Environmental Impact Analysis Process

Final Environmental Assessment for the Military Family Housing Privatization Initiative

United States Air Force
Air Education and Training Command
Columbus Air Force Base, Mississippi

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14. ABSTRACT

This EA addresses the potential environmental consequences to the human and natural environment from the Proposed Action, Alternative 1, and the No Action Alternative associated with the implementation of the MFH Privatization initiative at CAFB, MS. Currently, CAFB has 539 existing housing units distributed among three parcels of land located on CAFB (Capitol Village, Magnolia Village, and State Village). CAFB has a minimum requirement of 453 housing units. The Proposed Action is for the Air Force to convey all 539 existing housing units and associated infrastructure and utilities to a private real estate development and property management company. The Air Force proposes that the developer would then demolish 337 units and construct 251 new units. At completion of the project there would be 453 housing units at CAFB. Alternative 1, a maximum development scenario, is similar to the Proposed Action, except the developer would demolish all 539 units and construct 600 new units. At completion of the project under Alternative 1, there would be 600 housing units at CAFB. Also included in the Proposed Action and Alternative 1 is the potential construction of a 0.5-acre man-made lake approximately 5-6 feet in depth. Finally, the Proposed Action and Alternative 1 would involve the Air Force lease of the land supporting the final housing units to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. Under the No Action Alternative, the Air Force would not implement the MFH privatization program at CAFB and would continue to manage and maintain military family housing in accordance with existing Air Force policy. The Air Force would eventually demolish 86 surplus units (most likely the oldest and least adequate units) to reach the minimum requirement of 453 units. All demolition and construction activities would occur on CAFB property. Resources and issues addressed in the EA include earth resources, water resources, biological resources, air quality land use, socioeconomics and environmental justice, safety, infrastructure, solid waste, hazardous materials and waste and noise.

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FINDING OF NO SIGNIFICANT IMPACT FOR MILITARY FAMILY HOUSING PRIVATIZATION INITIATIVE COLUMBUS AIR FORCE BASE, MISSISSIPPI

AGENCY: United States Air Force, Air Education and Training Command.

PURPOSE: The United States Air Force (USAF) prepared an Environmental Assessment (EA) of the potential environmental consequences of implementing the Military Family Housing (MFH) Privatization Initiative at Columbus Air Force Base (CAFB), MS. The EA was completed pursuant to the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Sections 1500-1508), Department of Defense (DoD) Directive 6050.1, and Air Force Instruction (AFI) 32-7061.

PROPOSED ACTION: The Proposed Action is for the Air Force to convey all 539 existing housing units and associated infrastructure and utilities distributed among three parcels of land located on CAFB (Capitol Village, Magnolia Village, and State Village) to a private real estate development and property management company. The Air Force proposes that the developer demolish 337 units and construct 251 new units. At completion of the project there would be 453 housing units at CAFB. Also included in the project is the potential construction of a 0.5-acre man-made lake approximately 5-6 feet in depth. The Air Force proposes to lease all housing area lands to the developer at initiation of the project. Upon satisfactory demolition of existing housing units at Capital Village, the developer would return 60 acres of leased property at Capitol Village to CAFB for utilization in future planning efforts as needed, to include a 25-meter security standoff/buffer. The Air Force would continue to lease the land supporting the final 453 housing units to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. All demolition and construction activities would occur on CAFB property.

ALTERNATIVE 1: Alternative 1 is similar to the Proposed Action, with the exception of the number of units to be demolished and constructed. Under Alternative 1, the developer would demolish all 539 units and construct 600 new units. At completion of the project there would be 600 housing units at CAFB. Also included is the potential construction of a 0.5-acre man-made lake. All demolition and construction activities would occur on CAFB property.

NO ACTION ALTERNATIVE: Under the No Action Alternative, the Air Force would not implement the MFH privatization program at CAFB. Instead, CAFB would continue to manage and maintain military family housing in accordance with existing Air Force policy. Based on the latest Housing Requirements and Market Analysis (HRMA), CAFB has a requirement to supply 453 housing units. Given that CAFB currently has 539 units, there is a surplus of 86 housing units. It is reasonable to assume that, in the near future, CAFB would demolish these surplus units (most likely the oldest and least adequate units) to reach the minimum HRMA requirement of 453 units. Should the No Action

Alternative be selected, it is likely that demolition of these 86 surplus housing units would eventually occur.

