables 3-12 and 3-13**). Therefore, the Proposed Action is considered not to have a significant effect on air quality within the SEFI AQCR and vicinity of Homestead ARB. In summary, no significant impact on regional or local air quality would result from implementation of the Proposed Action. **Appendix C** details the emissions factors, calculations, and estimates of emissions for the Proposed Action.

Table 3-11. Total Commuter Emissions Estimates from the Proposed Action

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
Baseline Commuter Emissions	6	6	94	0.5	4
Proposed Commuter Emissions	7	7	117	0.6	5
Increase in Commuter Emissions	1	1	28	0.1	1
Percent Change in Commuter Emissions	16%	16%	23%	20%	25%

Table 3-12. Total Emissions Estimates in CY 2007 from the Proposed Action

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
Construction Emissions	0.4	0.2	0.5	0.1	0.7
Aircraft Emissions (Change)	12	5	23	ND	2
Commuter Emissions (Change)	1	1	28	0.1	1
AGE Emissions (Change)	9	0.8	3	0.6	0.7
Total Emissions	**22**	**7**	**55**	**0.8**	**4**
Regional Emissions (2001) [a]	237,826	295,787	2,140,038	113,893	114,504
Percent of Regional Emissions Inventory	< 0.01%	< 0.01%	< 0.01%	< 0.01%	< 0.01%

Note: ND = No data available
Source: [a] USEPA 2006a

Table 3-13. Total Emissions Estimates in CY 2008 from the Proposed Action

Description	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
Construction Emissions	0.2	0.1	0.2	< 0.01	0.3
Aircraft Emissions (Change)	12	5	23	ND	2
Commuter Emissions (Change)	1	1	28	0.1	1
AGE Emissions (Change)	9	0.8	3	0.1	0.7
Total Emissions	**22**	**7**	**54**	**0.2**	**4**
Regional Emissions (2001) [a]	237,826	295,787	2,140,038	113,893	114,504
Percent of Regional Emissions Inventory	< 0.01%	< 0.01%	< 0.01%	< 0.01%	< 0.01%

Note: ND = No data available
Source: [a] USEPA 2006a

Homestead ARB has a state permit that is enforced by DERM for three paint booths. The paint booths provide corrosion control for F-16 aircraft stationed at the base (HARB 2005a). Two of the paint booths are used by the AFRC for the F-16s and associated AGE equipment. The third booth is only used for FANG's AGE; all major work on their aircraft is done in Jacksonville. These paint booths have adequate permit limits to accommodate the additional F-16 aircraft mission requirements. Therefore, it would not be necessary to modify the permit for these three paint booths (Vespe 2006).

Homestead ARB has a state permit that is enforced by DERM for the abrasive blasting units to support the F-16 mission (HARB 2005a). No additional abrasive blasting units would be required to support the additional F-16 aircraft. Therefore, it would not be necessary to modify the permit for these abrasive blasting units as a result of the Proposed Action (Vespe 2006).

The 482 FW has two DERM-permitted engine test cell units to support the 482 FW mission; however, one of these test cells is inactive (HARB 2005a). The active engine test cell has adequate permit limits to accommodate the additional F-16 aircraft mission requirements. Therefore, it would not be necessary to modify the permit for the engine testing operations for the additional F-16 aircraft (Vespe 2006).

Everglades National Park is a Class I area according to 40 CFR Part 81. However, Everglades National Park is outside of the 10-kilometer distance requirement for Federal PSD regulations. Therefore, Federal PSD regulations would not apply to the Proposed Action.

3.4.5 No Action Alternative

Under the No Action Alternative there would be no change to baseline conditions and no adverse impacts would be expected as the Proposed Action would not be implemented. Existing activities at Homestead ARB would continue to affect the air quality as described in existing NEPA documentation for the installation.

3.5 Safety

3.5.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses (1) workers' health and safety during facilities construction, and (2) public safety during construction activities and during subsequent operations of those facilities.

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA) and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of highly noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

3.5.2 Existing Conditions

All contractors performing construction activities are responsible for following ground safety and OSHA regulations and are required to conduct construction activities in a manner that does not increase risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and use and availability of Material Safety Data Sheets (MSDS). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplaces; to monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures or engaged in hazardous waste

work. There are emergency services (i.e., police, fire, and emergency medical technician services) on Homestead ARB. Therefore, emergency situations in the vicinity of the proposed construction and renovation activities can be responded to within a quick timeframe.

Explosive safety clearance zones must be established around facilities used for the storage, handling, or maintenance of munitions. *Air Force Manual (AFMAN) 91-201* establishes the size of the clearance zone based upon quantity-distance (QD) criteria or the category and weight of the explosives contained within the facility. There are three QD safety zones at Homestead ARB. The first and largest of these is associated with the munitions area west of the runway. It includes portions of the taxiway and U.S. CBP complex. The second QD safety zone is centered on the hot cargo refueling area. It overlaps with the munitions storage area explosive safety zone and includes the taxiway and a portion of Building 208. The third QD safety zone is centered on the FANG area.

3.5.3 Evaluation Criteria

If implementation of the Proposed Action were to substantially increase risks associated with the safety of construction personnel, contractors, or the local community, or substantially hinder the ability to respond to an emergency, it would represent a significant impact. Impacts were assessed based on the potential effects of construction and operational activities.

3.5.4 Environmental Consequences of the Proposed Action

Short-term minor adverse construction safety effects would be expected during construction and renovation projects associated with the Proposed Action. Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at the proposed construction sites during the normal workday because the level of such activity would increase. Contractors would be required to establish and maintain safety programs. Constructing and renovating the proposed facilities would not pose a safety risk to other personnel or to activities at or within the vicinity of the construction sites. Work areas surrounding construction and renovation activities would be fenced and appropriate signs posted to further reduce safety risks to outside personnel. No impacts regarding fire hazards or public safety are expected to occur within the vicinity of the proposed construction sites from construction and renovation projects planned as part of the Proposed Action. No aircraft safety zones (i.e., clear zones and accident potential zones) or QD arcs are within the vicinity of the proposed construction and renovation activities. Therefore, significant impacts are not anticipated as a result of the Proposed Action.

3.5.5 No Action Alternative

Under the No Action Alternative, there would be no change to baseline conditions. No adverse impacts would be expected as the Proposed Action would not be implemented. Impacts from existing activities at Homestead ARB would continue to affect the safety as already defined by previous NEPA documentation.

3.6 Geological Resources

3.6.1 Definition of the Resource

Geological resources consist of the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of physiography and topography, geology, soils, and, where applicable, geologic hazards and paleontology.

Physiography and topography pertains to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Geology is the study of the earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition. Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological information helps in the assessment of ground water quality and quantity and its movement.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Section 404 of the Clean Water Act (CWA) addresses storm water runoff from construction sites and requires Phase II National Pollutant Discharge Elimination System (NPDES) permits for disturbances between 1 and 5 acres, and Phase I permits for disturbances of more than 5 acres. **Section 3.7** (Water Resources) provides a more detailed discussion of Section 404 requirements.

3.6.2 Existing Conditions

Physiography and Topography. The area occupied by Homestead ARB is on the southernmost portion of the Atlantic Coastal Ridge. The Atlantic Coastal Ridge is slightly elevated above the Atlantic Ocean shoreline to the east of the installation. The topography of Homestead ARB is essentially flat, with elevations ranging from 2 to 10 feet above MSL (HARB 2004a).

Geology. Homestead ARB was developed on a portion of the Miami oolite geologic formation, a marine-derived limestone of Pleistocene age, interbedded with sandy limestone and thin layers of hard limestone. The thickness of the Miami oolite ranges from about 20 to 30 feet at the installation. The Miami oolite is underlain by the Fort Thompson formation which consists of a series of alternating shallow, marine, brackish marine, and freshwater limestone. Both the Miami oolite and Fort Thompson formation are highly permeable and are the principal components of the Biscayne aquifer in the area (HARB 2004a).

Soils. There are six soil mapping units within Homestead ARB; however, approximately 74 percent of Homestead ARB consists of Urban Land/Udorthents-Urban Land Complex soil types (HARB 2004a). Urban Land is defined as area that has been altered or obscured by urban works and structures to the point that identification of the original soils is not feasible (USDA 1996). Udorthents are nearly level areas of extremely stony fill material that are almost always used for urban or recreational development, and are limited in their ecological potential. Limitations for this soil unit include wetness and the presence of underlying organic material. These limitations can be overcome by the use of stable fill material and the addition of, in some cases, extensive drainage systems (HARB 2004a). The land that would be affected by the Proposed Action lies within an urban land mapping unit; therefore by definition it is an area of previously disturbed soil.

3.6.3 Evaluation Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential impacts of a proposed action on geological resources. Generally, impacts can be avoided or minimized if proper construction

techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Analysis of potential impacts on geological resources typically includes the following steps:

- Identification and description of resources that could potentially be affected
- Examination of a proposed action and the potential effects this action could have on the resource
- Assessment of the significance of potential impacts
- Provision of mitigation measures in the event that potentially significant impacts are identified.

Impacts on geology and soils would be significant if they would alter the lithology, stratigraphy, and geological structure that control ground water quality, distribution of aquifers and confining beds, and ground water availability; or change the soil composition, structure, or function within the environment.

3.6.4 Environmental Consequences of the Proposed Action

No adverse effects on geological resources would be expected as a result of implementing the Proposed Action. The land that would be affected by the Proposed Action has been previously disturbed and is situated on an existing impervious surface.

The Proposed Action would not cause or create changes to the natural topography of Homestead ARB because the area was previously graded and leveled during installation development. In addition, there would not be an increase in impervious surfaces from the proposed construction since it would take place on impervious surfaces on or near airfield parking areas. Therefore, no direct or indirect effects on geological resources would result from implementation of the Proposed Action.

3.6.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions and none of the proposed BRAC renovation or construction projects would occur. As a result, there would be no effects on geological resources under the No Action Alternative.

3.7 Water Resources

3.7.1 Definition of the Resource

Water resources include ground water, surface water, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Ground Water. Ground water consists of subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Ground water typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Storm water flows,

which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Storm water systems convey storm water runoff away from developed sites to appropriate receiving surface waters. Various systems and devices might be used to slow the movement of water. For instance, a large, sudden flow could scour a streambed and harm biological resources. Storm water systems provide the benefit of reducing sediments and other contaminants that would otherwise flow directly into surface waters. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding. Higher densities of development, such as those found in urban areas, require greater degrees of storm water management because of the higher proportions of impervious surfaces that occur in urban areas.

The CWA (33 U.S.C. 1251 et. seq., as amended) establishes Federal limits through the NPDES on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. A Phase II NPDES permit would be required for any change in the quality or quantity of wastewater discharge or storm water runoff from construction sites where 1 to 5 acres would be disturbed, and a Phase I permit would be required for disturbances of more than 5 acres. Section 404 of the CWA regulates the discharge of fill material into waters of the United States.

In summer 2000, USEPA approved delegation of the NPDES program to the FDEP. Effective 22 October 2000, Florida adopted its Multi-Sector Generic Permit for Storm Water Discharge Associated with Industrial Activity under Rule 62-621.300(5) of the Florida Administrative Code. This permit includes a proper Storm Water Pollution Prevention Plan (SWPPP).

In addition to the NPDES program, the USAF has developed AFPD 32-70, which prescribes general responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment. To implement this policy directive, AFI 32-7041, *Water Quality Compliance*, has been specifically developed to address compliance with a number of water quality issues, including storm water pollution prevention. Under this and other USAF regulations, each major command is responsible for developing contingency plans and procedures for minimizing pollutant contributions to the environment through storm water contact and flow. This includes developing, maintaining, and implementing a written SWPPP, such as the *Storm Water Pollution Prevention Plan for Homestead Air Reserve Base, Florida* (HARB 2005b).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk from flooding to be located in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of appropriate FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to

comply with EO 11988. The process is outlined in the FEMA document *Further Advice on EO 11988 Floodplain Management*. As a planning tool, the NEPA process incorporates floodplain management through analysis and public coordination of the EA.

3.7.2 Existing Conditions

Homestead ARB is approximately 2 miles west of Biscayne National Park and 11 miles east of Everglades National Park. Water resources on the installation include three human-made lakes, comprising approximately 30.2 acres of land; and a complex drainage system comprising canals, swales, ditches, and pipes.

Ground Water. There are three hydrologic units present in the Homestead ARB area. They are the Biscayne aquifer, the Intermediate Confining Unit, and the Floridan aquifer system. The Biscayne aquifer extends from land surface to depths of about 80 to 100 feet below the area of Homestead ARB. The Intermediate Confining Unit hydraulically isolates the Biscayne aquifer system from the underlying Floridan aquifer system. Much of the Lower Floridan aquifer contains salt water. Because of the high salinity content, the Floridan aquifer in the area of Homestead ARB exceeds primary drinking water standards and is unsuitable as a potable water supply (HARB 2004a).

The Biscayne aquifer has been designated by USEPA under the Safe Drinking Water Act as a "sole source" potable water supply for Broward, Miami-Dade, Monroe, and Palm Beach counties. USEPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. Sole Source Aquifer designations are used to protect drinking water supplies in areas with few or no alternative sources to the ground water resource, and where, if contamination occurred, using an alternative source would be extremely expensive. The designation protects an area's ground water resource by requiring USEPA review of any proposed projects within the designated area that are receiving Federal financial assistance. All proposed projects receiving Federal funds are subject to review to ensure they do not endanger the water source.

Surface Water. Natural drainage on Homestead ARB is generally poor due to the relatively flat surface, at or near the surface water table. Storm water runoff is collected in an internal drainage system of canals, swales, ditches, and pipes, which discharge into the Boundary Canal and eventually into Biscayne Bay. The Boundary Canal flows into the storm water reservoir, on the eastern side of the installation, which then discharges water once it reaches a pre-established critical level into a pump house between the reservoir and Military Canal, allowing both active and passive flow between the two (HARB 2004a).

There are three human-made lakes, comprising approximately 30.2 acres (less than 2 percent) of Homestead ARB. These lakes, originally created from limestone borrow pits, are typically shallow with steep banks. Phantom Lake, comprising 14.5 acres, is along the western boundary of the installation, just north of the munitions storage area. The Twin Lakes, together comprising less than 16 acres, lie southeast of the runway at Homestead ARB. The northern end of the Twin Lakes has a culvert that connects to the Boundary Canal System (HARB 2004a).

Floodplains. FEMA flood maps indicate the eastern end of the installation, generally running north to south through the runway, would be flooded from a 100-year flood event (see **Figure 3-6**). This flooding would most likely result from significant periods of heavy rainfall and would less likely be attributed to coastal flooding and storm surges. Coastal flooding and storm surges could occur from strong hurricanes.

Based on the information from the *Integrated Natural Resources Management Plan for Homestead Air Reserve Base, 2004,* it has been estimated that Category 1 and Category 2 hurricanes would not cause inundation of the installation, but a Category 3, 4, or 5 hurricane could cause inundation from tidal surges ranging from 11 to 16 feet (HARB 2004a).

Wetland surveys conducted during 2001 identified approximately 233.5 acres (13 percent) of land as jurisdictional wetlands (HARB 2004a). See **Section 3.8.2** for a detailed discussion on wetlands.

3.7.3 Evaluation Criteria

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. The Proposed Action would have adverse effects on water resources if it were to result in one or more of the following:

- Reduce water availability or supply to existing users
- Overdraw ground water basins
- Exceed safe annual yield of water supply sources
- Affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics.
- Violate established laws or regulations adopted to protect water resources.

The effect of flood hazards on a proposed action is important if such an action is in an area with a high probability of flooding.

3.7.4 Environmental Consequences of the Proposed Action

Ground Water. The activities associated with the Proposed Action would have negligible adverse effects on ground water quality. Implementation of storm water and spill prevention best management practices (BMPs) developed consistent with applicable codes and ordinances would minimize potential runoff-related impacts on ground water. The proposed facilities would not have basements, therefore intrusion into the subgrade would be minimal and result in negligible adverse effects on ground water. However, the South Florida Water Management District suggested that Homestead ARB consider implementing a ground water monitoring program to help protect Biscayne Bay and the Biscayne aquifer (see **Appendix B**). It should be noted that Homestead ARB currently monitors the quality of the shallow ground water through various ground water long-term monitoring projects associated with their Installation Restoration Program sites.

Surface Water. It is anticipated that implementation of the Proposed Action would have minor adverse effects on surface water and surface water quality. Adherence to proper engineering practices and implementation of storm water BMPs developed consistent with applicable codes and ordinances would minimize runoff-related impacts and the potential for adverse effects on surface water quality. A negligible to minor increase in the conveyance of nonpoint source pollutants in runoff to the installation's internal drainage system could occur in association with construction activities. The potential for increased conveyance of nonpoint source pollutants to the installation's internal drainage system would be minimized by implementing applicable storm water management practices. The SWPPP for Homestead ARB is covered under a Multi-Sector Generic permit issued by the FDEP for storm water

discharges associated with industrial activities (Rule 62-621.300[5], Florida Administrative Code [F.A.C.]) (HARB 2004a). The South Florida Water Management District has advised that a General Permit Modification to Permit No. 13-00148-S be completed for the Proposed Action. It should be noted that Homestead ARB regularly submits modifications to the permit as part of their construction programs. The environmental resource permits of the South Florida Water Management District follow activities pursuant to the provisions in Chapter 373, Florida Statues and Chapter 40E F.A.C.

Floodplain. There would be no adverse effects on floodplains at Homestead ARB as a result of implementing the Proposed Action. Based on the review of the FEMA floodplain data, the Proposed Action would not involve construction activities in the 100-year floodplain (see **Figure 3-6**).

3.7.5 No Action Alternative

Under the No Action Alternative, Homestead ARB would not implement the Proposed Action. As a result there would be no change in baseline conditions, and none of the proposed BRAC renovation or construction projects would occur. There would be no effects on water resources under the No Action Alternative.