SUMMARY OF FINDINGS:

Earth Resources. Demolition and construction activities would temporarily disturb a maximum of 154 acres under the Proposed Action and 162 acres under Alternative 1. There should be about a 20-percent increase in the amount of impervious surface associated with the Proposed Action and an approximate 50-percent increase under Alternative 1. Best Management Practices (BMPs) and U.S. Environmental Protection Agency (USEPA) and Mississippi Department of Environmental Quality (MDEQ) permitting requirements would be used to limit or eliminate soil movement, stabilize runoff, and control sedimentation during construction. Consequently, impacts to earth resources would not be significant. The soils underlying the area that would support lake development within Capitol Village exhibit impermeable characteristics. Consequently, development of the lake and associated water collection may contribute to the potential for localized flooding in the area if the lake overflows during heavy storm events.

Water Resources. Any potential impacts to stormwater associated with the Proposed Action and Alternatives would be managed through the implementation of a stormwater pollution prevention plan as part of the construction permit requirements enforced by USEPA and the MDEQ. The Plan will include the use of appropriate construction and design BMPs. As described previously, localized flooding in the vicinity of the lake may occur during heavy storm events due to the impermeability of underlying soils.

Biological Resources. Implementation of the Proposed Action and Alternative is not expected to have an impact on threatened or endangered flora or fauna, because none are known to occur on CAFB, and activities would occur in areas that are already substantially disturbed. With exception of the man-made lake, there will be no wetlands impacted by the proposed action and alternatives.

Air Quality. Construction and demolition activities would result in short-term increases in combustion and dust-related emissions. The estimated emissions associated with the Proposed Action and Alternatives are significantly less than 10 percent of Lowndes County's annual air emissions. It is expected these additional emissions would not result in any significant or long-term impacts on the air quality of Lowndes County. Lowndes County is in attainment for all criteria pollutants, and therefore a conformity determination is not required and was not conducted.

Land Use. None of the proposed activities would cause a change in the governing land use plan. Development of a lake under the Proposed Action and Alternative 1 would create potential land use conflicts associated with compatibility of the lake area with

airfield operations. The Federal Aviation Administration recommends a distance of 5 statute miles from approach or departure airspace for wildlife attractants that may cause hazards due to wildlife movement. Development of a lake within Capitol Village would be within 5 miles of the CAFB airfield, and would therefore result in Bird-Aircraft Strike Hazard (BASH) issues. New housing units would be constructed between the 65-75 A-weighted decibel (dBA) Air Installation Compatible Use Zone (AICUZ) noise profile. This noise profile is typically considered incompatible for residential land uses. As a result, housing units in these areas would be constructed with specification to reduce aircraft noise within the units.

Socioeconomics. There would be no substantial population changes within the region surrounding the project location. The number of workers that may migrate to the area is a low proportion to the total population of Lowndes County. There would be a minor benefit to the local economy associated with the influx of workers, potential job creation, and monetary expenditures associated with infrastructure changes as a result of implementing the proposal.

Safety/Protection of Children. The primary safety concern for the Proposed Action and Alternative 1, as evaluated in the attached EA, is the construction of the lake and associated BASH and wildlife issues. Safety concerns associated with the construction/demolition activities under the Proposed Action and Alternatives may pose special risks to children. All applicable occupational safety requirements would be implemented, thereby minimizing the relatively low risk associated with construction activities. If the man-made lake were constructed within the vicinity of the military family housing area, it would pose risks to children during construction and following the project's completion. Water-related deaths rank second in causes of injury to individuals between the ages of one and fourteen. Furthermore, 37 percent of drownings occurred in natural bodies of water including lakes, rivers, and ponds. Risks may arise from unsupervised children playing around the lake or swimming without a personal floatation device.

Infrastructure. Minor short-term disruptions in utility services associated with construction may occur; however, these will be localized and of short duration. There would be only a small short-term increase in the amount of utility consumption in the surrounding area due to the influx of workers to the area. No significant long-term impacts to transportation or utility system components are anticipated as a result of this proposal.

Hazardous Materials and Waste. Construction and demolition activities would not involve the use of any hazardous materials, with the exception of fuel. However, these activities may generate asbestos and lead-based paint waste. These materials would be

handled and disposed of in accordance with Air Force guidance and plan requirements. No adverse impacts associated with hazardous materials or wastes are anticipated.

Solid Waste. It is estimated that approximately 3,857 tons of construction and demolition (C&D) debris will be generated on an annual average basis as a result of the Proposed Action (over five years), and 3,444 tons generated on an annual average over 10 years under Alternative 1. Based on local landfill capacity and current use rates, C&D debris would be recycled or reused to the extent practicable and the remaining debris distributed among the three local landfills to avoid placing a significant burden on the capacity of a single landfill. Consequently, there would be a negligible impact on local landfills.

Noise. Minor short-term noise associated with demolition and construction activities will occur. The installation is dominated by aircraft noise and the amount of noise created by demolition and construction activities is minimal in comparison. Noise associated with residential activities will be close to baseline. The Proposed Action and Alternatives would not significantly contribute to the existing noise environment of CAFB. Thus, there would be no significant impacts.

ENVIRONMENTAL JUSTICE: Activities associated with the Proposed Action and Alternatives will not impose disproportionately high and adverse effects to minority or low-income populations.

PUBLIC INVOLVEMENT: On 23 Jan 05, the Draft EA was released for public comment. No comments were received from the general public, and the few comments received from MDEQ on state regulatory and permit requirements were incorporated into the Final EA. The HRMA is being re-evaluated and may result in a slightly higher housing requirement at CAFB, but much less than the 600 units evaluated in the attached EA.

MAN-MADE LAKE: A 0.5 acre lake would increase the aesthetic value of part of the housing area, but would be in opposition to FAA recommendations. Attraction of migratory birds and waterfowl to the lake presents additional and significant BASH issues. The lake would also attract poisonous snakes and other nuisance wildlife. Migratory birds are protected under the Migratory Bird Treaty Act (16 United States Code 703-712; 1997-Supp), which would result in additional regulatory requirements when planning future activities in or around the lake. At the bare minimum, managing the lake to control the resulting safety and BASH concerns would be a continuing and costly maintenance effort. Although environmental impacts from the lake could be potentially minimized, it is in the best interests of CAFB not to implement a lake. If a lake were to be installed, additional environmental impact analysis would be required so that impacts and required mitigation measures are more thoroughly identified and studied.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): Based on my review of the facts and analysis in the EA, which is attached and incorporated by reference, I conclude that implementation of the Proposed Action or any other alternative (up to 600 housing units), without the man-made lake, will not have a significant impact either by itself or considering cumulative impacts. Accordingly, the requirements of NEPA, the CEQ Regulations, and AFI 32-7061 have been fulfilled, and an environmental impact statement is not required and will not be prepared.

Stephen W. Wilson

STEPHEN W. WILSON
Colonel, USAF
Commander

20 Jul 05
Date

COVER SHEET
FINAL ENVIRONMENTAL ASSESSMENT
MILITARY FAMILY HOUSING PRIVATIZATION INITIATIVE
COLUMBUS AFB, MS

a. *Responsible Agency:* Department of the Air Force, 14th Flying Training Wing (14 FTW), Columbus Air Force Base (CAFB), Mississippi (MS)

b. *Cooperating Agencies*: None

c. *Proposals and Actions*: This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the proposed MILITARY FAMILY HOUSING (MFH) PRIVATIZATION INITIATIVE AT COLUMBUS AIR FORCE BASE, MS. Columbus Air Force Base is located in Lowndes County, MS, approximately 10 miles northwest of the city of Columbus, MS. After considering the potential environmental consequences analyzed for the Proposed Action, Alternative 1, and the No Action Alternative, the U.S. Air Force will decide whether to implement the Proposed Action, Alternative 1, or the No Action Alternative.

d. *Comments and Inquiries*: Comments or inquiries regarding this document should be directed to Mr. Rick Johnson, 14 FTW/PA, 555 Seventh St, Suite 203, Columbus AFB MS, 39710-1009 (662-434-7068).