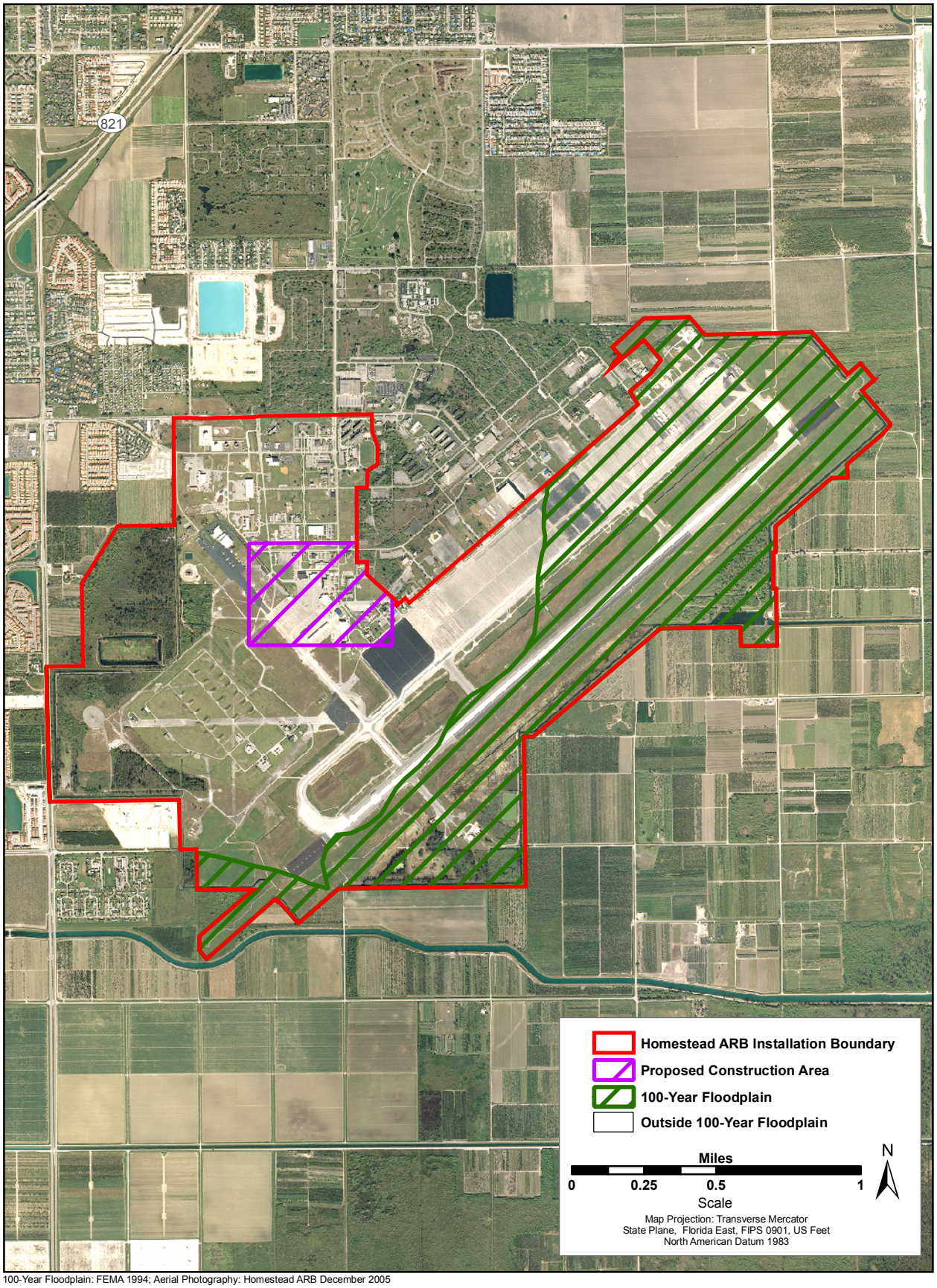
3.8 Biological Resources

3.8.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (i.e., wetlands, forests, and grasslands) in which they exist. Sensitive and protected biological resources include federally listed (endangered or threatened), proposed, and candidate species; rare habitats, designated or proposed critical habitat; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

Under the Endangered Species Act (ESA), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. Although candidate species receive no statutory protection under the ESA, the U.S. Fish and Wildlife Service (USFWS) advises government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA in the future.

The U.S. Army Corps of Engineers (USACE) defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328). Wetlands are important natural systems and habitats because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, ground water recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat and unique flora and fauna niche provisions, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the "waters of the United States" under Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats including wetlands.



100-Year Floodplain: FEMA 1994; Aerial Photography: Homestead ARB December 2005

Figure 3-6. 100-Year Floodplain at Homestead ARB

3.8.2 Existing Conditions

Vegetation. The proposed construction projects would occur in an area that is mostly urbanized. The proposed construction sites are characterized entirely by concrete and asphalt surfaces and there is no vegetation present.

Vegetation occurring in the vicinity of the proposed construction sites consists of mostly mowed Bermuda grass (*Cynodon dactylon)*(HARB 2004a).

Wildlife. Species commonly seen on Homestead ARB include wading birds that utilize the airfield wetlands, marsh, Boundary Canal, and the lakes. These species include the snowy egret (*Egretta thula)*, great blue heron (*Ardea herodias),* and the white ibis (*Eudocimus albus*). Other birds include the double-crested cormorant (*Phalacrocorax auritus*) and red-shouldered hawk (*Buteo lineatus*). Raccoon (*Procyon lotor)* and marsh rabbit (*Sylvilagus palustris)* are the mammal species most often observed on the installation (HARB 2004a).

The wetlands, lakes, and canals on Homestead ARB provide foraging and nesting habitat for a variety of fish, amphibians, and reptiles. Species of fish include largemouth bass (*Micropterus salmoides*), warmouth (*Lepomis gulosus*), bluegill (*L. macrochirus*), striped mullet (*Mugil cephalus*), Florida gar (*Lepisosteus platyrhincus)*, and common snook (*Centropomis undecimalis*). Herpetofauna include rough green snake (*Opheodrys aestivus*), corn snake (*Elaphe guttata*), checkered garter snake (*Thamnophis marcianus*), non-native red-eared slider (*Trachemys scripta*), Florida soft shell turtle (*Apalone ferox*), snapping turtle (*Chelydra serpentina*), Florida chorus frog (*Pseudacris nigrita verrucosa*), tree frogs (*Hyla* spp.), and two-toed amphiuma (*Amphiuma means*). The American alligator (*Alligator mississippiensis*) and non-native spectacled caiman (*Caiman crocodilus*) also are common inhabitants of the freshwater canals and lakes on Homestead ARB (HARB 2004a).

As previously mentioned, the proposed construction sites are characterized entirely by concrete and asphalt surfaces. Wildlife occurrence in the proposed construction sites would be minimal.

Protected Species. The American alligator *(Alligator mississippiensis)* which can be found in the canals on Homestead ARB is listed as threatened by similarity of appearance to the federally endangered American crocodile *(Crocodylus acutus)*. The crocodile has been observed in the Military Canal, but is not known to be a resident species of Homestead ARB (HARB 2005d). According to the USFWS, the "project area" has suitable habitat for the federally threatened eastern indigo snake (*Drymarchon corias couperi*) (see **Appendix B**). The federally threatened bald eagle *(Haliaeetus leucocephalus)* has been observed foraging north and south of Military Canal on Homestead ARB, but is not a resident species (HARB 2005d). The nearest breeding pair of bald eagles is approximately 7.5 miles south of Homestead ARB at the south end of Biscayne National Park (HARB 2004a). The federally endangered wood stork *(Mycteria americana)* has been observed foraging around the airfield, but is not a resident species. The federally endangered snail kite *(Rostrhamus sociabilis)* has been observed by Homestead ARB personnel, but is also not a resident species (HARB 2005d).

The Florida burrowing owl *(Athene cunicularia floridana),* which is listed by the State of Florida as a species of special concern, is a small, distinctive, ground-dwelling bird with long legs, a white chin stripe, round head, and stubby tail. Florida burrowing owls are known to occur in groups on Homestead ARB near the runway in the area around the control tower, and in grassy lawns near administrative buildings (HARB 2004a). The white-crowned pigeon (*Columba leucocephala*) and the least tern (*Sterna antillarum*), which are designated as state-threatened, are also known to reside on Homestead ARB in areas surrounding the proposed project area (HARB 2005d).

Other species designated by the State of Florida as a species of special concern that have been observed on Homestead ARB include limpkin *(Aramus guarauna)*, little blue heron *(Egretta caerulea)*, reddish egret *(Egretta rufescens),* snowy egret (*Egretta thula)*, tricolored heron *(Egretta tricolor)*, white ibis *(Eudocimus albus)*, American oystercatcher *(Haematopus palliatus),* and brown pelican *(Pelecanus occidentalis)* (HARB 2005d). These birds are not likely to occur in close proximity to the proposed construction sites due to lack of suitable habit resulting from existing development.

There are no known federally listed flora species on Homestead ARB. Flora designated as state-endangered that are found on Homestead ARB consist of wedgelet fern *(Sphenomeris clavata)* and Porter's spurge *(Chamaesyce porteriana)*. Flora designated as state-threatened that are found on Homestead ARB include locust berry (*Byrsonima lucida*), mahogany (*Swietenia mahagoni*), silver palm (*Coccothrinax argentata*), Christmas berry (*Crossopetalum ilicifolium*), Krug's holly (*Ilex krugiana*), pineland jacquemontia (*Jacquemontia curtissii)*, small-leaved melanthera *(Melanthera parvifolia)*, Bahama ladder brake fern (*Pteris bahamensis)*, and tetrazygia (*Tetrazygia bicolor)* (HARB 2004a).

Wetlands. During 2001, Federal and state jurisdictional wetland surveys were conducted on Homestead ARB. Of the nearly 1,779 acres within Homestead ARB, approximately 233.5 acres, or 13 percent of the total land area has been identified as jurisdictional wetlands (HARB 2004a).

The wetland areas are primarily within the runway infield and southeast of the runway extending in a southwest to northeast direction. Approximately 49 acres, or 21 percent of wetlands are within the infield of the taxiway and runway and appear to serve as drainage basins (HARB 2004a). Based on the Wetland Identification Report and Management Component Plan included as Appendix E of the *Integrated Natural Resources Management Plan* (INRMP) for Homestead ARB, 2004 there are no wetlands on, or in close proximity to the proposed construction site (HARB 2004a).

3.8.3 Evaluation Criteria

This section evaluates the potential effects on the biological resources under the Proposed Action and alternatives. The significance of effects on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to proposed activities, and (4) the duration of ecological effects. A habitat perspective is used to provide a framework for analysis of general classes of effects (i.e., removal of critical habitat, noise, human disturbance). The effects on biological resources are significant if a large proportion of a species or habitat of high concern are adversely affected or they are adversely affected over relatively large areas. Effects are also considered significant if disturbances cause reductions in population size or distribution of a species of high concern, such as state-listed sensitive species.

Ground disturbance and noise associated with construction activities might directly or indirectly cause potential effects on biological resources. Direct effects from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats might be effects associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the effects.

3.8.4 Environmental Consequences of the Proposed Action

Vegetation. No effects on vegetation would be expected as a result of implementing the Proposed Action. The proposed construction would be on developed land; the ground surfaces are covered with asphalt or concrete. There is no vegetation in the immediate vicinity of the proposed construction sites.

Wildlife. Under the Proposed Action, negligible impacts would be expected to occur to wildlife from an increase in noise due to additional aircraft operations. Short-term negligible impacts would occur to wildlife as a result of temporary noise disturbances associated with construction activities. BMPs would be implemented during the construction to minimize impacts on wildlife. It is anticipated that wildlife would adapt to the variety of noise levels associated with aircraft activities. See **Section 3.1.4** for a discussion of potential effects on birds and other wildlife associated with BASH.

Protected Species. Based on correspondence received from USFWS South Florida Ecological Services Office, dated 8 June 2006 (see **Appendix B**), Homestead ARB is in a habitat suitable for the federally threatened eastern indigo snake (*Drymarchon corias couperi*). However, the proposed construction sites are located entirely on existing concrete or asphalt surfaces and do not provide suitable habitat for the eastern indigo snake. Where appropriate, measures outlined in the USFWS's *Draft Standard Protection Measures for the Eastern Indigo Snake*, as specified in USFWS's correspondence (see **Appendix B**), would be implemented to minimize potential for any adverse impacts on the eastern indigo snake.

No adverse effects on federally listed avian species would be expected to occur as a result of the proposed construction activities. The bald eagle, wood stork, and snail kite have been observed foraging on the installation, but these species would not be expected to forage in the vicinity of the proposed construction sites because of the urbanized character of the area and the lack of suitable foraging habitat. There are no bald eagle nests documented on the installation, so no adverse effects on nesting eagles would be expected during site development.

Negligible adverse effects on the federally listed American alligator, American crocodile, or listed avian species would be expected as a result of increased aircraft operations under the Proposed Action. Homestead ARB actively implements a BASH Reduction Program on the installation (see **Section 3.1.2**) (HARB 2006d). U.S. Department of Agriculture (USDA) wildlife biologists monitor the airfield during all 482 FW day flying periods and minimize the potential for bird hazards using appropriate techniques (e.g., bioacoustics, pyrotechnics, propane cannons, and other effective techniques). In addition, the biologist covers all night flying periods during times of the year when birds are active at night during migration periods. Measures would be implemented to ensure that no adverse effects on federally listed avian species would occur if they were observed in the vicinity of the airfield during flying periods. American alligators have been documented to occasionally wander onto the airfield, usually following heavy rains. USDA wildlife biologists at Homestead ARB move alligators off of the airfield, thus minimizing the potential for adverse effects on the species resulting from collisions with aircraft. Implementation of management practices prescribed in the BASH Reduction Program would be expected to minimize potential for impacts on federally listed species that might occur in proximity of the airfield. Therefore, implementation of the Proposed Action would not be likely to adversely affect any federally listed species.

No direct effects are expected to occur on any state-listed flora because the Proposed Action is located in an area that is entirely developed.

Wetlands. Negligible effects on wetlands would be expected as a result of implementing the Proposed Action. The proposed construction sites are located in an area that is already developed. Negligible indirect impacts on wetlands could occur as a result of potential runoff from the proposed construction

sites. Implementation of properly designed and maintained erosion and sediment controls and storm water management practices during construction would minimize potential for any adverse effects on wetlands occurring in proximity to the proposed construction sites. Implementation of BMPs would minimize the potential for adverse effects associated with runoff from the construction sites.

3.8.5 No Action Alternative

Under the No Action Alternative, baseline conditions would remain unchanged and Homestead ARB would not implement the Proposed Action. As a result, none of the proposed BRAC renovation or construction projects would occur. There would be no effects on biological resources under the No Action Alternative.

3.9 Cultural Resources

3.9.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources. The National Historic Preservation Act (NHPA) of 1966, as amended, applies to "historic properties" defined as prehistoric and historic sites, structures, districts, objects, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and prehistoric or historic use, such resources might provide insight into lifestyles and living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA, the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (ARPA) (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990). NAGPRA requires consultation with interested Native American tribes for disposition of human remains and artifacts of cultural patrimony.

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings, structures, or objects that are united historically or aesthetically); or properties of traditional, cultural, or religious significance to Native American tribes.

Archaeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered eligible for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, might be eligible for the NRHP if they are considered to be of exceptional importance and have the potential to gain significance in the future. Historic districts have a significant concentration, linkage, or continuity of historic sites, buildings, structures, or objects that are united historically or aesthetically.

Traditional cultural properties (TCPs) or sacred sites can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process and the consultation process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Under Section 110 of the NHPA, Federal agencies are required to locate and inventory all resources under their purview that are recommended as eligible for inclusion in the NRHP on owned, leased, or managed property.

3.9.2 Existing Conditions

For the purpose of this EA, the APE for impacts on archaeological resources under the Proposed Action is defined by the limits of the proposed construction footprints for the three proposed construction projects. Based on the data provided in *Cultural Resources Base Module, Servicewide Overview Project, 482nd Fighter Wing, Air Force Reserve Command, Homestead Air Reserve Base* (Van Voorhies and Russo 1995), all 900 acres of what was then the limits of Homestead ARB have been surveyed for archaeological resources, with negative results. Homestead ARB currently consists of 1,943 acres. This finding has received concurrence from the Florida Division of Historical Resources.

For the purposes of this EA, the APE for impacts on historic buildings and structures under the Proposed Action is the cantonment area; specifically, the viewsheds that include buildings 187, 191, and 192, none of which meet the eligibility criteria for listing in the NRHP. Based on the information provided from the installation (Andrejko 2006), some of the buildings on the installation were demolished in the 1990s as a result of damage caused by Hurricane Andrew.

For the purposes of this EA, the APE for impacts on TCPs under the Proposed Action is the cantonment area. No TCPs have been identified within the cantonment area; however, Homestead ARB has not entered into consultation with federally recognized Native American tribes or other interested parties to determine whether TCPs are present. Based on the degree of historic disturbance documented at the installation, and the fact that the proposed construction projects would be restricted to previously developed areas of the installation, it is considered unlikely that implementation of the Proposed Action would have an impact on TCPs.

3.9.3 Evaluation Criteria

Adverse impacts on cultural resources might include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

3.9.4 Environmental Consequences of the Proposed Action

No impact on cultural resources is expected from the Proposed Action. The Proposed Action would not physically alter, damage, or destroy any cultural resource; alter characteristics of the surrounding environment that contribute to the resource's significance; introduce visual or audible elements that are out of character with the property or alter its setting; neglect the resource to the extent that it deteriorates or is destroyed; or result in the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

3.9.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions and Homestead ARB would not implement the Proposed Action. As a result, none of the proposed BRAC renovation or construction projects would occur. There would be no effects on cultural resources under the No Action Alternative.

3.10 Socioeconomics and Environmental Justice

3.10.1 Definition of the Resources

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a proposed action. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the "before" and "after" effects of any jobs created or lost as a result of a proposed action. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region.

In appropriate cases, data on an installation's expenditures in the regional economy help to identify the relative importance of an installation in terms of its purchasing power and jobs base.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to the evaluation of a proposed action, a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

Socioeconomic data shown in this section are presented at metropolitan, county, and state levels to characterize baseline socioeconomic conditions in the context of regional and state trends. Data have been collected from previously published documents issued by Federal, state, and local agencies; from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

Environmental Justice. There are no Federal regulations on socioeconomics, but there is one EO that pertains to environmental justice issues. This EO is included in the environmental justice section because it relates to various socioeconomic groups and the health effects that could be imposed on them. On 11 February 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* was issued. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal,

and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

3.10.2 Existing Conditions

Homestead ARB is approximately 25 miles south of Miami and 20 miles north of the Florida Keys. The installation is in Miami-Dade County and abuts the City of Homestead on the southwestern and western sides. The installation is bounded on the northwest by portions of developed land while areas to the east, northeast, and south are agricultural. Housing developments and agricultural land uses are present west of the installation (HARB 2006a).

Homestead AFB and the surrounding areas endured significant damage in 1992 from Hurricane Andrew. The hurricane devastated much of the area's infrastructure, residences, and businesses (HARB 2006b). Following the hurricane there was a reduction in personnel and operations at Homestead AFB (HARB 2005c). An estimated 40,000 families moved out of Miami-Dade County following the hurricane (Sharp 2002). In 1990 the population of Homestead was 26,866, which dropped to 24,752 in 1995 (HARB 2006a, HARB 2006b). Homestead has grown since then; in 2004 there was a population of approximately 37,957 (HARB 2006b).

Employment Characteristics. The Miami-Fort Lauderdale-Miami Beach Metropolitan Statistical Area (MSA) had an unemployment rate of 3.3 percent in March 2006 (BLS 2006). **Table 3-14** shows the breakdown of employment types and percentages in Florida and the MSA. The two largest employment categories in the MSA are educational, health and social services, and retail trade.

Table 3-14. Percent Employment by Industry

Employment by Industry	Miami-Fort Lauderdale-Miami Beach MSA	State of Florida
Percent of Employed Persons in Armed Forces	0.1%	0.5%
Industry of Civilian Labor Force		
Agriculture, forestry, fishing and hunting, and mining	0.5%	1%
Construction	7%	8%
Manufacturing	7%	7%
Wholesale trade	5%	4%
Retail trade	13%	14%
Transportation and warehousing, and utilities	7%	5%
Information	3%	3%
Finance, insurance, real estate, and rental and leasing	9%	8%
Professional, scientific, management, administrative, and waste management services	12%	11%
Educational, health and social services	18%	18%
Arts, entertainment, recreation, accommodation, and food services	9%	11%
Other services (except public administration)	6%	5%
Public administration	4%	5%

Source: U.S. Census Bureau 2000

Hurricane Andrew left nearly 97 percent of installation facilities in a nonfunctional condition. However, despite the damage from Hurricane Andrew, the installation has since realigned its operations and has continued to contribute to the economic base of the MSA. In FY 2005, Homestead ARB added an estimated $178 million to the local economy and employed approximately 1,000 full-time civilian and military personnel and 1,500 Traditional Reservists (HARB 2006b).

Environmental Justice. The ROI for environmental justice consists of the three zip codes surrounding Homestead ARB (i.e., 33032, 33033, 33035) (see **Figure 3-7**) of which some portion is within the Proposed Action noise contours. At this time, there are no residents in the portions of zip codes 33032 and 33035 that lie within the baseline scenario or Proposed Action noise contours (see **Figure 3-5**). According to the Vision Council, there were 61,879 residents living in the ROI in 2005 (Vision Council 2005). For the purposes of this EA, the zip code containing Homestead ARB exclusively (33039) was removed from evaluation as part of the ROI because there is no resident population at Homestead ARB.

A zip code is considered to have a disproportionately high percentage of low-income or minority residents under either of two conditions: (1) the percentage of low-income or minority populations within a zip code is greater than Miami-Dade County's minority percentage or low-income percentage, or (2) the percentage of persons in low-income or minority populations within the zip code is greater than 50 percent. It should be noted that the ROI contains data from 2005 while state and county data are from 2000 and 2004.

Table 3-15 shows that there is a higher percentage of African American residents (32 percent) in zip code 33032 than in zip codes 33033 (17 percent) and 33035 (11 percent), Florida (16 percent), and Miami-Dade County (20 percent). There is also a higher percentage of African American residents (17 percent) in zip code 33033 than Florida, but not Miami-Dade County. There is a 3 percent Asian population in zip code 33035 which has a higher percentage than the other zip codes in the ROI, Florida, and Miami-Dade County. The ROI has a higher percentage of persons reporting two or more races than Florida and Miami-Dade County.

3.10.3 Evaluation Criteria

Construction expenditure impacts are assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, they would be considered adverse. The Proposed Action could have a significant effect with respect to socioeconomic conditions in the surrounding ROI if the following were to occur:

- Substantially change the local business volume, employment, personal income, or population that exceeds the ROI's historical annual change
- Substantially and adversely affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates
- Substantially and disproportionately impact minority populations or low-income populations.

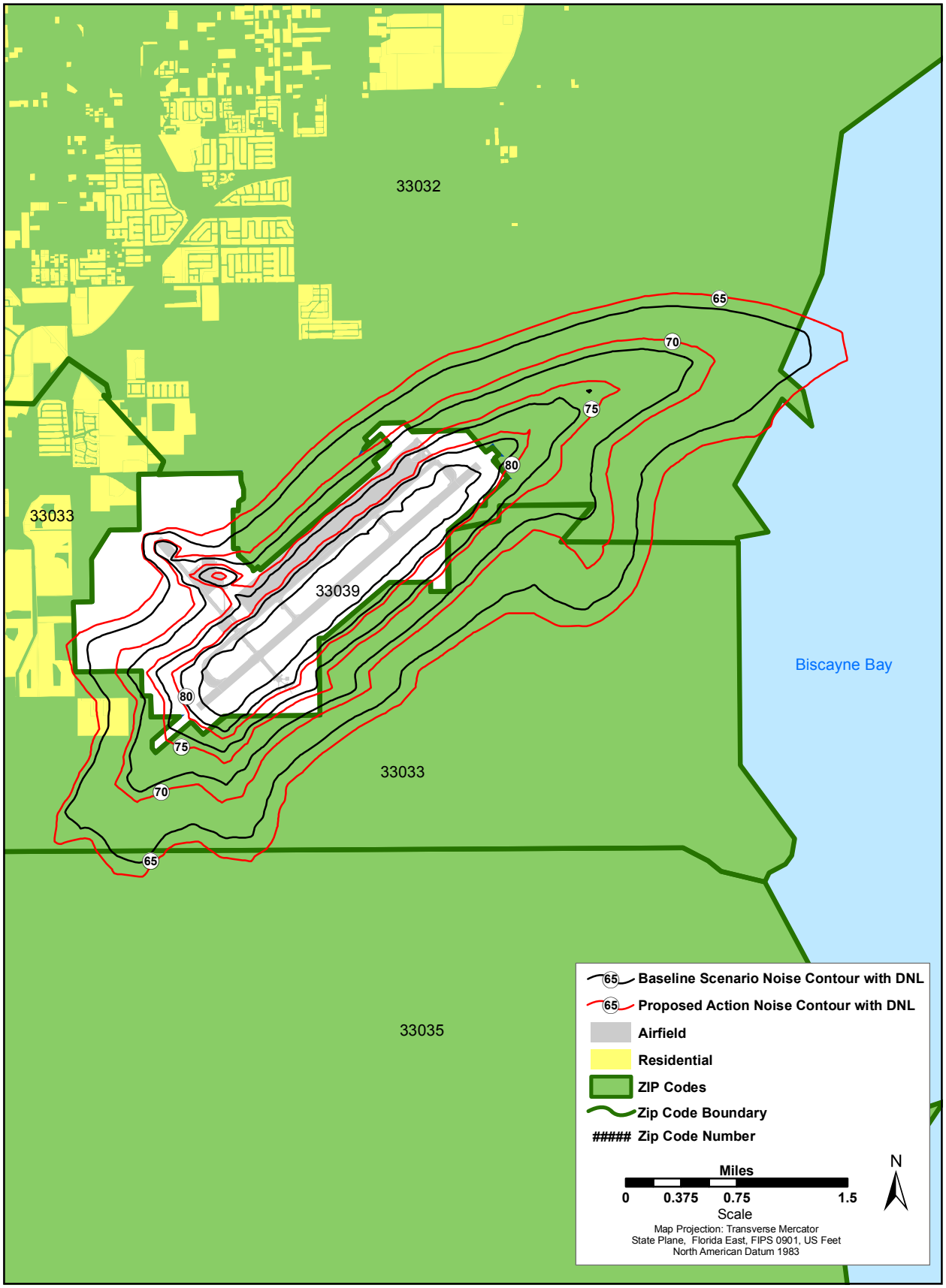


Figure 3-7. Baseline Scenario and Proposed Action Noise Contours and Zip Codes in the ROI

Table 3-15. Race and Poverty Characteristics of ROI, Miami-Dade County, and Florida

	2005				2004	
	Zip Code 33032	Zip Code 33033	Zip Code 33035	ROI	Miami-Dade County	Florida
Total Population	22,309	36,244	3,326	61,879	2,376,014	17,789,864
Percent White	54%	66%	79%	62%	76%	81%
Percent Black or African American	32%	17%	11%	22%	20%	16%
American Indian Alaska Native	0.3%	0.2%	0.2%	0.2%	0.3%	0.3%
Asian	2%	1%	3%	1%	1%	1%
Pacific Islander	0.1%	0.1%	0%	0%	0.1%	0.1%
Some other race	7%	11%	4%	10%	NA	NA
Percent reporting 2 or more races	4%	4%	3%	4%	1%	1%
Percent below poverty level	NA	NA	NA	NA	19%	13%
Per Capita Income	$14,648	$12,618	$21,650	$16,305	NA	NA
Median Household Income	$36,407	$33,011	$42,792	$37,403	NA	NA

Source: Vision Council 2005, US Census 2000, US Census Bureau State and County Quickfacts
NA: Data is Not Available

3.10.4 Environmental Consequences of the Proposed Action

Socioeconomics. The Proposed Action at Homestead ARB would have minor beneficial short- to long-term and direct and indirect impacts on economics and employment at Homestead ARB and the MSA. Under the Proposed Action, an estimated 302 personnel would be added, of which 83 would be full-time civilian personnel and 219 would be part-time Traditional Reservists. The additional personnel would represent an 8 percent increase in full-time employment at Homestead ARB and would provide minor beneficial long-term impacts on the local economy and employment.

The Proposed Action would include three construction projects resulting in approximately 32,378 ft^2 of new construction and 6,222 ft^2 of renovation. Due to the short-term timeline for the construction and renovation projects that are scheduled in 2007 and 2008, these construction and renovation activities would have minor beneficial short-term effects. None of these projects are forecasted to go beyond 2008, therefore employment benefits would be short-term. In addition, the estimated costs for the construction and renovation activities is just over $8 million, which would not significantly affect local economic indicators.

The Proposed Action would have negligible beneficial effects on personal income, poverty levels, or other demographic employment indicators in the MSA.

Environmental Justice. The Proposed Action would have long-term minor effects on residents in zip code 33033. Significant impacts would occur on populations if an incompatible land use increased by 2 dB or greater inside of a noise contour that is equal to or greater than 65 DNL. At this time there are no residents in the portions of zip codes 33032 and 33035 that lie within the baseline or Proposed Action noise contours (see **Figure 3-5**). The baseline scenario and Proposed Action noise contours overlap all of the zip codes in the ROI. The Proposed Action would have a measurable increase in the existing noise contours that would occur almost entirely in zip codes 33032 and 33033 (see **Figure 3-7**). These zip codes were previously affected areas under the baseline noise contours but would experience an increase in noise from aircraft operations under the Proposed Action. The land use within the Proposed Action noise contours show inclusion of agricultural, vacant, and government-owned properties with overall low residential density (see **Figure 3-5**).

The 18 percent overall areal increase in noise contours would affect approximately 861 total acres and 13 residential acres that were previously outside of the 65 and greater DNL noise contour (see **Figure 3-6**). Residential land inside of the 65 DNL noise contour under both the baseline scenario and Proposed Action noise contours are in zip code 33033. It is not anticipated that there would be an increase in noise from the Proposed Action of 2 dB or greater in the residential area inside of the 65 DNL noise contour. As previously discussed, the percentage of minority populations inside of zip code 33033 is comparable to the ROI (see **Table 3-15**). Data is not available for the percent below poverty level in the zip codes or the ROI for 2004. However, given that 19 percent of the population in Miami-Dade County was below the poverty level in 2004, it is likely that some of the residents inside of the 65 DNL noise contour are below the poverty level.

There would be no adverse impacts on socioeconomics or environmental justice with the exception of noise effects. However these noise effects would be minor and isolated to day time hours (7 a.m. to 10 p.m.). See **Section 3.2.4** for discussion of noise effects.

3.10.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions and Homestead ARB would not implement the Proposed Action. The installation would continue to operate with the current inventory of aircraft and would maintain the workforce at present levels. Homestead ARB would continue to use the current facilities, although routine replacement or renovation actions could occur through normal military maintenance and construction procedures.

3.11 Infrastructure

3.11.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as urban or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure information contained in this chapter provides a brief overview of each infrastructure component and comments on its existing general condition.

Solid waste management primarily concerns itself with the availability of landfills to support a population's residential, commercial, and industrial needs. Alternative means of waste disposal might

involve waste-to-energy programs or incineration. In some localities, landfills are designed specifically for, and are limited to, disposal of construction debris. Recycling programs for various waste categories (e.g., glass, metals, and papers) reduce reliance on landfills for disposal.

3.11.2 Existing Conditions

Transportation Systems. Homestead ARB is accessible by U.S. Highway 1 (South Dixie Highway) and the Homestead Extension of the Florida Turnpike (Highway 821) from the north and west. Westover Street and Coral Sea Boulevard serve as the primary entrances into the installation. The roads on Homestead ARB are in excellent condition and do not have significant failures (HARB 2006a). The perimeter road around the airfield is not completely paved.

Electrical Systems. Electricity is supplied by Florida Power and Light Company (FPL) and is rated at 12.5 kilovolts. The main substation and distribution owned by FPL is on the former Homestead AFB near Mystic Lake. There is an underground transformer at each of the buildings (187, 191, and 192) associated with the Proposed Action. Buildings are individually metered. Power to the airfield is controlled by Homestead ARB.

Natural Gas Systems. There is no natural gas supply at Homestead ARB.

Liquid Fuel Systems and Airfield Pavements. The liquid fuel systems at Homestead ARB are supplied by a tank farm in the northwestern corner of the installation. Currently, there are two large aboveground storage tanks (ASTs) within the tank farm serving the liquid fuels systems. The other four large ASTs once located within the tank farm were demolished in June 2005 and March 2006. The tank farm receives jet fuel shipments daily through delivery by commercial tanker trucks. An underground supply line provides fuel to a nearby truck filling station located south of the tank farm and to the Hot Pits Area located near the south end of the runway (HARB 2006a).

The airfield has recently been repaved, freshly marked, lined with updated signage, and lit with a new airfield lighting system. Most pavement features are capable of supporting the current type and level of aircraft traffic. Pavements with structural limitations are not used for normal aircraft operations. These areas include the apron areas (HARB 2006a).

Water Supply Systems. Homestead ARB receives potable water from the Miami-Dade Water and Sewer Department (WASD) through two meters with 10-inch inner-diameter openings. The water distribution system within the installation consists of 38,000 linear feet of main and lateral lines less than 10 years old, and 28,000 linear feet of older main lines located mostly under the airfield ramps and other areas where they are not easily replaceable. Some individual buildings are metered so that proper accounting of usage can be monitored. An additional water meter was recommended for the intersection of Schweinfurt Road and Bikini Boulevard; providing better residual pressure, chlorination, and supply for the northeastern portion of the installation (HARB 2006a). Overall, the newer components are in excellent condition while the remnants of the old system are in fair condition. For fire suppression, Building 192 uses aqueous foam and Buildings 187 and 191 use sprinkler systems; all buildings have adequate fire flows. The new building will implement high expansion foam.

Sanitary Sewer/Wastewater Systems and Storm water Systems. Wastewater treatment and disposal is provided by WASD, which is permitted to treat 100 million gallons per day. The wastewater collection system on the installation is owned by WASD and has been rebuilt with gravity flows to Building 545 which handles 95 percent of the sewage. A combination of a force main and a county-owned gravity main are used to convey wastewater to two lift stations (Buildings 768 and 769). These sewage lift stations/buildings are located outside of the Homestead ARB cantonment area, but within the confines of

the former Homestead ARB. Building 769 also receives wastewater from the FANG (Building 877 and related structures). There is one meter at this building which measures effluent and it has been recommended that meters be installed closer to the base boundaries to ensure accuracy of measurement (HARB 2006a).

Although the wastewater system is in excellent condition there are some portions of old piping owned by the county that are responsible for excess infiltration and inflow.

Industrial wastewater at Homestead ARB is treated and discharged into the sanitary sewer. A long-term goal of the installation is to relinquish ownership of the sanitary sewer to the county.

Storm water systems at Homestead ARB include gravel-filled swales, underground pipes, and catch basins. Storm water is then discharged into the installation's Boundary Canal System, which runs along the northern, western, southern and eastern boundaries and eventually empties out into a storm water reservoir located at the southeastern corner of the base. From here the storm water eventually enters Military Canal. Under the NPDES permit, there are no guidelines for storm water quality, therefore Homestead ARB established a program with the State of Florida to test and monitor storm water quality.

Heating and Cooling Systems. Because of the humid Florida climate, engineers are considering an installation-wide Utility Central Management System (UCMS), which would be an overall long-range cost savings. The UCMS can function over the same information-processing network background as the existing computer system.

Communications Systems. All wiring on the installation is government-owned and maintained. BellSouth owns the entrance and the SOCSOUTH wiring. Fiber optics are used for high speed data and copper telephone lines for normal communications. Communication lines pass through underground conduit. The installation has 1,800 analog and 41 digital lines. Approximately 3,000 phone numbers have been reserved with BellSouth to accommodate expansion. Areas of the installation that have communications systems aboveground will eventually be converted to underground.

Solid Waste. Municipal solid waste (MSW) at Homestead ARB is managed in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*. This AFI incorporates by reference the requirements of Subtitle D, 40 CFR Parts 240 through 244, 257, and 258; and other applicable Federal regulations, AFIs, and DOD Directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention. The Homestead ARB *Integrated Solid Waste Management Plan* (ISWMP) also includes guidance for materials that can be composted, construction and demolition debris, and industrial solid waste; it does not address hazardous waste. Solid waste is collected and disposed by a private contractor.

As specified in EO 13101 and AFI 32-7080, Homestead ARB established the Homestead Recycling Program (HRP) to meet USAF goals for waste diversion from landfills. Recyclable products are collected from all buildings and sorted in Building 164.

Pollution Prevention. AFI 32-7080, *Pollution Prevention Program*, implements the regulatory mandates in the Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act of 1990; EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*; EO 12902, *Energy Efficiency and Water Conservation at Federal Facilities*; and EO 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*. In accordance with EO 13101, the USAF preferentially chooses recycled-content products where possible. AFI 32-7080

prescribes the establishment of Pollution Prevention Management Plans. The 482 FW fulfills this requirement with the following plans:

- Storm Water Pollution Prevention Plan (2005)
- Hazardous Materials Plan (2004)
- Hazardous Waste Management Plan (2005)
- Solid Waste Management Plan (2002).

These plans assist Homestead ARB in maintaining a waste-reduction program and meeting the requirements of the CWA and and Federal, state, and local requirements.

3.11.3 Evaluation Criteria

Effects on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and create additional needs for energy and water consumption, sanitary sewer systems, and transportation patterns and circulation. Impacts might arise from physical changes to traffic circulation, construction activities, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes; and energy needs created by either direct or indirect workforce and population changes related to installation activities. An impact would be adverse if a proposed action exceeded capacity of a utility.

3.11.4 Environmental Consequences of the Proposed Action

Under the Proposed Action, minor adverse effects would occur to the infrastructure at Homestead ARB. As mentioned in **Section 2.2.3**, Homestead ARB was examined to determine if general and specific siting criteria are met, which include components of infrastructure. The only inadequacy found was the lack of existing facilities to accommodate the gain of personnel and aircraft. The following section describes effects on infrastructure.

Transportation Systems. There would be short-term minor adverse effects on the transportation systems during the construction activities associated with the Proposed Action. Construction activities would temporarily increase the use of the installation's roadways and parking. Construction equipment would be driven to the proposed construction sites and would be kept on site for the duration of the project. All damaged installation transportation infrastructure from construction activities would be repaired.

There would be an increase of 83 full-time civilian personnel and ARTs to support the Proposed Action. Approximately 1,000 personnel (including military and civilian) work and train full-time at Homestead ARB, which would be an increase of 8 percent. In addition, 219 Traditional Reservists would be expected under the Proposed Action. This increase is considered minor since Traditional Reservists are only committed to duty for one three-day weekend each month plus 2 full weeks a year to staisfiy their reserve time, which would not influence current traffic patterns significantly.

Electrical Power Systems. Negligible effects on the electrical power system would be expected. The Proposed Action would result in a slight increase in the use of the electrical power system due to the increase in personnel and additional infrastructure. However, this increase would be minor compared to total installation usage. Two electrical transformers would need to be relocated.

Natural Gas Systems. There is no natural gas system at Homestead ARB.

Liquid Fuels Systems and Airfield Pavements. Negligible effects on the liquid fuels systems would be expected due to the increased fuel consumption. Although additional jet fuel would be used due to the increase in aircraft operations, Homestead ARB receives jet fuel shipments daily and has 2 ASTs. The additional use of jet fuel is not expected to significantly affect fuel supplies.

Long-term minor adverse effects on the airfield pavements due to the wearing of the pavements would be expected. The recently completed runway reconstruction project included airfield lighting upgrades, airfield signs and markings, and new paving. However, some airfield pavements in the apron areas have limitations. The increase in the number of aircraft operations would increase the rate of wearing of airfield pavements.

Water Supply Systems. Negligible effects would be expected on the water supply systems. As previously mentioned, the newer components are in excellent condition and the older components are in fair condition. The proposed expansion projects would implement use of high expansion foam fire suppression system equipment. If Homestead ARB uses high expansion foams in their fire suppression systems, such operations would follow applicable USAF guidance on prevention of potential impacts on equipment and human health.

Sanitary Sewer/Wastewater Systems and Storm water Systems. No effects on the sanitary sewer/wastewater and minor to negligible adverse effects to storm water systems would be expected. The sanitary sewer was recently rebuilt and is in excellent condition. During construction it is imperative that requirements of the industrial wastewater permit (NPDES) and the SWPPP are followed. Homestead ARB regularly submits modifications to the permit as part of their construction programs. The South Florida Water Management District has advised that a General Permit Modification to Permit No. 13-00148-S be completed for the Proposed Action. The Proposed Action would result in a slight increase in the use of the sanitary sewer and wastewater systems on Homestead ARB due to the increase in personnel. However, this increase would be minor in comparison to the current installation population. A portion of the sanitary sewer would need to be relocated.