e. *Designation*: Final Environmental Assessment

f. *Abstract*: This EA addresses the potential environmental consequences to the human and natural environment from the Proposed Action, Alternative 1, and the No Action Alternative associated with the implementation of the MFH Privatization initiative at CAFB, MS. Currently, CAFB has 539 existing housing units distributed among three parcels of land located on CAFB (Capitol Village, Magnolia Village, and State Village). CAFB has a minimum requirement of 453 housing units. The Proposed Action is for the Air Force to convey all 539 existing housing units and associated infrastructure and utilities to a private real estate development and property management company. The Air Force proposes that the developer would then demolish 337 units and construct 251 new units. At completion of the project, there would be 453 housing units at CAFB. Alternative 1, a maximum development scenario, is similar to the Proposed Action, except the developer would demolish all 539 units and construct 600 new units. At completion of the project under Alternative 1, there would be 600 housing units at CAFB. Also included in the Proposed Action and Alternative 1 is the potential construction of a 0.5-acre man-made lake approximately 5-6 feet in depth. Finally, the Proposed Action and Alternative 1 would involve the Air Force lease of the land supporting the final housing units to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. Under the No Action Alternative, the Air Force would not implement the MFH privatization program at CAFB and would continue to manage and maintain military family housing in accordance with existing Air Force policy. The Air Force would eventually demolish 86 surplus units (most likely the oldest and least adequate units) to reach the minimum requirement of 453 units. All demolition and construction activities would occur on CAFB property. Resources and issues addressed in the EA include earth resources, water resources, biological resources, air quality, land use, socioeconomics and environmental justice, safety, infrastructure, solid waste, hazardous materials and waste, and noise.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

§	Section
µ/m^3	Micrograms per Cubic Meter
14 CES	14th Civil Engineering Squadron
14 CES/CEH	Housing Program
14 CES/CEOE	Energy/Utility Program
14 CES/CEOR	Facilities Maintenance
14 CES/CERR	Real Property
14 CES/CEV	Environmental Flight
14 CES/CEVN	Natural Resources Program Office
14 CES/CEVR	Restoration Program
14 FTW	14th Flying Training Wing
14 FTW/PA	14th Flying Training Wing/Public Affairs
14 MDOS/SGOAB	Bioenvironmental Engineering Element
ACAM	Air Conformity Applicability Model
ACBM	Asbestos-Containing Building Materials
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Materials
AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFR	Air Force Regulation
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
ANSI	American National Standards Institute
APC	Air Pollution Control
APZ	Accident Potential Zones
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
BASH	Bird-Aircraft Strike Hazard
BMP	Best Management Practices
C&D	Construction and Demolition
CAA	Clean Air Act
CAFB	Columbus Air Force Base
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGO	Company Grade Officer
CO	Carbon Monoxide
CWA	Clean Water Act
dBA	A-weighted Decibels
dBC	C-Weighted Decibel
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ESQD	Explosive Safety Quantity-Distance
ETS/CEM	Emission Tracking System/Continuous Emissions Monitoring
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency

ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

FGO	Field Grade Officer
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
FONSI	Finding of No Significant Impact
FPMI	FPMI Solutions, Inc.
ft^2	Square Feet
ft^3	Cubic Foot (Feet)
FY	Fiscal Year
GIS	Geographic Information System
GO	General Officer
HRMA	Housing Requirements and Market Analysis
HUD	Housing and Urban Development
HWMP	Hazardous Waste Management Plan
Hz	Hertz
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IMPLAN	Impact Analysis for Planning
IRP	Installation Restoration Program
JNCO	Junior Noncommissioned Officer
kWh	Kilowatt Hours
LBP	Lead-Based Paint
lbs	Pounds
L_{dn}	Daily Day-Night Average Sound Levels
L_{eq}	Equivalent Sound Level
$L_{eq(1)}$	Average Acoustic Energy Over a 1-Hour Period
$L_{eq(8)}$	Average Acoustic Energy Over an 8-Hour Period
$L_{eq(24)}$	Average Acoustic Energy Over a 24-Hour Period
LOS	Level of Service
MCEQ	Mississippi Commission on Environmental Quality
mcf	Thousand Cubic Feet
MCL	Maximum Contaminant Levels
MDEQ	Mississippi Department of Environmental Quality
MFH	Military Family Housing
MGD	Million Gallons per Day
MILCON	Military Construction
mph	Miles per Hour
MS	Mississippi
MSW	Municipal Solid Waste
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NO_x	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRC	National Research Council
O_3	Ozone
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
Pb	Lead
PCB	Polychlorinated Biphenyls
PM_{10}	Particulate Matter Less Than or Equal to 10 Micrometers in Diameter

ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

POL	Petroleum, Oil, and Lubricant
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
RAPCON	Radar Approach and Control
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
ROD	Record of Decision
ROI	Region of Influence
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SEL	Sound Exposure Level
SER	Significant Emissions Rate
SGO	Senior Grade Officer
SIP	State Implementation Plan
SNCO	Senior Noncommissioned Officer
SO_2	Sulfur Dioxide
SWPPP	Stormwater Pollution Prevention Plan
TSCA	Toxic Substances Control Act
TVA	Tennessee Valley Authority
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VA	Veterans Administration
VMT	Vehicle Mile Traveled
VOCs	Volatile Organic Compounds
XRF	X-ray Fluorescence
yd^2	Square Yard(s)
yd^3	Cubic Yard(s)

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1. PURPOSE AND NEED

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The United States Air Force (USAF), Air Education and Training Command (AETC), proposes to privatize its Military Family Housing (MFH) at Columbus Air Force Base (CAFB), Mississippi. The purpose of the Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families will choose to live. In evaluating its current stock of housing units to accommodate this need, the Department of Defense (DoD) has determined that the current condition of DoD-owned housing is poor. About 60 percent of DoD units need to be renovated or replaced (Office of the Secretary of Defense [OSD], 2004). At CAFB, nearly 63 percent of the base's 539 housing units are more than 40 years old and do not meet current Air Force housing standards. The costs of renovating or replacing CAFB housing units are estimated to be $30 million (U.S. Air Force, 2004a).

To attempt to meet the overall DoD need for safe, quality, well-maintained military family housing, the *National Defense Authorization Act of 1996* gave the DoD the authority to engage private sector businesses through a process of housing privatization, wherein the DoD would rely on private sector housing developers to renovate or demolish existing housing units, build new units, and provide the infrastructure needed to support such developments.

Prior to 1998, CAFB had 817 housing units distributed among State Village, Magnolia Village (480 units combined), and Capitol Village (337 units), which were constructed between 1959 and 1961. By 1998, these units showed the effects of age, continuous heavy use, and high occupant turnover and had never been renovated or upgraded. The units required major structural repairs to their roofs, walls, and foundations. In addition, plumbing and electrical systems did not meet current building codes, and the heating and cooling systems were inefficient and required replacement. Bedrooms and kitchens were small and inefficient, and the flooring throughout was heavily worn. Potential health issues associated with asbestos, lead-based paint, and mold also existed in these units.

In 1998, as part of an action to improve CAFB housing under military construction (MILCON) appropriation, all units in the State Village and Magnolia Village housing areas (a total of 480) were approved for demolition, and construction was approved for 481 new units (U.S. Air Force 1998). The 337 units at Capitol Village were to remain "as is." These actions were to occur under a six-phase approach between Fiscal Year (FY) 1999 and FY04. By 2001, a total of 357 housing units in the State Village and Magnolia Village areas had been demolished. The demolition of the remaining 123 inadequate units (55 in State Village, 68 in Magnolia Village) has been congressionally approved and funded, and is currently underway. As a result, these units are not considered part of CAFB's current MFH inventory. Additionally, although

481 new units were approved for construction under that project, funding was discontinued after construction of only 202 units due to the privatization initiative.

As a result of these previously approved actions, CAFB's housing inventory currently is 539 units:

- Capitol Village
  - 337 units built in 1959 – 1961
- State Village
  - 50 units built in 2001 and 2002
- Magnolia Village
  - 152 units built in 2002

Because the inadequate units in State and Magnolia Villages have been approved for demolition under a previous action, and will likely be demolished before implementation of privatization, these 123 units *are not included* in the Proposed Action for MFH privatization. The relationship between the demolition of the 123 units and the privatization effort is addressed in cumulative impacts analysis sections in pertinent resource areas of Chapter 4 of this Environmental Assessment (EA).