The increase in impervious surfaces is minor in comparison to the total for the installation. Since Homestead ARB has established a program to test and monitor storm water quality, negligible effects on the storm water system would be expected as a result of the Proposed Action.

Heating and Cooling Systems. Negligible effects on the heating and cooling systems would be expected. The Proposed Action would include the addition of new heating and cooling units, which would result in a slight increase in the demand for electrical power. However, this increase would be minor compared to total installation usage at Homestead ARB. In addition, the new equipment would likely be more efficient.

Communications Systems. No adverse effects on the communications systems would be expected. The Proposed Action would result in a slight increase in use of the communications system due to the increase in personnel. However, this increase would be minor in comparison to the use of the current installation's communications system.

Solid Waste. Short-term minor adverse effects would be expected. The majority of the solid waste generated by the Proposed Action would occur during the construction. In considering the basis for evaluating impacts on solid waste, several items are considered. These items include evaluating the degree to which the proposed construction projects would affect the existing solid waste management program and the capacity of the area landfill.

Solid waste generated from the proposed construction activities would consist of building materials such as solid pieces of concrete, metals (conduit, piping, and wiring), and lumber. Contractors are responsible for disposal of generated wastes and can be required to recycle construction and demolition materials to the greatest extent possible as part of their contract. The existing ISWMP and HRP at Homestead ARB should be consulted to ensure the proper steps are taken for recycling and waste reduction.

Analysis of the cumulative impacts associated with implementation of the Proposed Action and other actions is based on the assumption that 4 pounds of construction debris is generated for each square foot of floor area for new structures (USACE 1976). Following these assumptions, roughly 130,000 pounds, or about 65 tons, of solid waste would be generated from construction debris. A private contractor would collect this waste and dispose it.

Pollution Prevention. Negligible effects on pollution prevention at Homestead ARB would be expected. Quantities of hazardous material and chemical purchases, off-installation transport of hazardous waste, disposal of MSW, and energy consumption would continue. Operation of the new facilities would require procurement of products containing hazardous materials, generation of hazardous waste, and consumption of energy consistent with the baseline condition associated with the operation of the proposed facilities. The installation's plans would remain in place and BMPs would be followed to ensure compliance.

3.11.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions. Homestead ARB would not implement the Proposed Action and the recommendations by the BRAC Commission would not be accomplished. The installation would continue to operate with the current inventory of F-16 aircraft and would maintain the workforce at present levels. Homestead ARB would continue to use the current facilities, although routine replacement or renovation actions could occur through normal military maintenance and construction procedures, as circumstances might independently warrant.

3.12 Hazardous Materials and Wastes

3.12.1 Definition of the Resource

Hazardous material is defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the Toxic Substances Control Act, as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments (HSWA), as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that poses a substantial present or potential hazard to human health or the environment. In general, both hazardous materials and wastes include substances that, because of their quantity; concentration; or physical, chemical, or infectious characteristics, might present substantial danger to public health or welfare or the environment when released or otherwise improperly managed.

Evaluation of hazardous materials and wastes focuses on underground storage tanks (USTs) and aboveground storage tanks (ASTs) and the storage, transport, and use of pesticides and herbicides; fuels; and petroleum, oil, and lubricants (POL). Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well being of wildlife species, botanical habitats, soil systems, and

water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on the type of soil, topography, and water resources.

Special hazards are those substances that might pose a risk to human health but are not regulated as contaminants under the hazardous wastes statutes. Potential hazards associated with the Proposed Action are asbestos-containing material (ACM) and lead-based paint (LBP). The presence of special hazards or controls over them might affect, or be affected by, the Proposed Action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of the Proposed Action.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, the DOD has dictated that all facilities develop and implement Hazardous Material Emergency Planning and Response Plans or Spill Prevention, Control, and Countermeasure Plans. Also, DOD has developed the Environmental Restoration Program (ERP), intended to facilitate thorough investigation and cleanup of contaminated sites on military installations. Through ERP, DOD evaluates and cleans up sites where hazardous wastes have been spilled or released to the environment. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to human health and the environment, and clean up contamination. Description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in the identification of properties and their usefulness for given purposes (e.g., activities dependent on ground water usage might be restricted until remediation of a ground water contaminant plume has been completed). These plans and programs, in addition to established legislation (i.e., CERCLA and RCRA), effectively form the "safety net" intended to protect the ecosystems on which most living organisms depend.

AFPD 32-70, *Environmental Quality*, establishes the policy that the USAF is committed to the following:

- Cleaning up environmental damage resulting from its past activities
- Meeting all environmental standards applicable to its present operations
- Planning its future activities to minimize environmental impacts
- Managing responsibly the irreplaceable natural and cultural resources it holds in public trust
- Eliminating pollution from its activities wherever possible.

AFPD 32-70 and the AFI 32-7000 series incorporate the requirements of all Federal regulations, other AFIs, and DOD Directives for the management of hazardous materials, hazardous wastes, and special hazards.

3.12.2 Existing Conditions

The 482d Mission Support Group/Civil Engineering Environmental Flight (482 MSG/CEV) is responsible for the hazardous material and waste plans for the installation. In conformance with the policies established by AFPD 32-70, *Environmental Quality*, the 482 MSG/CEV has developed plans to manage hazardous materials, hazardous wastes, and special hazards at the installation.

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the USAF. It applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials; and to those who manage, monitor, or track any of those activities. Homestead ARB has an established hazardous materials pharmacy (HAZMART) in accordance with AFI 32-7086. The HAZMART is the central location for the

receipt, storage, and issue of the majority of hazardous materials (HAZMAT) at Homestead ARB. The HAZMART maintains the bulk supply of these HAZMAT and delivers HAZMAT throughout the installation. The pharmacy ensures that only the smallest quantities of hazardous materials necessary to accomplish the mission are purchased and used. The management and responsibilities of HAZMAT storage, handling, transfer, spill response, and cleanup are described in the HAZMAT Plan. Also included in this plan are guidelines for spill prevention, control, and countermeasures.

The use of HAZMAT would be reported to the HAZMART office. A list of all HAZMAT should include a copy of each material's MSDS, an estimate of how much material will be used, amount stored, and location of the facility prior to the start of work. Prior to beginning any process that will use HAZMAT, the user will contact the 482 MSG/CEV with the duration of the action and the type and amount of the material that will be used.

Hazardous Wastes. The 482 MSG/CEV maintains a *Hazardous Waste Management Plan* (HWMP) as directed by AFI 32-7042. This plan prescribes the roles and responsibilities of all members of Homestead ARB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable Federal, state, and local standards for solid and hazardous waste management.

Wastes generated at Homestead ARB include pesticides, herbicides, POL, flammable solvents, contaminated fuels and lubricants, paint/coating, stripping chemicals, waste oils, waste paint-related materials, and other universal wastes. Management of hazardous wastes is the responsibility of each waste-generating organization and 482 MSG/CEV. Hazardous waste is stored at a satellite accumulation point (SAP), which is at or near the point of generation and under the control of the owner/manager of the generating activity. An SAP is designed to facilitate collection of hazardous wastes and ensure proper management. An SAP is allowed to accumulate up to 55 gallons of hazardous waste or 1 quart of acute hazardous waste. Once the 55 gallons (or 1 quart in the case of acute hazardous waste) limit is reached, the generating activity must transfer the hazardous waste container to the central storage area (CSA) (Building 214) where wastes from several SAPs are placed for periods of up to 180 days pending disposal or further transfer. There are no SAPs at the construction sites where the Proposed Action would occur (Cedeno 2006). According to the HWMP, Buildings 191 and 192 generate non-RCRA hazardous wastes, including POL (which is recycled), and gun barrel cleaning solvent. Building 192 has "jet wash" used for cleaning gun parts as well as a parts washer which uses a citrus-based cleaner. These systems have built in skimmers and filters which require disposal periodically, however an SAP is not warranted at these locations. There are no hazardous wastes generated from Building 187.

Each organization has appointed a primary and alternate manager for each hazardous waste site on Homestead ARB. Hazardous waste generators are required to maintain a listing of all the hazardous waste streams generated in their section, with proper identification, handling, storage, and record keeping. For special projects, generators must coordinate with 482 MSG/CEV to obtain containers, and to ensure they meet U.S. Department of Transportation (USDOT) compatibility and air emissions standards. Responses to spills of hazardous waste should follow the Spill Prevention Control and Countermeasure Plan, which is a part of the HAZMAT Plan. In addition, contractors must accomplish the following:

- Obtain 482 MSG/CEV approval for all hazardous materials and wastes used or generated on the installation
- Ensure hazardous wastes are managed per 40 CFR 260-282 and transported in accordance with 49 CFR 105-180 to a certified disposal facility
- Ensure proper labeling, handling, segregation, collection, and storage of hazardous waste

- Ensure all personnel are properly trained for handling the hazardous waste they generate
- Ensure the 482 MSG/CEV is given notice when scheduling waste disposal requiring a manifest(s), before it is transported off of the installation.

Storage Tanks and Oil-Water Separators. AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70, *Environmental Quality*. It identifies compliance requirements for ASTs and USTs and associated piping that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 U.S.C. 6991, and 40 CFR 280.

A storage tank consists of a vessel and its associated piping that contains a product, such as petroleum or septic. From a regulatory perspective, if at least 10 percent of the storage tank is underground, it is a UST. If less than 10 percent of the storage tank is underground, it is an AST. There are no ASTs or USTs at any of the proposed construction sites.

There is an oil-water separator (OWS) outside of Building 192 which discharges into the sanitary sewer system. Building 192 contains a parts washer which requires an OWS per Miami-Dade County regulations. In addition, there is an industrial waste permit for the OWS. The OWS is sampled once per quarter; no problems have been recorded.

Environmental Restoration Program. ERP, formerly known as the Installation Restoration Program, is a subcomponent of the Defense Environmental Restoration Program that became law under SARA. The ERP requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. Homestead ARB contains six sites that require long-term monitoring. There are no ERP sites in the immediate vicinity of the construction sites under the Proposed Action (see **Figure 3-8**). The closest ERP site, known as Operational Unit (OU) 15 is approximately 500 feet north of Project No. 3 (Building 187). This site is the former hazardous waste storage building (Building 153). There are seven monitoring wells on the west and south sides of the building which monitor the presence of arsenic. OU-5 is more than 500 feet north of Project No. 3 (Building 187). This site is the former electroplating waste disposal area. The site consists of a northern and southern area. The northern area is still of potential concern. OU-2 is greater than 1,000 feet west of the proposed construction sites. This site is the former pesticide disposal/rinse area that is no longer in use. This site is off-limits to personnel to prevent human exposure to contamination. OU-12 (Building 371) is greater than 1,000 feet north of Project No. 3 (Building 187). Site-specific Land Use Controls (LUCs) were implemented to limit human exposure to the residual contamination within the surface soils. OU-7, which is a parking lot that runs perpendicular on the south side of Building 232, was a former entomology storage area has seven monitoring wells for arsenic content in the ground water.

Asbestos-Containing Material. As discussed in **Section 3.9**, many of the buildings on the installation were demolished in the 1990s as a result of damage caused by Hurricane Andrew. The buildings that have been constructed subsequently do not contain ACM.

AFI 32-1052, *Facilities Asbestos Management,* provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DOD Directives. AFI 32-1052 requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, as well as documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects. ACM is regulated by USEPA with the authority promulgated under the Occupational Safety and Health Act, 29 U.S.C. 669, et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. USEPA policy is to leave asbestos in place when exposure pathways are incomplete, but disturbance or removal could pose a health threat.

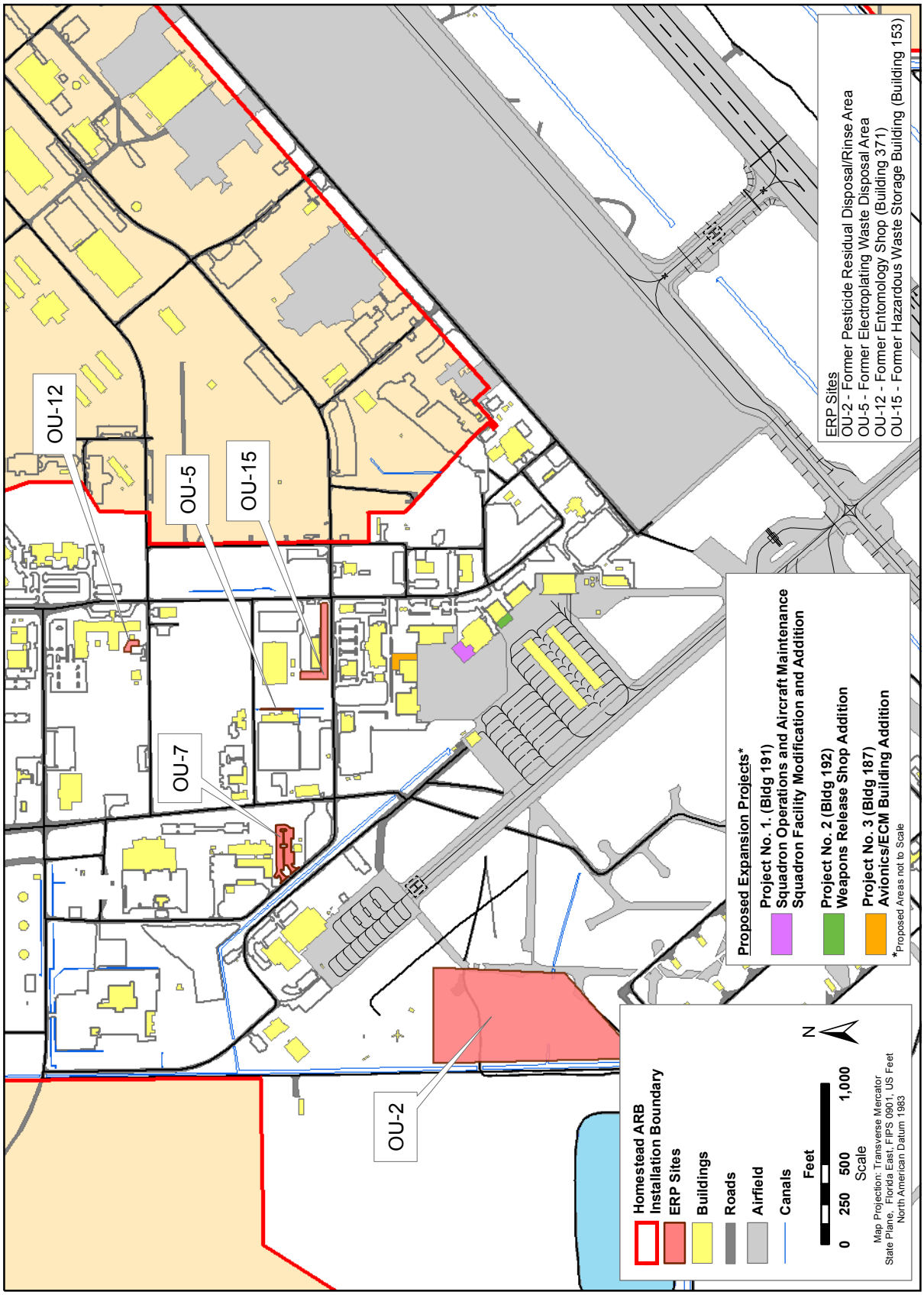


Figure 3-8. ERP Sites Within the Vicinity of the Proposed Action

Asbestos at Homestead ARB is managed in accordance with the installation's *Asbestos Management Plan.* This plan specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects. In addition, it is designed to protect personnel who work at Homestead ARB from exposure to airborne asbestos fibers as well as to ensure the installation remains in compliance with Federal, state, and local regulations pertaining to ACM. Materials that might contain asbestos include pipe insulation and floor tiles. ACM are removed on an as-needed basis to minimize health risks from release of asbestos fibers during normal activities, maintenance, renovation, or demolition. According to installation personnel, the buildings that would be renovated under the Proposed Action are relatively new and should contain very little, if any, asbestos. However, the buildings should be sampled prior to the commencement of the Proposed Action. A list of buildings with ACM and abatement activities can be found at the 482 FW/Civil Engineering Environmental Flight.

Lead-Based Paint. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X), passed by Congress on 28 October 1992, regulates the use and disposal of LBP on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards.

USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR 1910.120, 29 CFR Part 1926, 40 CFR 50.12, 40 CFR Parts 240 through 280, the CAA, and other applicable Federal regulations. In addition the policy requires each installation to develop and implement a LBP management plan for identifying, evaluating, managing, and abating LBP hazards. The LBP program manager is in charge of inspection, management, and abatement activities at Homestead ARB.

Mold. Mold spores are commonly found in both indoor and outdoor air. Mold growth can occur indoors when excessive moisture or water accumulates. Some molds can grow on wood, paper, food, and carpets. As molds grow, they digest whatever they are growing on. Mold growth can cause damage to structures, as well as health effects via the production of allergens, irritants, and toxins.

Ordnance. The location of the proposed construction sites are outside the installation's explosive safety quantity distance (ESQD) arcs.

3.12.3 Evaluation Criteria

Effects on HAZMAT or hazardous waste management would be considered adverse if the Proposed Action resulted in noncompliance with applicable Federal and state regulations, or increased the amounts generated or procured beyond current Homestead ARB waste management procedures and capacities. Effects on pollution prevention would be considered adverse if the Proposed Action resulted in worker, resident, or visitor exposure to these materials, or if the action generated quantities of these materials beyond the capability of current management procedures. Effects on the ERP would be considered adverse if the Proposed Action disturbed (or created) contaminated sites resulting in adverse effects on human health or the environment. Effects on fuels management would be adverse if the established management policies, procedures, and handling capacities could not accommodate the activities associated with the Proposed Action.

3.12.4 Environmental Consequences of the Proposed Action

Hazardous Materials. No adverse effects on hazardous materials management would be expected. Products containing hazardous materials would be procured and used during the proposed construction projects. There would be no new chemicals or toxic substances used or stored at Homestead ARB. It is anticipated that the quantity of products containing hazardous materials used during the three construction

activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Contractors must report use of hazardous materials to the HAZMART, including pertinent information (e.g., MSDS).

The increase in aircraft operations would also increase the use of hazardous materials, such as jet fuel (JP-8), POL, paints, and solvents, but would not be expected to impact the management plans or capacities for handling these hazardous materials.

Hazardous Waste. Short-term minor effects on the installation's hazardous waste management program would be expected from implementation of the Proposed Action. It is anticipated that the quantity of hazardous wastes generated from proposed construction activities would be minor.

Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations, as well as the Installation's Hazardous Waste Management Plan. With the increased use of HAZMAT for aircraft operations, hazardous waste would be expected to increase as well. This increase would not be expected to impact the management plans or capacities for handling this waste. As stated previously, most of the hazardous waste currently generated at the building associated with the Proposed Action is recycled (HARB 2002). The increase in the generation of wastes is not expected to change the generator status of Homestead ARB from a small quantity generator to a large quantity generator, nor is it expected to result in a modification of the existing HSWA permit which was issued by FDEP in February 2006 (permit number 72438-HH-001) (Cedeno 2006).

Storage Tanks and Oil-Water Separators. No effects on the installation's storage tanks would be expected. The Proposed Action would not involve the removal of any storage tanks. If the Proposed Action requires the installation of a storage tank, it is mandatory that all Federal, state, and local regulations and requirements, as well as USAF AFI 32-7044, *Storage Tank Compliance,* are followed. Similarly, no impacts are expected to the OWS located at Building 192.

ERP. No adverse effects on the ERP would be expected. There are no ERP sites near the proposed construction sites. BMPs would be followed to ensure that contamination from a spill does not occur. If, however, a spill occurs, the installation's HAZMAT Plan contains spill prevention, control, and countermeasures which outline the appropriate measures for spill situations.

ACM. No adverse effects from ACM would be expected. The Proposed Action would not involve the removal of ACM. Building materials containing asbestos would not be used in construction activities.

LBP. No adverse effects from LBP would be expected. Many of the buildings were constructed in the 1990s and are not likely to contain LBP. However, the LBP program manager should be contacted to determine if paint is lead-based.

Mold. No adverse effects from mold would be expected. Proper construction techniques and practices would be used to inhibit the growth of mold. During periods of rain it would be necessary to cover drywall and material prone to mold growth. If mold is found, the appropriate measures should be taken to inhibit its continued growth, including removal of that material.

Ordnance. No adverse effects on ordnance would be expected. The additional aircraft operations under the Proposed Action would increase the consumption of ordnance, but would not be beyond the installation's storage capacity or handling capabilities. All applicable regulations and guidelines would be followed and only trained and permitted personnel would handle ordnance. Since the Proposed Action

is outside the ESQD arcs, personnel working at the proposed construction sites would not be expected to sign waiver forms.

3.12.5 No Action Alternative

No effects would be expected under the No Action Alternative as baseline conditions would remain unchanged. Hazardous waste generation would remain unchanged and management and disposal of HAZMAT and wastes would continue according to procedures already in place.

4. Cumulative and Other Impacts

4.1 Cumulative Impacts

Cumulative impacts on environmental resources result from incremental effects of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the project area. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. Informed decision-making is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

The environmental effects identified with this Proposed Action are associated with additional aircraft operations and the construction of facilities. An effort was undertaken to identify other projects for evaluation in the context of the cumulative impact analysis. This was further developed through review of public documents, information gained from the IICEP process, and other coordination with various applicable agencies. The Proposed Action is estimated to take approximately 2 years to complete. During the timeframe of the Proposed Action, no projects from past, present, or reasonably foreseeable future construction in the immediate vicinity of the projects associated with the 482 FW were identified that would have any potential for an additive impact in conjunction with the Proposed Action. Additional personnel would not be expected to result in any perceptible cumulative impacts.

Future development plans at Homestead ARB include the construction of four new lodging facilities, an addition and alteration to the 70 Aerial Port Squadron building (Building 588), and an addition to the Security Forces Squadron (Building 353) (HARB 2006a). If the construction projects under the Proposed Action were to occur in combination with the planned future projects there would be minor cumulative impacts associated with these activities. These would include short-term increases in heavy equipment noise, criteria air emissions, and sedimentation.

In addition to the future plans at Homestead ARB, residential and commercial development is expected in the surrounding region. Between 10,000 and 14,000 new homes are anticipated in the eastern part of the City of Homestead by 2010 (Franzino 2004). These activities would also add to the future cumulative impacts in the area.

4.2 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

Geological Resources. Under the Proposed Action, construction activities, such as grading, excavating, and trenching of the ground, would result in some minor soil disturbance. Implementation of BMPs during construction would limit environmental consequences resulting from construction activities. Standard erosion-control means would also reduce environmental consequences related to these characteristics. Although unavoidable, impacts on soils at the installation are not considered significant.

Biological Resources. The Proposed Action would result in essentially no loss of vegetation and wildlife habitat because the proposed construction sites are on land that is currently developed. Proposed construction components occur entirely on existing paved surfaces or disturbed land. Negligible impacts on wetlands would occur as a result of potential runoff from the proposed construction sites. Implementation of BMPs would minimize the potential for adverse effects associated with runoff from the Proposed Action.

Infrastructure. Roughly 130,000 pounds, or about 65 tons, of solid waste would be generated from construction debris. This is an unavoidable but minor adverse impact, as the amount of solid waste generated would not be significant in proportion to other sources of solid waste generation. However, this impact is not considered significant because local landfill capacity would not be exceeded by the additional solid waste generated from the Proposed Action.

Hazardous Materials and Wastes. The generation of hazardous materials and wastes is an unavoidable consequence associated with the Proposed Action. However, the generation of hazardous materials and wastes would not significantly increase over baseline conditions and, therefore, is not considered significant.

The potential for construction accidents or spills during fuel handling is an unavoidable risk associated with the Proposed Action. However, the potential for such risk would not increase significantly over the baseline scenario and, therefore, is not considered significant.

Energy Resources. The Proposed Action would require the use of fossil fuels, a nonrenewable natural resource. The use of nonrenewable resources in construction activities, and subsequently with the operations of facilities and additional F-16 aircraft, would be unavoidable, although not considered significant.

4.3 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, Federal Aviation Authority, and Local Land Use Plans, Policies, and Controls

The Proposed Action would occur in a region where residential and commercial development is prevalent. As previously mentioned, between 10,000 and 14,000 new homes are anticipated in the eastern part of the City of Homestead by 2010. The additional 30,000 people would cause the city's population to nearly double (Franzino 2004). Homestead ARB is adjacent to the City of Homestead (as shown on **Figure 1-1**). As a result, development in the eastern part of the City of Homestead could directly impact the land use compatibility issues associated with Homestead ARB.

Under the Proposed Action, there would be a collective net increase of 861 acres (18 percent) of land that would be affected by increased noise levels. Of this amount, approximately 13 acres of residential land use would be impacted by increased noise levels under the Proposed Action that are not impacted under the baseline scenario. A Homestead JLUS is currently being completed. Implementation of the JLUS into the surrounding communities should minimize incompatible development in the area surrounding the installation.

Homestead ARB is a USAF base and therefore, follows the regulations set forth by the USAF for airspace management and land use compatibility. The USAF has established the AICUZ study in an effort to protect local citizens from noise exposure and accident potential associated with flying activities and to prevent degradation of the USAF capability to achieve its mission by promoting compatible land use planning. The last AICUZ study for Homestead ARB was completed June 2004; the AICUZ will be updated once the Proposed Action has begun.

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Homestead ARB. The proposed construction activities would not result in any significant or incompatible land use changes on or off the installation. The proposed projects have been sited according to existing land use zones. Consequently, construction activities would not be in conflict with

installation land use policies or objectives. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated clear zones.

4.4 Relationship Between the Short-term Use of the Environment and Long-term Productivity

Short-term uses of the biophysical components of the environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of the environment include those impacts occurring over a period of more than 5 years, including permanent resource loss. Several kinds of activities could result in short-term resource use that compromise long-term productivity. Filling of wetlands or loss of other especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in an intensification of land use at Homestead ARB or in the surrounding area. Since the proposed construction activities would occur on installation land that consists of impervious surface, biophysical components of the environment would not be impacted. Development of the Proposed Action would not represent a significant loss of open space. However, as previously mentioned, there would be an 18 percent increase in the land affected by increased noise levels.

4.5 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable time frame (e.g., energy and minerals).

The irreversible and irretrievable commitment of resources that would result from implementation of the Proposed Action involve the consumption of material resources used for construction, energy resources, biological resources, and human labor resources. The loss of these resources is considered to be permanent.

Material Resources. Material resources used for the Proposed Action include building materials (for construction of facilities), concrete and asphalt (for roads), and various material supplies (for infrastructure). Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. Energy resources utilized for the Proposed Action would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operations, gasoline would be used for the operation of POVs and GOVs and jet fuel would be used for the additional F-16 aircraft. There would be a slight increase in the use of electricity from operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would be expected.

Biological Resources. The construction projects under the Proposed Action would result in essentially no loss of vegetation and wildlife habitat because the proposed construction sites are on or adjacent to the flightline, where no biological habitat exists. Proposed construction components occur entirely on existing flightline surfaces or already disturbed land. Minor adverse effects would be anticipated from the potential increase in BASH incidents from the estimated increase in aircraft operations of 32 percent

related to the Proposed Action. However, the 482 FW actively implements a BASH Reduction Program, thereby reducing the potential for a bird strike to occur. Aircrews are briefed and familiarized with potential obstructions along their routes before undertaking a mission.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss of this resource only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

5. Preparers

This EA has been prepared by engineering-environmental Management, Inc. (e^2M) under the direction of Headquarters AFRC at Robins AFB and 482 FW at Homestead ARB. The individual contractors that contributed to the preparation of this document are listed below.

Louise Baxter
M.P.A. Public Administration
B.S. Political Science
Years of Experience: 6

Suanne Collinsworth
M.S. Environmental Sciences and Engineering
B.S. Geology
Certificate of Water Quality Management
Years of Experience: 7

Shannon Cauley
B.S. Geology
USACE Certified Wetland Delineator
Certified Professional Soil Scientist
Years of Experience: 22

Dr. Sue Goodfellow
Ph.D. Anthropology
B.A. Anthropology and Archaeology
Years of Experience: 20

Stuart Gottlieb
B.A. Geography
GIS Professional Certificate
Years of Experience: 3

Gustin Hare
B.S. Environmental Science
Registered Environmental Professional
Years of Experience: 11

Bridget Kelly
B.S. Biology
Years of Experience: 8

Daniel Koenig
B.S. Environmental Policy and Planning
Years of Experience: 2

Sean McCain
M.B.A. Business Administration
B.S. Forestry and Natural Resources Management
Years of Experience: 11

Dr. Michael Moran
Ph.D. Biochemistry
B.S. Chemistry
Registered Environmental Manager
Years of Experience: 23

Tanya Perry
B.S. Environmental Science
B.A. Communications
Years of Experience: 6

Devin Scherer
B.S. Biology
Years of Experience: 2

Juliann Shockley
B.A. Geology
Years of Experience: 1

Adam Turbett
B.S. Environmental Studies
Years of Experience: 2

Lauri Watson
B.S. Environmental Science
Years of Experience: 4

Jeffrey Weiler
M.S. Resource Economics/Environmental Management
B.A. Political Science
Years of Experience: 32

Mary Young
B.S. Environmental Science
Years of Experience: 4

6. References

Andrejko 2006 — Andrejko, Michael. 2006. Personal Communication between Michael Andrejko (482 MSG/CEV) and Mr. Gus Hare of engineering-environmental Management, Inc (e^2M). 24 May 2006.

BLS 2006 — Bureau of Labor Statistics (BLS). 2006. Local Area Unemployment Statistics. Available online: <*http://www.bls.gov/web/laummtrk.htm*>. Accessed 29 May 2006.

Cedeno 2006 — Cedeno, Anthony. 2006. Personal communication between Mr. Anthony Cedeno (482 Mission Support Group/Environmental Flight [MSG/CEV]) and Devin Scherer (e^2M) regarding whether hazardous waste and satellite accumulation points are present in Buildings 187, 191, and 192. 10 August 2005.

City of Homestead 2006 — City of Homestead. 2006. Draft Joint Land Use Study. Prepared by the city of Homestead and EDAW. 2006.

COL 2001 — City of Lodi (COL). 2001. *City of Lodi Community Development Department ProStyle Sports Complex Draft Environmental Impact Report.* Prepared by Parsons Engineering Science, Inc. December 2001. Available online: <*http://www.lodi.gov/eir/index.htm*>. Accessed 11 November 2005.

FAA 2004a — Federal Aviation Administration (FAA). 2004. "U.S. Airspace Classes." Available online: <*http://www.asy.faa.gov/safety_products/airspaceclass.htm*>. Accessed 8 June 2006.

FAA 2004b — FAA, National Aeronautical Charting Office. 2004. Sectional Raster Aeronautical Charts. East Volume: 0404. Effective 15 April 2004. Digital Versatile Disk.

FAA 2006 — Federal Aviation Administration (FAA). 2006. *Aeronautical Information Manual. Official Guide to Basic Flight Information and ATC Procedures*. 16 February, 2006. Available online: <*http://www.faa.gov/ATPubs/AIM/chap3toc.htm*>. Accessed 1 June 2006.

FEMA 1994 — Federal Emergency Management Agency (FEMA). 1994. Map Service Center. Available online: <*http://msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&categoryId=12001&langId=-1&userType=G&type=1*>. Accessed 5 September 2006.

FHWA 1980 — Federal Highway Administration (FHWA). 1980. "Noise Fundamentals Training Document Highway Noise Measurement."

FICON 1992 — Federal Interagency Committee on Noise (FICON). 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues.* August 1992.

Finegold et al. 1994 — Finegold, S. Lawrence, C. Stanley Harris, and Henning E. von Gierke. 1994. "Community annoyance and sleep disturbance: Updated criteria for assessing the impacts of general transportation noise on people." *Noise Control Engineering Journal* 42(1): 25–30. January–February 1994.

Franzino 2004 — Franzino, Robert. 2004. *Homestead, Florida. An Inventory and Analysis of Community and Economic Development Efforts*. Available online: <*http://www.cuesfau.org/studentpapers/ urp6545/URP6545_RobertFranzino_paper_Homestead.pdf*>. Accessed 20 April 2004.

HARB 2002 — Homestead ARB. 2002. *Integrated Solid Waste Management Plan for Homestead Air Reserve Base*. Prepared by Ecology and Environment, Inc. October 2002.

HARB 2004a — HARB. 2004. *Integrated Natural Resources Management Plan for Homestead ARB, Homestead, Florida*. October 2004.

HARB 2004b — HARB. 2004. *Air Installation Compatible Use Zone Study for the 482 FW*. Prepared by e²M. June 2004.

HARB 2005a — HARB. 2005. *2004 Air Emission Inventory Report*. Prepared by e²M. July 2005.

HARB 2005b — HARB. 2005. *Storm Water Pollution Prevention Plan For Homestead Air Reserve Base, Florida.* Prepared for Headquarters, Air Force Reserve Command Headquarters AFRC/CEVQ. April 2005.

HARB 2005c — HARB. 2005. *Final Site Management Plan FY 2006 Homestead Air Reserve Base, Florida*. October 2005.

HARB 2005d — HARB. 2005. *Threatened and Endangered Species Survey and Management Plan*. Prepared by e²M. June 2005.

HARB 2006a — HARB. 2006. *General Plan Homestead Air Reserve Base*, 35% Submittal. Prepared by CH2M Hill. February 2006.

HARB 2006b — HARB. 2006. Encyclopedia. Available online: *<http://www.answers.com/topic/homestead-city-fl>*. Accessed 1 June 2006.

HARB 2006c — HARB. 2006. *Homestead ARB BASH (Bird/Wildlife Aircraft Strike Hazard) Strikes*. January 2002 – April 2006.

HARB 2006d — HARB. 2006. 482 FWI 91-212. *482d Fighter Wing Bird/Wildlife Aircraft Strike Hazard (BASH) Reduction Program*. October 2006.

IERA 2001 — U.S. Air Force Institute for Environment, Safety, and Occupational Health Risk Analysis (IERA). 2001. *AF IERA Air Emissions Inventory Guidance for Mobile Sources*. July 2001.

Landrum & Brown 2002 — Landrum & Brown, Inc. 2002. "Common Noise Sources." Available online: *<www.landrum-brown.com/env/PVD/EIS/Jan%202002%20Chapter%204/ 4%201-1%20%20common_noise_sources.pdf>*. Accessed 6 July 2004.

MOBILE6 2006 — MOBILE6. 2006. Vehicle Emission Modeling Software. Version 6.2. United States Environmental Protection Agency.

NASCAR 2006 — NASCAR. 2006. Homestead-Miami Speedway. Available online *<http://www.nascar.com/races/tracks/hms/index.html>*. Accessed 2 June 2006.

NMIM 2006 — National Mobile Inventory Model (NMIM). 2006. United States Environmental Protection Agency.

NOAA 2006 — National Oceanic and Atmospheric Administration (NOAA). 2006. *Soil Moisture*. Available online: *<http://www.cpc.noaa.gov/products/soilmst/drought_composite.html#CSMRP>*. Accessed 8 May 2006.

NRCS 2006 — Natural Resources Conservation Service (NRCS). 2006. *Miami, Florida Wind Rose*. Available online: *<ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/florida/miami/>*. Accessed 8 May 2006.

Sharp 2002 — Sharp, Deborah. 2002. USA Today. "Floridians Recall Andrew's Rage." Available online: *<http://www.usatoday.com/news/nation/2002-08-22-andrew-anniversary_x.htm>*. Accessed on 1 August 2006.

USACE 1976 — U.S. Army Corps of Engineers (USACE). 1976. *Development of Predictions Criteria for Demolition and Construction Solid Waste Management*. October 1967.

U.S. Census Bureau 2000	U.S. Census Bureau. 2000. American Fact Finder. Available online: <*http://factfinder.census.gov/home/saff/main.html?_lang=en*.>. Accessed 30 May 2006.
USDA 1996	United States Department of Agriculture (USDA). 1996. Soil Survey of Miami-Dade County, Florida.
USDOT 1984	U.S. Department of Transportation (USDOT). 1984. *Airport Noise Compatibility Planning; Development of Submission of Airport Operator's Noise Exposure Map and Noise Compatibility Program; Final Rule and Request for Comments*. 14 CFR Parts 11 and 150, Federal Register 49(244). December 1984.
USEPA 1974	U.S. Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974.
USEPA 2004	USEPA. 2004. *National Ambient Air Quality Standards*. Available online: <*http://www.epa.gov/air/criteria.html*>. Accessed 8 May 2006.
USEPA 2005	USEPA. 2005. *Green Book Nonattainment Areas for Criteria Pollutants*. Available online: <*http://www.epa.gov/oar/oaqps/greenbk/*>. Accessed 8 May 2006.
USEPA 2006a	USEPA. 2006. AirData NET Tier Report for Southeast Florida Intrastate AQCR Available online: <*http://www.epa.gov/air/data/geosel.html*>. Accessed 9 May 2006.
USEPA 2006b	USEPA. 2006. Compilation of Air Pollutant Emission Factors Mobile Sources. Available online: <*http://www.epa.gov/otaq*>. Accessed August 2006.
Van Voorhies and Russo 1995	Van Voorhies, Christine, and Michael Russo. 1995. *Cultural Resources Base Module, Servicewide Overview Project, 482nd Fighter Wing, Air Force Reserve Command, Homestead Air Reserve Base, Dade County, Florida*. Prepared by: National Park Service, Office of Cultural Resources, Southeast Region and the Georgia Trust for Historic Preservation for the United States Air Force.
Vespe 2006	Vespe, Robert. 2006. Information provided by Robert Vespe (482 MSG/CEV) regarding Homestead ARB air compliance program and permits. 8 March 2006.
Vision Council 2005	Vision Council. 2005. "Demographic and Income Profile." Prepared by The Beacon Council, Research Department.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

Airspace

Airspace management in the USAF is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace and establishes practices to decrease disturbances from flight operations that might cause adverse public reaction and provides flying unit commanders with general guidance for dealing with local problems.

Noise

The Air Installation Compatible Use Zone (AICUZ) Program, (Air Force Instruction [AFI] 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near U.S. Air Force (USAF) installations.

Land Use

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, 1 August, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990 recognize that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQSs) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to use financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

Safety

AFI 91-202, *USAF Mishap Prevention Program*, implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information. This instruction applies to all USAF personnel.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program,* implements AFPD 91-3, *Occupational Safety and Health,* by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water-quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water-quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone, through the development of land and water use programs in cooperation with Federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Development projects affecting land or water use or natural resources of a coastal zone, must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species, such as the bald eagle, also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport or carry from one state, territory, or district to another, or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

EO 11514, *Protection and Enhancement of Environmental Quality* (5 March, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (10 January, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of American Indian tribes to claim ownership of certain "cultural items," defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners' access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13287, *Preserve America* (3 March, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (11 February, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify differential patterns of consumption of natural resources among minority populations and low-income populations." A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. EO 12856, *Federal Compliance with Right-to Know Laws and Pollution Prevention Requirements* (3 August, 1993), requires Federal agencies to comply with the provisions of the PPA and requires Federal agencies to ensure all necessary actions are taken to prevent pollution. In addition, in *Federal Register* Volume 58 Number 18 (29 January, 1993), CEQ provides guidance to Federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for "cradle-to-grave" management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The

HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of ground water.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. EO 12856 requires Federal agencies to comply with the provisions of EPCRA. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the "innocent purchaser" defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs Federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

AGENCY AND PUBLIC INVOLVEMENT

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE

4 May 2006

MEMORANDUM FOR DISTRIBUTION

FROM: 482 MSG/CEV
29350 Westover Street
Bldg. 232
Homestead ARB, Florida 33039-1299

SUBJECT Solicitation of input into the preparation of an Environmental Assessment (EA) addressing the 2005 Base Realignment and Closure Actions at Homestead ARB, Florida.