Determining the specific need for required housing at CAFB involved estimating the number of appropriate private sector housing units available to military families within 20 miles, or a 60-minute commute. In 2003, a Housing Requirements and Market Analysis (HRMA) was conducted for CAFB to identify the housing units available to military members in the private community. The shortfalls in the available private sector housing were factored into the Total Military Family Housing Requirement for CAFB to determine the number of units that the Air Force needs to provide at Columbus for its personnel.

In July 2004, the Air Force reevaluated the HRMA estimates and determined that the minimum requirement for family housing at CAFB is 453 units (U.S. Air Force, 2004a). As part of the privatization effort, CAFB has developed a number of alternatives that would meet the minimum need for 453 units. Under privatization, all 539 existing family housing units would be conveyed to a private real estate development and property management company. The developer would then propose development scenarios to provide for a minimum of 453 family housing units.

The units would essentially be an investment for the private developer, since the developer would own the units, lease the land from the Air Force, and collect rent from service members while providing maintenance and management. Additional information and details regarding the housing privatization initiative can be found on the DoD housing privatization website at http://www.acq.osd.mil/housing.

1.2 LOCATION OF THE PROPOSED ACTION

CAFB is a USAF training installation under the AETC. The installation covers 4,930.33 acres and is located in Lowndes County, Mississippi, approximately 10 miles northwest of the city of Columbus. Figure 1-1 shows the location of CAFB. Under the Proposed Action, activities would occur within existing CAFB MFH areas, as shown in Figure 1-2. Designated as Parcels A (Capitol Village, 337 units), B (State Village, 50 units), and C (Magnolia Village, 152 units), these housing areas comprise a total of 210 acres (U.S. Air Force, 2004b).

1.3 DECISION TO BE MADE

The decision to be made by the Air Force is, based on the results of the analysis in this EA, whether to proceed with military family housing privatization through the implementation of the Proposed Action or Alternative, or to take no action.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This EA identifies, describes, and evaluates the potential environmental impacts that may result from the implementation of MFH housing privatization under the Proposed Action and the Alternative Action, as well as the No Action Alternative. As appropriate, the affected environment and environmental consequences of the Proposed Action and Alternatives may be described in terms of site-specific descriptions or regional overview. Finally, the EA identifies measures that would prevent or minimize environmental impacts.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on 11 February 1994. In the EO, the President instructed each Federal Agency to make "achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Federal Interagency Working Group on Environmental Justice defines *adverse* as "having deleterious effects on human health or the environment that is significant, unacceptable, or above generally accepted norms."