1. The Air Force Reserve Command (AFRC) is preparing an EA to address the 2005 Base Realignment and Closure Actions proposed for Homestead ARB, Florida. Under the Proposed Action, the 482nd Fighter Wing at Homestead ARB would receive nine additional F-16 aircraft and associated ground support equipment. The Proposed Action also calls for renovated and new facilities and an estimated 302 additional personnel authorizations in conjunction with the gained aircraft. A detailed Description of the Proposed Action and Alternatives (DOPAA) is included as an attachment to this correspondence.

2. The environmental impact analysis process for the Proposed Action and appropriate alternatives is being conducted by Headquarters AFRC in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental issues of concern to you.

3. Please provide any general comments or information directly to Mr. Jake Shaw, 482d FW/PA, 29050 Coral Sea Blvd., P.O. Box 46, Homestead ARB, Florida 33039-1299 by 5 June 2006.

4. If members of your staff have any technical-related questions please feel free to contact me at the address listed at the top of this letter.

Michael J. Andrejko
NEPA Program Manager

Attachments:
(1) Description of the Proposed Action and Alternatives
(2) Distribution List

THIS PAGE INTENTIONALLY LEFT BLANK

Interagency and Intergovernmental Coordination for Environmental Planning List

Federal

The Honorable Bill Nelson
U.S. Senator
225 E. Robinson St., Ste. 410
Orlando, FL 32801

The Honorable Mel Martinez
U.S. Senator
315 E. Robinson St.
Landmark Ctr. 1, Ste. 475
Orlando, FL 32801

The Honorable Ileana Ros-Lehtinen
U.S. Congresswoman
Miami, FL Office
9210 SW 72nd St., Suite 100
Miami, FL 33173

Ms. Andree DuVarney
Natural Resource Conservation Service
U.S. Department of Agriculture
14th and Independence Ave., SW
PO Box 2890
Washington, DC 20013

USEPA, Region 4
Heinz Mueller
Environmental Review Coordinator
61 Forsyth St.
Atlanta, GA 30303

USDA Forest Service
325 John Knox Road
Suite F-100
Tallahassee, FL 32303

FAA Southern Region Headquarters
Carolyn Blum
P. O. Box 20636
Atlanta, GA 30320

Mr. James J. Slack
US Department of the Interior
Fish and Wildlife Service
South Florida Ecological Services Office
1339 20th St.
Vero Beach, FL 32960

Biscayne National Park
Attn: Mark Lewis, Superintendent
9700 SW 328 Street
Homestead, FL 33033-5634

Everglades National Park
Attn: Dan Kimball, Superintendent
40001 State Road 9336
Homestead, FL 33034-6733

State

Governor Jeb Bush
Office of the Governor
The Capitol
400 South Monroe St.
Tallahassee, FL 32399

Larcenia J. Bullard
State Senator (District 39)
8603 S. Dixie Hwy
Suite 304
Miami, FL 33143

Edward B. Bullard
State Representative (District 118)
16201 SW 95th Avenue
Suite 214
Miami, FL 33157-3459

Ms. Jasmin Raffington
Coordinator, Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Blvd.
Suite 320
Tallahassee, FL 32399-2100

Mr. Frederick Gaske, SHPO & Division Director Division of Historical Resources, Department of State
500 South Bronough St.
Room 305
Tallahassee, FL 32399-0250

Florida Fish and Wildlife Conservation Commission
Farris Bryant Building
620 South Meridian Street
Tallahassee, FL 32399-1600

Sally B. Mann
Florida Department of Environmental Protection
3900 Commonwealth Blvd. MS 47
Tallahassee, FL 32399-3000

Michael Hutchinson, Colonel USAF
Chief, Plans and Program Division
Directorate of Installations and Mission Support
HQ AMC/A75
507 Symington Drive
Scott AFB, IL 62225-5022

Mr. James J. Golden
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

Florida Power and Light
P.O. Box 025576
Miami, FL 33102

Local

Mayor Roscoe Warren
City of Homestead City Hall
790 N Homestead Blvd.
Homestead, FL 33030

Vice Mayor Steven D. Losner
City of Homestead City Hall
790 N Homestead Blvd.
Homestead, FL 33030

Councilwoman Lynda Bell
City of Homestead City Hall
790 N Homestead Blvd.
Homestead, FL 33030

Mayor Carlos Alvarez
Miami-Dade County
Stephen P. Clark Center
111 N.W. 1st Street, 29th Floor
Miami, FL 33128

Vice Chairman
Dennis C. Moss, District 9
Miami-Dade County Commission
10710 SW 211 St.
Suite 206
Miami, FL 33189

Katy Sorenson, District 8
Miami-Dade County Commission
10710 SW 211 St.
Suite 204
Miami, FL 33189

George M. Burgess County Manager
Miami-Dade County
Stephen P. Clark Center
111 N.W. 1st Street, Suite 2910
Miami, FL 33128

Miami-Dade Department of Planning and Zoning
Diane O'Quinn Williams
Stephen P. Clark Center
111 NW 1st Street, Suite 1210
Miami, FL 33128

Mr. Wilbur Mayorga, P.E.
Miami-Dade County Department of Environmental Resources Management
33 S.W. 2nd Ave., Suite 800
Miami, FL 33130-1540

Tribal

Miccosukee Reservation
Eastern Area Office
Billy Cypress, Chairman
Box 440021, Tamiami Sta.
Miami, FL 33144

Brighton Reservation
Seminole Agency
6075 Stirling Rd.
Hollywood, FL 33024

THIS PAGE INTENTIONALLY LEFT BLANK

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

CON 24

June 5, 2006

Mr. Jake Shaw
482d FW/PA
29050 Coral Sea Blvd.
P.O. Box 46
Homestead ARB, FL 33039-1299

Subject: 2005 Base Realignment and Closure Actions at Homestead ARB
Preparation of Environmental Assessment

Dear Mr. Shaw:

In response to your request, South Florida Water Management District (SFWMD) staff has reviewed the document entitled "Description Of The Proposed Action And Alternatives For 2005 Base Realignment And Closure Actions At Homestead Air Reserve Base". We have the following comments.

(1) The proposed improvements will require a General Permit Modification to Permit No. 13-00148-S.

(2) To further the protection of water resources in the vicinity of the Base, including Biscayne Bay and the Biscayne aquifer, the Air Force should consider implementation of a ground water monitoring program.

Further inquiries concerning the SFWMD's permitting process should be directed to Tony Waterhouse at (561) 682-6867. If I can be of further assistance, please do not hesitate to contact me at (561) 682-6862.

Sincerely,

James J. Golden, AICP
Senior Planner
Environmental Resource Regulation

/jg

bc: Bob Brown
Damon Meiers
Claudia Kugler
Tony Waterhouse
Carlos de Rojas
Eduardo Lopez
Anita Bain
Barb Conmy
Ron Peekstok
Pat Walker
Teresa Coley
Jose Fuentes

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

June 8, 2006

Jake Shaw
482d FW/PA
29050 Coral Sea Boulevard
Post Office Box 46
Homestead Air Reserve Base, Florida 33039-1299

Service Federal Activity Code: 41420-2006-FA-0777
Date Received: May 8, 2006
Project: Description of Proposed Action Alternatives for Homestead Air Reserve Base
County: Miami-Dade

Dear Mr. Shaw:

Thank you for your May 4, 2006, letter to the Fish and Wildlife Service (Service) requesting our review of the Description of the Proposed Action and Alternatives (DOPAA) announcing the preparation of an Environmental Assessment (EA) that will address the 2005 Base Realignment and Closure Actions at Homestead Air Reserve Base (HARB). Under the Proposed Action, the 482nd Fighter Wing at HARB would receive nine additional F-16 aircraft and associated ground support equipment. The Proposed Action on HARB calls renovated and new facilities and an estimated 302 additional personal in conjunction with the gained aircraft. In your correspondence, you requested our review of the DOPAA, below we provide general comments on items we recommend be incorporated in the EA

Although no federally listed endangered or threatened species have been documented to regularly occur at the HARB, the endangered wood stork (*Mycteria americana*) has been reported to forage on the Base. The project area also has habitat suitable for the federally threatened eastern indigo snake (*Drymarchon corias couperi*). In order to minimize any potential impacts to these listed species we recommend that the EA incorporate, where appropriate, the avoidance and minimization measures outlined the Service's *Draft Supplemental Habitat Management Guidelines for the Wood Stork in the South Florida Ecological Services Consultation Area* and the *Draft Standard Protection Measures for the Eastern Indigo Snake*.

Thank you for the opportunity to review and provide comments on this DOPAA for the proposed EA for HARB. If you have any questions, please contact Mark Salvato at 772-562-3909, extension 340.

Sincerely yours,

for Paul Souza
Acting Field Supervisor
South Florida Ecological Services Office

cc:
Service, Atlanta, Georgia (Tom Sinclair)

FLORIDA DEPARTMENT OF STATE
Sue M. Cobb
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Jake Shaw, 482d FL/PA
Air Force Reserve
P.O. Box 46
Homestead Air Reserve Base, FL 33039-1299

June 7, 2006

RE: DHR Project File Number: 2006-3895
Received by DHR: May 8, 2006
Description of the Proposed Action & Alternatives & 2005 Base Realignment and Closure Actions at Homestead Air Reserve Base, Dade County

Dear Mr. Shaw:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and *36 CFR Part 800: Protection of Historic Properties* and the *National Environmental Policy Act of 1969,* as amended. The State Historic Preservation Officer is to advise Federal agencies as they identify historic properties (listed or eligible for listing in the *National Register of Historic Places*), assess effects upon them, and consider alternatives to avoid or minimize adverse effects.

Thank you for providing us advance notice for the above-referenced project. Based on the information provided, it is the opinion of this office that the above-referenced project will have no effect on historic properties.

If you have any questions concerning our comments, **please contact James Toner, Historic Sites Specialist, by electronic mail at *jetoner@dos.state.fl.us*, or at 850-245-6333**.

Sincerely,

Frederick P. Gaske

Frederick P. Gaske, Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • http://www.flheritage.com

☐ Director's Office (850) 245-6300 • FAX: 245-6436
☐ Archaeological Research (850) 245-6444 • FAX: 245-6452
☑ Historic Preservation (850) 245-6333 • FAX: 245-6437
☐ Historical Museums (850) 245-6400 • FAX: 245-6433
☐ Southeast Regional Office (954) 467-4990 • FAX: 467-4991
☐ Northeast Regional Office (904) 825-5045 • FAX: 825-5044
☐ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340

MIAMI-DADE COUNTY

Office of the County Manager
111 NW 1st Street • Suite 2910
Miami, Florida 33128-1994
T 305-375-5311 F 305-375-1262

miamidade.gov

June 12, 2006

Mr. Jake Shaw
482d FW/PA
29050 Coral Sea Boulevard
P.O. Box 46
Homestead AFB, Florida 33039-1299

Dear Mr. Shaw:

The purpose of this letter is to respond to your agency's solicitation of input regarding the environmental assessment addressing the 2005 Base Realignment and Closure (BRAC) actions at Homestead Air Reserve Base.

We are very pleased to learn that the base will be increasing by 302 additional personnel and nine (9) aircraft. We know how important this expansion is to your installation and as soon as this action is cleared from an environmental standpoint, we are prepared to assist the base to meet the demands of this growth.

Furthermore, please be advised that on May 23, 2006, Commissioner Dennis Moss sponsored a resolution of the Board of County Commissioners in support of this action. A copy of this agenda item is attached for your information.

Yours truly,

George M. Burgess
County Manager

Attachment

MEMORANDUM

Agenda Item No. 14(A)(6)

TO: Honorable Chairman Joe A. Martinez
and Members, Board of County Commissioners

DATE: May 23, 2006

FROM: Murray A. Greenberg
County Attorney

SUBJECT: Resolution in support of 2005 BRAC recommendation for Homestead Air Reserve Base

The accompanying resolution was prepared and placed on the agenda at the request of Commissioner Dennis C. Moss.

Murray A. Greenberg
County Attorney

MAG/bw

MEMORANDUM

(Revised)

TO: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

DATE: May 23, 2006

FROM: Murray A. Greenberg, County Attorney

SUBJECT: Agenda Item No. 14(A)(6)

Please note any items checked.

- ✓ "4-Day Rule" ("3-Day Rule" for committees) applicable if raised
- _____ 6 weeks required between first reading and public hearing
- _____ 4 weeks notification to municipal officials required prior to public hearing
- _____ Decreases revenues or increases expenditures without balancing budget
- _____ Budget required
- _____ Statement of fiscal impact required
- _____ Bid waiver requiring County Manager's written recommendation
- _____ Ordinance creating a new board requires detailed County Manager's report for public hearing
- _____ Housekeeping item (no policy decision required)
- ✓ No committee review

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 14(A)(6)
5-23-06

RESOLUTION NO. _____

RESOLUTION IN SUPPORT OF 2005 BRAC RECOMMENDATION FOR HOMESTEAD AIR RESERVE BASE

WHEREAS, Homestead Air Reserve Base, consistent with Federal law, is in the process of preparing an environmental assessment to determine the impact of expanding base facilities to accommodate nine additional F-16 aircraft and 302 personnel; and

WHEREAS, Miami-Dade County was an active participant in the 2005 Base Realignment and Closure process that resulted in the recommendation to expand Homestead Air Reserve Base; and

WHEREAS, Homestead Air Reserve Base is part of a local military industry that provides approximately $1.5 billion in economic activity and over 25,000 jobs annually; and

WHEREAS, Miami-Dade County has previously gone on record pursuant to Resolution R-120-04 encouraging the Air Force Reserve Command to expand its facilities surplus property that has been transferred to Miami-Dade County,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that Miami-Dade County is supportive of the implementation of the 2005 BRAC recommendation for nine (9) additional F-16 aircraft and associated ground support equipment, renovated and new

facilities and an estimated 302 additional personnel authorizations in conjunction with the gained aircraft.

The foregoing resolution was sponsored by Commissioner Dennis C. Moss and offered by Commissioner , who moved its adoption. The motion was seconded by Commissioner and upon being put to a vote, the vote was as follows:

Joe A. Martinez, Chairman
Dennis C. Moss, Vice-Chairman

Bruno A. Barreiro	Jose "Pepe" Diaz
Audrey M. Edmonson	Carlos A. Gimenez
Sally A. Heyman	Barbara J. Jordan
Dorrin D. Rolle	Natacha Seijas
Katy Sorenson	Rebeca Sosa
Sen. Javier D. Souto	

The Chairperson thereupon declared the resolution duly passed and adopted this 23rd day of May , 2006. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By:_____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

Murray A. Greenberg

MS # 47 MC Acct. # 0153

Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Blvd, Mail Station 47
Tailahassee, Florida 32399-3000

DEPARTMENT OF THE AIR FORCE
DR. MICHAEL J. ANDREJKO
482 MSG/CEV
29350 WESTOVER STREET, BLDG 232
HOMESTEAD ARB FL 33039-1299

SAI# FL200606122412C

Department of the Air Force - Scoping Notice - Environmental Assessment to Address the 2005 Base Realignment and Closure Actions at Homestead Air Reserve Base - Homestead, Miami-Dade County, Florida.

The above-referenced project was received by the Florida State Clearinghouse on 6/12/06, and has been forwarded to the appropriate reviewing agencies. The clearance letter and agency comments will be forwarded to you no later than 7/27/06, unless you are otherwise notified. Please refer to the State Application Identifier (SAI) number in all written correspondence with the Florida State Clearinghouse regarding this project. If you have any questions, please contact the Clearinghouse staff at (850) 245-2161.

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

July 26, 2006

Dr. Michael J. Andrejko
NEPA Program Manager
482 MSG/CEV
29350 Westover Street, Bldg. 232
Homestead ARB, FL 33039-1299

RE: Department of the Air Force – Scoping Notice – Environmental Assessment to Address the 2005 Base Realignment and Closure Actions at Homestead Air Reserve Base – Homestead, Miami-Dade County, Florida.
SAI # FL200606122412C

Dear Dr. Andrejko:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the referenced proposal.

The Florida Department of Environmental Protection (DEP), Division of Waste Management has reviewed the Description of the Proposed Action and Alternatives (DOPAA) and recommends that the following concerns be addressed in the Environmental Assessment (EA):

- **Petroleum fuel usage and storage:**
  The EA should identify current jet fuel consumption and fuel storage capacity for the aircraft operations identified in Table 2-1 of the DOPAA. The EA should also provide information on the anticipated changes in petroleum fuel usage and storage requirements resulting from the addition of the nine jets. Are current petroleum storage tank capacities and pipelines adequate to support the Proposed Action?

- **Hazardous materials and wastes:**
  The EA should identify the changes in hazardous materials usage and hazardous waste generation anticipated from additional maintenance activities. Are current hazardous waste collection areas adequate? Could there be a change in hazardous waste generator status?

- **CERCLA sites:**
  The EA should identify past and current CERCLA sites that have been or are being remediated or managed pursuant to the Federal Facilities Agreement for Homestead Air Force Base. The location of these CERCLA sites with respect to the three proposed construction projects should be made clear in the EA.

- **Petroleum cleanup sites:**
  The EA should identify current petroleum sites that have been or are being remediated or managed pursuant to Chapter 62-770, *Florida Administrative Code*, or other petroleum cleanup agreements between the DEP and the Air Force. The location of these petroleum sites with respect to the three proposed construction projects should be clearly indicated.

- **Permits/Authorizations:**
  The facility operates under a HSWA Corrective Action Permit, has regulated petroleum storage tanks, has petroleum cleanup sites being investigated or remediated (some under Petroleum Cleanup Orders), is listed on the National Priorities List and has several CERLA sites being remediated under a Federal Facilities Agreement.

For further information and assistance, please contact Mr. David P. Grabka, P.G., in the DEP Bureau of Waste Cleanup at (850) 245-8997.

The South Florida Water Management District (SFWMD) notes that the proposed improvements will require a General Permit Modification to SFWMD Permit No. 13-00148-S. The Air Force is advised to consider implementation of a ground water monitoring program as well. Please refer to the enclosed SFWMD letter.

Based on the information contained in the DOPAA and the enclosed state agency comments, the state has determined that, at this stage, the proposed activity is consistent with the Florida Coastal Management Program (FCMP). The applicant must, however, address the concerns identified by our reviewing agencies prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review the proposed project. If you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lpm
Enclosures

cc: Linda Frohock, DEP, DWM
Jim Golden, SFWMD

Project Information	
Project:	FL200606122412C
Comments Due:	07/12/2006
Letter Due:	07/27/2006
Description:	DEPARTMENT OF THE AIR FORCE - SCOPING NOTICE - ENVIRONMENTAL ASSESSMENT TO ADDRESS THE 2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD AIR RESERVE BASE - HOMESTEAD, MIAMI-DADE COUNTY, FLORIDA.
Keywords:	USAF - 2005 BRAC ACTIONS AT HOMESTEAD AIR RESERVE BASE - MIAMI-DADE CO.
CFDA #:	12.200
Agency Comments:	
SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL	
No Comment	
MIAMI-DADE -	
No Comment	
COMMUNITY AFFAIRS - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS	
FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION	
NO COMMENT BY JOE WALSH 6/27/06.	
STATE - FLORIDA DEPARTMENT OF STATE	
No Comment	
TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION	
As requested, the PLEMO Environment section has reviewed the above-referenced scoping notice for solicitation of input into the preparation of an Environmental Assessment (EA), which the Air Force Reserve Command is preparing in order to address the 2005 Base Realignment and Closure Actions proposed for Homestead Air Reserve Base (HARB). Based upon a review of the Description of the Proposed Action and Alternatives (DOPAA), included as an attachment to the scoping notice, there are no issues of concern. There are no State Roads located adjacent to the HARB, nor does it appear any State Roads in the vicinity of the HARB will be involved in this action. Also, please provide a copy of the EA to this office for review when it is submitted. Thank you for providing us with the opportunity to comment. Should you have any questions, please contact Susanne Travis at (305) 470-5568 or Marjorie Bixby at (305) 470-5220.	
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	
The DEP Division of Waste Management has reviewed the Description of the Proposed Action and Alternatives and recommends that the future EA address the following issues: petroleum fuel usage and storage, hazardous materials usage and waste generation, CERCLA sites, petroleum cleanup sites and agreements, and waste management permits/authorizations. For further information and assistance, please contact Mr. David P. Grabka, P.G., in the DEP Bureau of Waste Cleanup at (850) 245-8997.	
SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT	
Letter e-mailed via PDF file on 6/16/06	

For more information please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

COUNTY: MIAMI-DADE

A:G-NEPA-USAF-HM

DATE: 6/12/2006
COMMENTS DUE DATE: 7/12/2006
CLEARANCE DUE DATE: 7/27/2006
SAI#: FL200606122412C
REFER TO: FL200001040002CR

MESSAGE: 2006-05341

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNIT	RPCS & LOC GOVS
COMMUNITY AFFAIRS	SOUTH FLORIDA WMD		
ENVIRONMENTAL PROTECTION			
FISH and WILDLIFE COMMISSION			
X STATE			
TRANSPORTATION			

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

_ **Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.**

X **Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.**

_ **Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.**

_ **Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.**

Project Description:

DEPARTMENT OF THE AIR FORCE - SCOPING NOTICE - ENVIRONMENTAL ASSESSMENT TO ADDRESS THE 2005 BASE REALIGNMENT AND CLOSURE ACTIONS AT HOMESTEAD AIR RESERVE BASE - HOMESTEAD, MIAMI-DADE COUNTY, FLORIDA.

To: Florida State Clearinghouse

AGENCY CONTACT AND COORDINATOR (SCH)
3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

EO. 12372/NEPA

☑ No Comment
☐ Comment Attached
☐ Not Applicable

Federal Consistency

☑ No Comment/Consistent
☐ Consistent/Comments Attached
☐ Inconsistent/Comments Attached
☐ Not Applicable

From:
Division/Bureau: Division of Historical Resources, Bureau of Historic Preservation

RECEIVED
JUL 25 2006
OIP / OLGA

Reviewer: James E. Joiner
Deputy SHPO
Date: 7/20/06 7.20.2006

The below Notice of Availability was published on in *The Miami Herald* on January 18, *South Dade News Leader* on January 19, and the *Keynoter* on January 20, 2007. Publication of the Notice of Availability initiated a 30-day public review period of the Draft EA and Draft FONSI. The Draft EA and Draft FONSI were available in the Homestead Branch of the Miami-Dade County Library, as indicated in the below notice, for the entire public review period. No comments were received.

PUBLIC NOTICE

Notice of Availability
Draft Finding of No Significant Impact for the Environmental Assessment of 2005 Base Realignment and Closure Actions at Homestead ARB, Florida

Homestead ARB, Florida – An Environmental Assessment (EA) of 2005 Base Realignment and Closure Actions at Homestead ARB is being prepared. The U.S. Air Force (USAF) is proposing to reassign nine F-16 aircraft to the 482nd Fighter Wing (482 FW) at Homestead ARB. The Proposed Action would also provide for 302 additional personnel authorizations and three construction projects.

The Air Force Reserve Command is proposing to issue a Finding of No Significant Impact (FONSI) based on the EA. The analysis considered in detail potential effects of the Proposed Action and the No Action Alternative on 12 resource areas: airspace management, aircraft safety, noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, and hazardous materials and wastes. The results, as found in the EA, show that the Proposed Action would not have an adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Copies of the Draft FONSI and EA showing the analysis are available for review at the Homestead Branch of the Miami-Dade County Library, 700 N Homestead Blvd., Homestead, Florida 33030, 305-246-0168. Public comments on the Draft FONSI and EA will be accepted through February 18, 2007.

In addition, the below Privacy Notice was published on the Cover Sheet of the Draft EA.

PRIVACY NOTICE

Your comments on this document are requested. Letters or other written comments provided may be published in the EA. Comments will normally be addressed in the EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the EA.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

AIR QUALITY EMISSIONS CALCULATIONS SPREADSHEETS

Appendix C AQ Emission Calculation Spreadsheets

Summary	Summarizes total emissions by calendar year. Pages C-1 and C-2
Combustion	Estimates emissions from non-road equipment exhaust as well as painting. Pages C-3 to C-6 for CY2007 and Pages C-11 to C-14 for CY 2008
Fugitive	Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust Pages C-7 to C-9 for CY2007 and Pages C-15 to C-17 for CY2008
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions Page C-10 for CY2007 and C-18 for CY 2008
Aircraft Emissions	Estimates the delta change in total F-16 aircraft emissions from baseline to the Proposed Action mission operations. Pages C-19 and C-20
AGE Emissions	Estimates the delta change in total F-16 aerospace ground equipment emissions from baseline to the Proposed Action mission operations. Pages C-21 and C-22
Commuter Emissions	Estimates the total emissions from personally-owned vehicles from additional mission support personnel coming to Homestead ARB. Pages C-23, C-24, and C-25
AQCR Tier Report	Summarizes total emissions for the Southeast Florida Intrastate AQCR Tier Reports for 2001, to be used to compare project to regional emissions. Page C-26

Air Quality Emissions from Proposed Action at Homestead ARB

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)
CY2007	Construction Combustion	0.405	0.182	0.469	0.012	0.014
	Construction Fugitive Dust					0.643
	Delta Change in Commuter Vehicles	1.000	1.000	23.000	0.100	1.000
	Delta Change in Aircraft	11.642	5.409	22.737	ND	2.106
	Delta Change in AGE	8.724	0.765	3.488	0.549	0.731
	TOTAL CY2007	21.771	7.357	49.694	0.661	4.494

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)
CY2008	Construction Combustion	0.177	0.107	0.205	0.005	0.006
	Construction Fugitive Dust					0.281
	Delta Change in Commuter Vehicles	1.000	1.000	23.000	0.100	1.000
	Delta Change in Aircraft	11.642	5.409	22.737	ND	2.106
	Delta Change in AGE	8.724	0.765	3.488	0.549	0.549
	TOTAL CY2008	21.543	7.281	49.430	0.654	3.943

Since future year budgets were not readily available, actual 2001 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Southeast Florida Intrastate AQCR

	Point and Area Sources Combined				
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
2001	237,826	295,787	2,140,038	113,893	114,504

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 8 May 2006.

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
Minimum - 2001	237,826	295,787	2,140,038	113,893	114,504
2007 Emissions	21.77	7.357	49.694	0.661	4.494
Proposed Action %	**0.0092%**	**0.00249%**	**0.00232%**	**0.00058%**	**0.0039%**

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)
Minimum - 2001	237,826	295,787	2,140,038	113,893	114,504
2008 Emissions	21.54	7.281	49.430	0.654	3.943
Proposed Action %	**0.0091%**	**0.0025%**	**0.0023%**	**0.0006%**	**0.0034%**

Construction Combustion Emissions for CY 2007

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Construction

Includes:

1	100% Construct Squadron Operations and Aircraft Maintenance Facility	13,702 ft²	0.315	acres	
2	100% Construct Weapons Release Shop Addition	8,826 ft²	0.203	acres	
3	Demolition Activities	0 ft²	0.000	acres	(no facilities would be demolished as part of BRAC action)
4	Paving Operations	0 ft²	0.000	acres	(no parking lots are required as part of BRAC action)
5	Installation of Utilities	0 ft²	0.000	acres	(no utilitiy trenching activities are required as part of BRAC action)

Total Building Construction Area:	22,528 ft²	(1 and 2)	
Total Demolished Area:	0 ft²	(None)	
Total Paved Area:	0 ft²	(None)	
Total Disturbed Area:	22,528 ft²	(1 and 2)	
Construction Duration:	1.0 year(s)		
Annual Construction Activity:	230 days/yr	(Project will last for 1 year (230 working days))	

Emission Factors Used for Construction Equipment

Reference: EPA AP-42

Emission factors are taken from Table 3-2. Assumptions regarding the type and number of equipment are from Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Motor Grader	1	10.22	1.76	14.98	0.20	0.28
Water Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	3	60.51	9.02	70.69	1.21	2.03

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Total per 10 acres of activity	2	12.94	2.23	18.96	0.26	0.36

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	2	28.75	4.95	42.14	0.58	0.80

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Stationary						
Generator Set	1	11.83	1.47	10.09	0.24	0.47
Industrial Saw	1	17.02	2.12	14.52	0.34	0.68
Welder	1	4.48	0.56	3.83	0.09	0.18
Mobile (non-road)						
Truck	1	20.89	3.60	30.62	0.84	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Total per 10 acres of activity	6	67.16	9.98	78.03	2.02	2.27

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Air Compressor	1	6.83	0.85	5.82	0.14	0.27
Total per 10 acres of activity	1	6.83	0.85	5.82	0.14	0.27

a) Assuming 10 acres of that activity,
(e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) For the purposes of this worksheet ROG = VOC.

c) For this worksheet, SO_2 emissions have been estimated
based on approximate fuel use rate for diesel equipment and the assumption of 500 ppm sulfur diesel fuel. For the average of the equipment fleet, the resulting SO_2 factor was found to be approximately 0.04 times the NOx emission factor for the mobile equipment (based upon 2002 USAF IERA "Air Emissions Inventory Guidance") and 0.02 times the NOx emission factor for all other equipment (based on AP-42, Table 3.4-1)

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	SMAQMD Emission Factors (lb/day)				
		NO_x	VOC	CO	SO_2**	PM_{10}
Grading Equipment	1	3.129	0.466	3.656	0.063	0.105
Paving Equipment	1	0.000	0.000	0.000	0.000	0.000
Demolition Equipment	1	0.000	0.000	0.000	0.000	0.000
Building Construction	1	3.473	0.516	4.035	0.104	0.117
Air Compressor for Architectural Coating	1	0.353	0.044	0.301	0.007	0.014
Architectural Coating			12.233			

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project
Example: Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 ac*((total disturbed area/43560)/10))*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days
Grading:	22,528	0.52	1
Paving:	0	0.00	0
Demolition:	0	0.00	0
Building Construction:	22,528	0.52	230
Architectural Coating	22,528	0.52	20

(from "CY2007 Grading" worksheet)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}
Grading Equipment	3.13	0.47	3.66	0.06	0.10
Paving	-	-	-	-	-
Demolition	-	-	-	-	-
Building Construction	798.86	118.71	928.16	24.03	27.00
Architectural Coatings	7.06	245.53	6.02	0.14	0.28
Total Emissions (lbs):	**809.06**	**364.71**	**937.84**	**24.23**	**27.39**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Project Emissions (lbs)	809.06	364.71	937.84	24.23	27.39
Total Project Emissions (tons)	0.40	0.18	0.47	0.01	0.01

Construction Fugitive Dust Emissions for CY 2007

Calculation of PM_{10} Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	0.52	acres/yr	(From "CY2007 Combustion" worksheet)
Grading days/yr:	0.29	days/yr	(From "CY2007 Grading worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	25	%	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	120	days/yr rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1, Ave. range from 40-240 days/yr on U.S. coastline)	
Wind speed > 12 mph %, I:	30	%	Average annual windspeed (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/florida/miami/
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	3.00	vehicles	(From "CY2007 Grading worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM_{10} Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

TSP - Total Suspended Particulate
VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	4.5	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15	VMT/day	
Construction VMT per acre	8.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM_{10})

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^{a} (W/3)^{b})]\ [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.21 lbs/hr	4.5 hr/acre	0.90 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.37 lbs/VMT	8.4 VMT/acre	19.90 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = 1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 10.1 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 1.01 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM_{10} Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.90 lbs/acre	0.52	NA	0	0.000
Grading	0.80 lbs/acre	0.52	NA	0	0.000
Vehicle Traffic	19.90 lbs/acre	0.52	NA	10	0.005
Erosion of Soil Piles	1.01 lbs/acre/day	0.52	90	47	0.024
Erosion of Graded Surface	26.40 lbs/acre/day	0.52	90	1,229	0.614
TOTAL				1,287	0.64

Soil Disturbance EF: 21.60 lbs/acre
Wind Erosion EF: 27.41 lbs/acre/day

Back calculate to get EF: 8,614.88 lbs/acre/grading day

Construction (Grading) Schedule for CY 2007

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 0.52 acres/yr (from "CY2007 Combustion" Worksheet)
Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	0.52	0.06
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	0.52	0.25
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	0.26	0.26
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	0.26	0.11
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	0.52	0.18
TOTAL								0.87

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 0.87
Qty Equipment: 3.00
Grading days/yr: 0.29

Construction Combustion Emissions for CY 2008

Combustion Emissions of VOC, NO_x, SO_2, CO and PM_{10} Due to Construction

Includes:

100% Construct Avionics/ECM Building

1	Addition	9,849	ft^2	0.226	acres	
2	Demolition Activities	0	ft^2	0.000	acres	(no facilities would be demolished as part of BRAC action)
3	Paving Operations	0	ft^2	0.000	acres	(no parking lots are required as part of BRAC action)
4	Installation of Utilities	0	ft^2	0.000	acres	(no utilitiy trenching activities are required as part of BRAC action)

Total Building Construction Area:	9,849	ft^2	(1)
Total Demolished Area:	0	ft^2	(None)
Total Paved Area:	0	ft^2	(None)
Total Disturbed Area:	9,849	ft^2	(1)
Construction Duration:	1.0	year(s)	
Annual Construction Activity:	230	days/yr	(Project will last for 1 year (230 working days))

Emission Factors Used for Construction Equipment

Reference: EPA AP-42

Emission factors are taken from Table 3-2. Assumptions regarding the type and number of equipment are from Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Bulldozer	1	29.40	3.66	25.09	0.59	1.17
Motor Grader	1	10.22	1.76	14.98	0.20	0.28
Water Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	3	60.51	9.02	70.69	1.21	2.03

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Paver	1	7.93	1.37	11.62	0.16	0.22
Roller	1	5.01	0.86	7.34	0.10	0.14
Total per 10 acres of activity	2	12.94	2.23	18.96	0.26	0.36

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Loader	1	7.86	1.35	11.52	0.16	0.22
Haul Truck	1	20.89	3.60	30.62	0.42	0.58
Total per 10 acres of activity	2	28.75	4.95	42.14	0.58	0.80

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Stationary						
Generator Set	1	11.83	1.47	10.09	0.24	0.47
Industrial Saw	1	17.02	2.12	14.52	0.34	0.68
Welder	1	4.48	0.56	3.83	0.09	0.18
Mobile (non-road)						
Truck	1	20.89	3.60	30.62	0.84	0.58
Forklift	1	4.57	0.79	6.70	0.18	0.13
Crane	1	8.37	1.44	12.27	0.33	0.23
Total per 10 acres of activity	6	67.16	9.98	78.03	2.02	2.27

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)
Air Compressor	1	6.83	0.85	5.82	0.14	0.27
Total per 10 acres of activity	1	6.83	0.85	5.82	0.14	0.27

a) Assuming 10 acres of that activity,
(e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) For the purposes of this worksheet ROG = VOC.

c) For this worksheet, SO_2 emissions have been estimated based on approximate fuel use rate for diesel equipment and the assumption of 500 ppm sulfur diesel fuel. For the average of the equipment fleet, the resulting SO_2 factor was found to be approximately 0.04 times the NOx emission factor for the mobile equipment (based upon 2002 USAF IERA "Air Emissions Inventory Guidance") and 0.02 times the NOx emission factor for all other equipment (based on AP-42, Table 3.4-1)

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	SMAQMD Emission Factors (lb/day)				
		NO_x	VOC	CO	SO_2**	PM_{10}
Grading Equipment	1	1.37	0.20	1.60	0.03	0.05
Paving Equipment	1	0.00	0.00	0.00	0.00	0.00
Demolition Equipment	1	0.00	0.00	0.00	0.00	0.00
Building Construction	1	1.52	0.23	1.76	0.05	0.05
Air Compressor for Architectural Coating	1	0.15	0.02	0.13	0.00	0.01
Architectural Coating			8.09			

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days
Grading:	9,849	0.23	1
Paving:	0	0.00	0
Demolition:	0	0.00	0
Building Construction:	9,849	0.23	230
Architectural Coating	9,849	0.23	20

(from "CY2008 Grading" worksheet)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}
Grading Equipment	1.37	0.20	1.60	0.03	0.05
Paving	-	-	-	-	-
Demolition	-	-	-	-	-
Building Construction	349.26	51.90	405.78	10.50	11.80
Architectural Coatings	3.09	162.15	2.63	0.06	0.12
Total Emissions (lbs):	**353.71**	**214.25**	**410.01**	**10.59**	**11.97**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}
Total Project Emissions (lbs)	353.71	214.25	410.01	10.59	11.97
Total Project Emissions (tons)	0.18	0.11	0.21	0.01	0.01

Construction Fugitive Dust Emissions for CY 2008

Calculation of PM_{10} Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	0.23	acres/yr	(From "CY2008 Combustion" worksheet)
Grading days/yr:	0.13	days/yr	(From "CY2008 Grading worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.56 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	25	%	(http://www.cpc.noaa.gov/products/soilmst/w.shtml)
Annual rainfall days, p:	120	days/yr rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1, Ave. range from 40-240 days/yr on U.S. coastline)	
Wind speed > 12 mph %, I:	30	%	Average annual windspeed (ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/florida/miami/
Fraction of TSP, J:	0.5	per California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993, p. A9-99	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	3.00	vehicles	(From "CY2008 Grading worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM_{10} Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
PM_{10} Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM_{10} for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

TSP - Total Suspended Particulate
VMT - Vehicle Miles Traveled

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	4.5	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15	VMT/day	
Construction VMT per acre	8.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM_{10})

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-1, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-1,
Vehicle Traffic (unpaved roads)	$[(k(s/12)^{a} (W/3)^{b})]\ [(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.21 lbs/hr	4.5 hr/acre	0.90 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.80 lbs/acre
Vehicle Traffic (unpaved roads)	2.37 lbs/VMT	8.4 VMT/acre	19.90 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: California Environmental Quality Act (CEQA) Air Quality Handbook, SCAQMD, 1993.