Figure 1-1. Location of Columbus AFB, MS

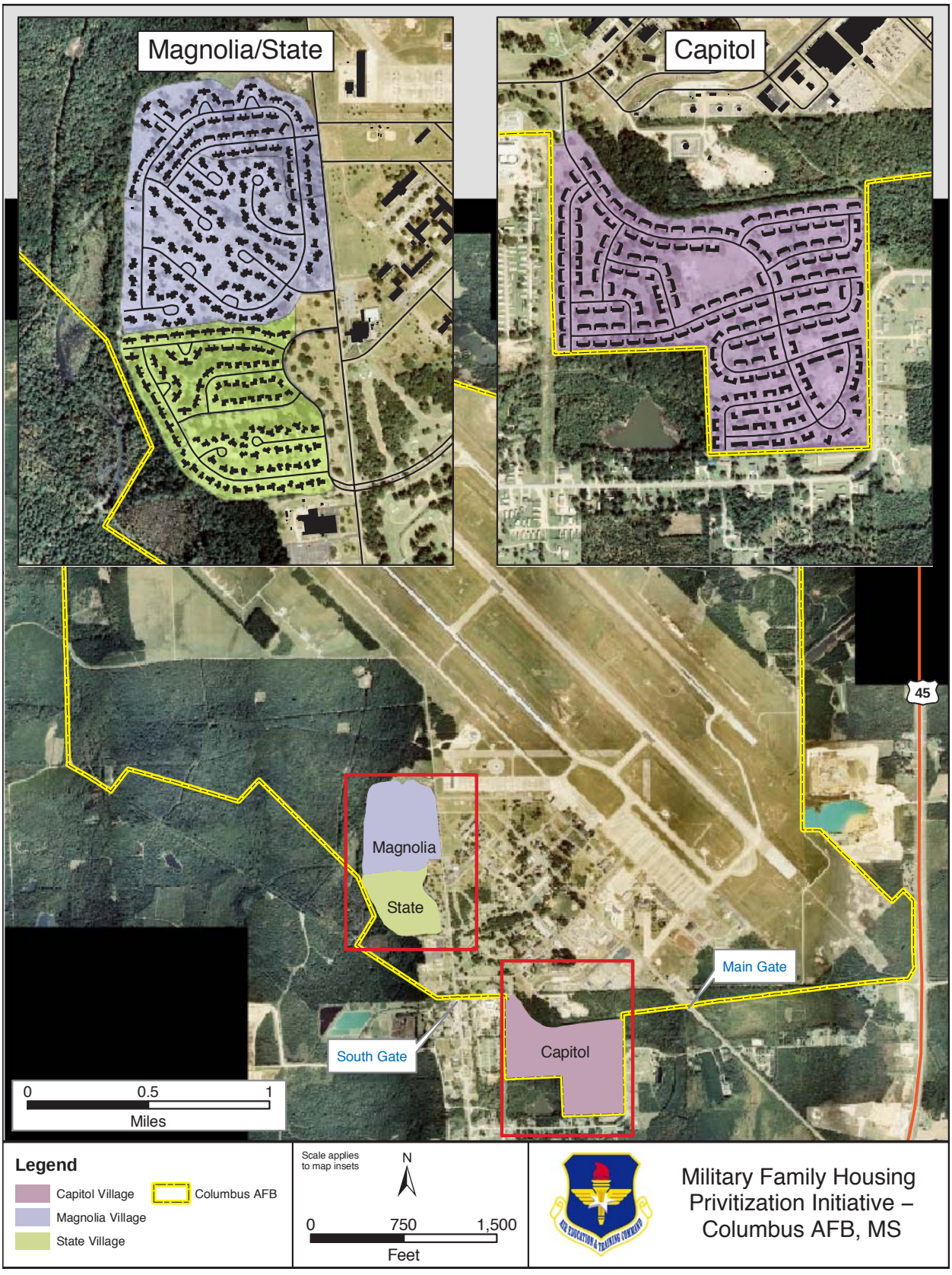

Figure 1-2. Location of Military Family Housing Areas at CAFB, MS

Based on analysis of impacts in the EA, a determination on the significance of impacts will be made in a decision document. If anticipated impacts would be significant, the Air Force would either prepare an Environmental Impact Statement (EIS) or would not implement the proposal. If impacts would not be significant, a Finding of No Significant Impact (FONSI) would be prepared. Accordingly, Environmental Justice will be addressed either in a FONSI or in a Record of Decision (ROD) based on an EIS.

1.4.1 Identification of Environmental Issues Associated With the Proposed Action and Alternatives

Inapplicable Environmental Issues

Based on preliminary issue screening, the following issue and resource area was found to have no applicability to the Proposed Action or Alternatives, as there would be no potential for direct, indirect, or cumulative impacts. Therefore, this issue was not carried forward for detailed analysis within this EA.

Cultural Resources/Historic Sites – There are no known cultural resources or known potential for such occurrences, nor have any historic sites or structures been identified, within the MFH areas at Columbus AFB (U.S. Air Force, 1995). Therefore, no impacts to cultural resources or historic sites are expected and analysis of impacts to these resource areas is not necessary. Any unexpected findings of artifacts would be immediately reported to the CAFB 14 CES/CEVN, Cultural Resources Program Office.

Applicable Environmental Issues

The resources that could be impacted and are therefore analyzed in the EA include: earth resources, water resources (including floodplains), biological resources, air quality, land use, socioeconomics and environmental justice, safety and protection of children, infrastructure, solid waste, hazardous materials and wastes, and noise. Issues associated directly with the potential construction of a man-made lake, which would not have been addressed otherwise, are as follows.