Soil Piles EF = 1.7(s/1.5)[(365 - p)/235](I/15)(J) = (s)(365 - p)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 10.1 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 1.01 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM_{10} Emissions

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.90 lbs/acre	0.23	NA	0	0.000
Grading	0.80 lbs/acre	0.23	NA	0	0.000
Vehicle Traffic	19.90 lbs/acre	0.23	NA	4	0.002
Erosion of Soil Piles	1.01 lbs/acre/day	0.23	90	21	0.010
Erosion of Graded Surface	26.40 lbs/acre/day	0.23	90	537	0.269
TOTAL				563	0.28

Soil Disturbance EF: 21.60 lbs/acre
Wind Erosion EF: 27.41 lbs/acre/day

Back calculate to get EF: 19,705.15 lbs/acre/grading day

Construction (Grading) Schedule for CY 2008

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 0.23 acres/yr (from "CY2008 Combustion" Worksheet)
Qty Equipment: 3.00 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	0.23	0.03
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	0.23	0.11
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	0.11	0.11
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	0.11	0.05
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	0.23	0.08
TOTAL								0.38

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 0.38
Qty Equipment: 3.00
Grading days/yr: 0.13

Aircraft	Engine	Time in Mode (minutes)				Fuel Flow (lb/hr)			
F-16	F100-PW-100	Idle	App	Int	Mil	Idle	App	Int	Mil
Number of Engines:	1	29.80	3.50	0.80	0.40	1,097	2,746	7,617	10,104

	VOC Emission Index (lb/1000 lb)				CO Emission Index (lb/1000 lb)				NO_x Emission Index (lb/1000 lb)				PM_{10} Emission Index (lb/1000 lb)			
	Idle	App	Int	Mil	Idle	App	Int	Mil	Idle	App	Int	Mil	Idle	App	Int	Mil
	8.60	0.16	0.14	0.28	35.29	3.49	0.91	0.90	4.38	12.33	30.89	39.44	2.06	2.63	2.06	1.33
Emissions (lb/Sortie)	4.69	0.03	0.01	0.02	19.23	0.56	0.09	0.06	2.39	1.98	3.14	2.66	1.12	0.42	0.21	0.09

Example: NO_x emissons for App = (3.50 min/(60 min/hr))*(2746 lb/hr)*(12.33 lb/1000 lb)*(1 engine) = 1.98 lbs/sortie

Notes: EPCpol,mode = (TIM/60)* (FFR/1000) *EF* NE
EPCpol,mode = Emissions per cycle for a particular pollutant during a particular mode (lb/cycle)
TIM = Time in Mode (min/cycle)
60 = Factor for converting minutes to hours (min/hr)
FFR = Fuel Flow Rate per engine (lb/hr)
1000 = Factor for converting lb/hr to 1000 lb/hr
EF = Emission Factor (lb/1000 lb)
NE = Number of Engines on the aircraft

Aircraft	Total Emissions per LTO (lb)				Total Emissions per Closed Pattern (lb)			
	VOC	CO	NO_x	PM_{10}	VOC	CO	NO_x	PM_{10}
F-16	4.74	19.94	10.16	1.84	0.06	0.71	7.77	0.72

Example: LTO NOx emissions per Sortie = Idle (2.39)+App (1.98)+Int(3.14)+Mil(2.66) = 10.16 lb

Notes: Total emissions per aircraft sortie for a particular pollutant are totaled by adding emissions from each TIM cycle.

Total LTOs/Yr	Total Closed Patterns/Yr	Total Sorties/Yr	Baseline Emissions (tons per year)			
			VOC	CO	NO_x	PM_{10}
3,000	300	3,300	7.13	30.02	16.40	2.87

Example: NO_x emissions (tons per year) = (3,000 LTOs)*(10.16 lb/LTO)/(2,000 lb/ton) + (300 Closed Patterns)*(7.77 lb/Closed Pattern)/(2,000 lb/ton)= 16.40 tons per year

Notes: Estimates emissions from F-16 aircraft exhaust.
Fuel flow and emissions data are from USAF IERA "Air Emissions Inventory Guidance", July 2001, Table 3-3 for Criteria Pollutant Emission Factors for Aircraft Engines
A maximum of 3,300 aircraft sorties were flown in calendar year 2005 (including 3,000 LTOs and 300 Closed Patterns).
Criteria emission factors are per engine.
Daily aircraft sorties consist of 12 LTOs and 1.2 closed patterns.
LTOs consist of Idle, Approach, Intermediate, and Military modes. Closed patterns consist of Approach, Intermediate, and Military modes.
There were 250 flying days in calendar year 2005 year at Homestead ARS.

Aircraft	Engine	Time in Mode (minutes)				Fuel Flow (lb/hr)			
F-16	F100-PW-100	Idle	App	Int	Mil	Idle	App	Int	Mil
Number of Engines:	1	29.80	3.50	0.80	0.40	1,097	2,746	7,617	10,104

	VOC Emission Index (lb/1000 lb)				CO Emission Index (lb/1000 lb)				NO_x Emission Index (lb/1000 lb)				PM_{10} Emission Index (lb/1000 lb)			
	Idle	App	Int	Mil	Idle	App	Int	Mil	Idle	App	Int	Mil	Idle	App	Int	Mil
	8.60	0.16	0.14	0.28	35.29	3.49	0.91	0.90	4.38	12.33	30.89	39.44	2.06	2.63	2.06	1.33
Emissions (lb/Sortie)	4.69	0.03	0.01	0.02	19.23	0.56	0.09	0.06	2.39	1.98	3.14	2.66	1.12	0.42	0.21	0.09

Example: NO_x emissons for App = (3.50 min/(60 min/hr))*(2746 lb/hr)*(12.33 lb/1000 lb)*(1 engine) = 1.98 lbs/sortie

Notes: EPCpol,mode = (TIM/60)* (FFR/1000) *EF* NE
EPCpol,mode = Emissions per cycle for a particular pollutant during a particular mode (lb/cycle)
TIM = Time in Mode (min/cycle)
60 = Factor for converting minutes to hours (min/hr)
FFR = Fuel Flow Rate per engine (lb/hr)
1000 = Factor for converting lb/hr to 1000 lb/hr
EF = Emission Factor (lb/1000 lb)
NE = Number of Engines on the aircraft

	Total Emissions per LTO (lb)				Total Emissions per Closed Pattern (lb)			
Aircraft	VOC	CO	NO_x	PM_{10}	VOC	CO	NO_x	PM_{10}
F-16	4.74	19.94	10.16	1.84	0.06	0.71	7.77	0.72

Example: LTO NOx emissions per Sortie = Idle (2.39)+App (1.98)+Int(3.14)+Mil(2.66) = 10.16 lb

Notes: Total emissions per LTO for a particular pollutant are totaled by adding emissions from each TIM cycle.

Total LTOs/Yr	Total Closed Patterns/Yr	Total Sorties/Yr	Proposed Emissions (tons per year)			
			VOC	CO	NO_x	PM_{10}
5,280	317	5,597	12.53	52.75	28.04	4.98

Example: NO_x emissions (tons per year) = (5,280 LTOs)*(10.16 lb/LTO)/(2,000 lb/ton) + (317 Closed Patterns)*(7.77 lb/Closed Pattern)/(2,000 lb/ton)= 28.04 tons per year

Notes: Estimates emissions from F-16 aircraft exhaust.
Fuel flow and emissions data are from USAF IERA "Air Emissions Inventory Guidance", July 2001, Table 3-3 for Criteria Pollutant Emission Factors for Aircraft Engines
A maximum of 5,597 aircraft sorties are proposed as part of the BRAC action (including 5,280 LTOs and 317 Closed Patterns).
Criteria emission factors are per engine.
Proposed daily aircraft sorties would consist of 20 LTOs and 1.2 closed patterns.
LTOs consist of Idle, Approach, Intermediate, and Military modes. Closed patterns consist of Approach, Intermediate, and Military modes.
There would be 264 flying days as part of the Proposed Action at Homestead ARS.

Delta Change from Baseline Emissions to Proposed Action Emissions	VOC	CO	NO_x	PM_{10}
Baseline Emissions	7.13	30.02	16.40	2.87
Proposed Action Emissions	12.53	52.75	28.04	4.98
Delta Change	5.41	22.74	11.64	2.11

Aerospace Ground Equipment (AGE) Emissions

Baseline AGE Emissions

Equipment Description	Equipment Type	Fuel Type	Engine Type	Number of Units	Fuel Usage (gal/yr)	AP-42 Emission Factors (lb/1000 gal)					Note
						NO_x	VOC	CO	SO_x	PM_{10}	
Generator	A/M32A-60A	JP-8	Turbine	12	37,569	33	7.4	150	ND	12.7	[a]
Heater	H-1	Diesel	Int. Combustion	5							
Hydraulic Test Stand	MJ-2A-1	Diesel	Int. Combustion	2							
Generator	B-809	Diesel	Int. Combustion	1							
Generator	A/M32A-86D	Diesel	Int. Combustion	4							
Air Compressor	MC-1A	Diesel	Int. Combustion	3							
Air Compressor	MC-2A	Diesel	Int. Combustion	7							
Air Compressor	7MC-2A	Diesel	Int. Combustion	1							
Air Compressor	MC-7	Diesel	Int. Combustion	3							
Cabin Pressure Tester	AF/M32T-1	Diesel	Int. Combustion	1							
Bomblift	MHU-83C/E	Diesel	Int. Combustion	7							
Bomblift	MJ-1B	Diesel	Int. Combustion	10							
Floodlight	FL-1D	Diesel	Int. Combustion	15							
Floodlight	NF-2D	Diesel	Int. Combustion	2							
Self-Generating Nitrogen Servicing Cart	PD91TRIDM12	Diesel	Int. Combustion	4	46,094	604	49.3	130	39.7	42.5	[b]

Baseline Emissions (tpy)				
NO_x	VOC	CO	SO_x	PM_{10}
14.54	1.28	5.81	0.91	1.22

Example: NO_x emissions (tpy) = ((total JP-8 fuel usage/1000)*Turbine EF/2000) + ((total Diesel fuel usage/1000)*Int. Combustion EF/2000)

Example: NO_x emissions (tpy) = ((37569/1000)*604/2000) + ((46094/1000)*604/2000) = 14.54 tpy

Proposed AGE Emissions

Equipment Description	Equipment Type	Fuel Type	Engine Type	Number of Units	Fuel Usage (gal/yr)	AP-42 Emission Factors (lb/1000 gal)					Note
						NO_x	VOC	CO	SO_x	PM_{10}	
Generator	A/M32A-60A	JP-8	Turbine	13	60,110	33	7.4	150	ND	12.7	[a]
Heater	H-1	Diesel	Int. Combustion	5							
Hydraulic Test Stand	MJ-2A-1	Diesel	Int. Combustion	3							
Generator	B-809	Diesel	Int. Combustion	1							
Generator	A/M32A-86D	Diesel	Int. Combustion	4							
Air Compressor	MC-1A	Diesel	Int. Combustion	3							
Air Compressor	MC-2A	Diesel	Int. Combustion	7							
Air Compressor	7MC-2A	Diesel	Int. Combustion	1							
Air Compressor	MC-7	Diesel	Int. Combustion	4							
Cabin Pressure Tester	AF/M32T-1	Diesel	Int. Combustion	1							
Bomblift	MHU-83C/E	Diesel	Int. Combustion	7							
Bomblift	MJ-1B	Diesel	Int. Combustion	10							
Floodlight	FL-1D	Diesel	Int. Combustion	15							
Floodlight	NF-2D	Diesel	Int. Combustion	2							
Self-Generating Nitrogen Servicing Cart	PD91TRIDM12	Diesel	Int. Combustion	4	73,750	604	49.3	130	39.7	42.5	[b]

Proposed Emissions (tpy)				
NO_x	VOC	CO	SO_x	PM_{10}
23.26	2.04	9.30	1.46	1.95

Note: it is assumed that fuel usage would increase proportionally to number of aircraft (60%) from the Proposed Action.

Example: NO_x emissions (tpy) = ((total JP-8 fuel usage/1000)*Turbine EF/2000) + ((total Diesel fuel usage/1000)*Int. Combustion EF/2000)

Example: NO_x emissions (tpy) = ((60110/1000)*604/2000) + ((73750/1000)*604/2000) = 23.26 tpy

Delta Change in Baseline and Proposed AGE Emissions					
	NO_x	VOC	CO	SO_x	PM_{10}
Baseline Emissions	14.54	1.28	5.81	0.91	1.22
Proposed Emissions	23.26	2.04	9.30	1.46	1.95
Delta Change	8.72	0.77	3.49	0.55	0.73

Source:
MSgt David Howard (482 MXG/M)
23-May-06

[a] Emissions data are from USAF IERA "Air Emissions Inventory Guidance", July 2001, Tables 2-4 for EPA Emission Factors for Uncontrolled Small Diesel Internal Combustion Engines

[b] Emissions data are from USAF IERA "Air Emissions Inventory Guidance", July 2001, Tables 2-6 for Uncontrolled Criteria Pollutant Emission Factors for Specific Types of Diesel/JP-8 Turbine AC

Privately-Owned Vehicle Emissions

As described in Section 2.1.4 of the DOPAA, the proposed program manpower authorizations would be an additional 302 personnel (83 full-time civilian Air Reserve Technicians and 219 part-time Traditional Reservists personnel).
This worksheet estimates the additional privately-owned vehicle commuting emissions expected to result from the Proposed Action.

In general, POV emissions tend to decline as the fleet is replaced with later-model vehicles that have been manufactured to lower emission standards. For this analysis, the impacts of POVs have been estimated for 2007, the earliest year when most of the additional Proposed Action new staff are expected to be on Base.

Step 1 Estimate the Vehicle Miles Traveled (VMT) by Vehicle Class

For this analysis, we have assumed that the commuter fleet corresponding to these additional employees will reflect the passenger vehicle fleet on the roads using a national average vehicle mix. The passenger care VMT data are estimates from the USEPA MOBILE6 and National Mobile Inventory Model (NMIM) modeling program (http://www.epa.gov/otaq/nmim.htm).

USEPA MOBILE6 National Average Vehicle Mix

VClassId	Vehicle Class	Mix
1	LDGV	46.44%
2	LDGT1	6.74%
3	LDGT2	22.42%
4	LDGT3	7.80%
24	MC	3.99%

Assumptions Used To Estimate Mileage

1.2	Riders per vehicle
40	Miles avg. commute round trip
50%	Vehicles do daytime errands/lunch
10	Miles avg. errand/lunch round trip
230	Working Days Per Year
2500*	Baseline Personnel
2802	Proposed Personnel

* Assume 1,000 full-time and 1,500 part-time
** 83 full-time and 209 part-time
* Part-time equals 17 days per year/person

POV Vehicle Miles Traveled Assumed for This Estimate

Description of Vehicle Class	Vehicle Class	POV VMT %	Baseline POV Annual Miles	Proposed POV Annual Miles
Light-duty gasoline vehicles (passenger cars)	LDGV	46.44%	5,832,001	7,653,382
Light-duty gasoline trucks (SUVs, pickups GVWR 0-6000 lbs, LVW 0-3750 lbs)	LDGT1	6.74%	846,419	1,110,762
Light-duty gasoline trucks (GVWR 0-6000 lbs, LVW 3751-5750 lbs)	LDGT2	22.42%	2,815,535	3,694,849
Light-duty gasoline trucks (GVWR 6001-8500 lbs, ALVW 0-5750 lbs)	LDGT3	7.80%	98,135	1,285,452
Motorcycles	MC	3.99%	501,069	657,558
			10,093,159	14,402,003

Example: POV Annual VMT for LDGV = (LDGV VMT %) * (new personnel/riders per vehicle)*(working days per year)*(miles avg. commute round trip)+ (new personnel/riders per vehilce) *(% vehicles doing daytime errands/lunch)*(working days per year)*(miles avg. errand/lunch round trip)

Step 2 Select the Appropriate Air Pollutant Emission Factors (grams per mile) for the POV Fleet

Emission Factors

Emission factors are taken from the USEPA MOBILE5 emissions model, as compiled and published in "Air Emissions Inventory Guidance Document for Mobile Sources and Air Force Installations" Air Force Institute for Environmental Safety and Occupational Health Risk Analysis (AFIERA), July 2001.

All vehicle emissions are calculated assuming that the average commute vehicle is five years old. That is calendar year 2007 emissions estimates assume that the average vehicle in each vehicle class is a 2002 model.

Note that PM_{10} emission factors include both exhaust and "fugitive" emissions (paved road, brake & tire dust, etc.).

Emission Factors in g/mi from MOBILE5 Tables for 2002 Model Year Vehicles in CY2007.

	POV Low Altitude g/mi - 2007				
	NO_x	VOC	CO	SO_2	PM_{10}
LDGV	1.0	1.0	14.6	0.072	0.71
LDGT1	1.1	1.2	16.2	0.096	1.08
LDGT2	1.2	1.2	16.9	0.098	2.58
LDGT3	1.2	1.2	16.9	0.098	2.58
MC	0.9	4.7	22.1	0.032	0.08

Reference: Tables 4-2 through 4-53, (AF IERA, July 2001)
Notes:
LDGT1 and LDGT2 emission factors shown above were taken from AF IERA LDGT1 (0-6000 lbs) emission factors
LDGT3 emission factors shown above were taken from AF IERA LDGT2 (6001-8500 lbs) emission factors

Step 3 Multiply the Emission Factors Times the Annual Vehicle Miles Traveled for Each Vehicle Class

(and convert from grams to tons)

Baseline Commuter Emissions

	POV Emissions by Vehicle Class- 2007				
	NO_x	VOC	CO	SO_2	PM_{10}
LDGV	6.43	6.43	93.86	0.46	4.56
LDGT1	1.03	1.12	15.11	0.09	1.01
LDGT2	3.72	3.72	52.45	0.30	8.01
LDGT3	0.13	0.13	1.83	0.01	0.28
MC	0.50	2.60	12.21	0.02	0.04
Total	**11.81**	**14.00**	**175.46**	**0.88**	**13.90**

Example: LDGV POV emissions for NO_x = (LDGV g/mi EF)*(LDGV POV Annual Miles)/(453 g/lb*2000 lb/ton)

Proposed Commuter Emissions

	POV Emissions by Vehicle Class- 2007				
	NO_x	VOC	CO	SO_2	PM_{10}
LDGV	8.44	8.44	123.17	0.61	5.99
LDGT1	1.35	1.47	19.84	0.12	1.32
LDGT2	4.89	4.89	68.83	0.40	10.51
LDGT3	1.70	1.70	23.95	0.14	3.66
MC	0.65	3.41	16.02	0.02	0.06
Total	**17.02**	**19.90**	**251.80**	**1.29**	**21.53**

Delta Change in Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}
Baseline	6.00	6.00	94.00	0.50	4.00
Proposed	7.00	7.00	117.00	0.60	5.00
Delta Change	**1.00**	**1.00**	**23.00**	**0.10**	**1.00**
Percent Change	**16.00**	**16.00**	**24.00**	**20.00**	**20.00**

Southeast Florida Intrastate AQCR

			Area Source Emissions						Point Source Emissions					
Row #	State	County	CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
SORT														
1	FL	Broward Co	566,452	56,544	20,602	9,483	12,187	70,604	1,888	17,256	769	711	22,378	1,442
2	FL	Indian River Co	49,893	3,913	3,477	1,163	317	6,694	99.6	134	19.2	15.3	9.15	237
3	FL	Martin Co	59,585	5,067	3,765	1,305	396	8,377	2,276	9,643	742	656	19,035	440
4	FL	Miami-Dade Co	657,309	61,926	30,002	13,818	16,730	93,868	5,201	17,454	997	656	12,882	4,088
5	FL	Monroe Co	150,768	5,920	10,881	7,215	764	28,748	828	234	17.8	16.5	61.8	42
6	FL	Okeechobee Co	14,954	1,387	3,817	1,009	109	2,754	111	6	0.08	0.02	0.03	5.47
7	FL	Palm Beach Co	532,758	39,241	23,947	12,476	5,247	64,935	25,142	11,419	11,552	10,858	23,254	2,431
8	FL	St. Lucie Co	71,770	7,146	3,850	1,241	499	10,252	1,003	536	66.1	50.9	24.5	870
Grand Total			2,103,489	181,144	100,341	47,710	36,249	286,232	36,549	56,682	14,163	12,964	77,644	9,555

SOURCE: USEPA - AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 9 May 2006.
*Net Air pollution sources (area and point) in tons per year (2001)
Emissions In Tons Per Year
Year: 2001
Geographic Area: Broward Co, Indian River Co, Martin Co, Miami-Dade Co, Monroe Co, Okeechobee Co, Palm Beach Co, St. Lucie Co, FL.
Pollutants: Carbon Monoxide, Nitrogen Oxides, Particulate (size < 10 micrometers), Particulate (size < 2.5 micrometers), Sulfur Dioxide, Volatile Organic Compounds