Water Resources – Depending on the depth of the water table, potential impacts to groundwater may result from the construction of a man-made lake in Capitol Village should the lake interact with the water table. Interaction with the water table may result in the establishment of a new direct recharge point. In addition, localized flooding may result during heavy storm events if the underlying soils are impermeable and prone to flooding.

Wetlands – Construction of a man-made lake in Capitol Village may potentially result in the creation of a new wetland area where one had not previously existed if the lake area exhibits the qualities of a wetland (as described in Section 3.3.2.3). Consequently, there may be additional requirements associated with housing construction and future planning in the area.

Wildlife – Standing water bodies are known to attract several different species of waterfowl, wading birds, and other migratory birds. Under the Migratory Bird Treaty Act of 1918 (16 United States Code [USC] §§ 703-712, 3 July 1918, as amended), migratory birds are protected from harm. Construction of a man-made lake may attract migratory birds in the future, thereby resulting in the need for consideration of impacts to migratory birds during future planning activities, as well as create a potential bird strike hazard for installation aircraft.

Safety – Addition of a man-made lake in a residential area may also pose safety risks to children. Additionally, the Federal Aviation Administration recommends a distance of five (5) statute miles from approach or departure airspace for wildlife attractants that may cause wildlife movement into or across approach or departure airspace, resulting in a hazard for aircraft. A 0.5-acre lake would be considered a wildlife attractant. The presence of the lake would require extensive Bird-Aircraft Strike Hazard Program coordination to ensure personnel safety during flight operations.

1.5 APPLICABLE REGULATORY REQUIREMENTS

National Environmental Policy Act

Federal agencies are required to consider the environmental consequences of proposed actions in the decision-making process under the National Environmental Policy Act (NEPA) of 1969. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. In 1978, the CEQ issued regulations implementing the NEPA process under 40 Code of Federal Regulations (CFR) Parts 1500-1508. The CEQ regulations require that the federal agency considering an action evaluate or assess the potential consequences of the action or alternatives to the action, which may result in the need for an environmental assessment or environmental impact statement. Under 40 CFR:

- An EA must briefly provide evidence and analysis to determine whether the Proposed Action might have significant effects that would require the preparation of an EIS. If the analysis determines that the environmental effects will not be significant, a FONSI will be prepared.
- An EA must facilitate the preparation of an EIS if required.

The activities that are addressed within this chapter constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action will include the development of an EA to address the environmental issues related to the proposed activities. The USAF implementing procedures for NEPA are contained in Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR 989 et seq.).

Clean Air Act

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provides the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare.

Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC § 1251 *et seq*.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA, EO 11990, *Protection of Wetlands,* and EO 11988, *Floodplain Management,* regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands.

Cultural Resources Regulatory Requirements

The National Historic Preservation Act (NHPA) of 1966 (16 USC § 470) established the National Register of Historic Places (National Register) and the Advisory Council on Historic Preservation (ACHP), outlining procedures for the management of cultural resources on federal property.

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

Other Regulatory Requirements

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of

these categories are not disproportionately affected by any federal action. Also, under the Migratory Bird Treaty Act of 1918 (16 USC §§ 703-712, July 3, 1918, as amended), migratory birds are protected from harm. In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires federal agencies to evaluate the effects of actions on migratory birds with an emphasis on species of concern.

Environmental Coordination

EO 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate the potential environmental impacts of a proposed action. Comments from these agencies are subsequently incorporated into the Environmental Impact Analysis Process (EIAP). The IICEP process for this EA is described in Appendix A.

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into seven chapters. Chapter 1 contains a statement of the purpose and need for the action and the location of the Proposed Action. It also provides a summary of the scope of the environmental review, the decision to be made, identification of applicable regulatory requirements, and a description of the organization of the EA.

Chapter 2 contains a brief introduction, describes the history of the formulation of alternatives, describes the alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, describes the No Action and other action alternatives, summarizes other actions anticipated in the region of influence, and provides a comparison matrix of environmental effects for all alternatives. This section also identifies the preferred alternative and discusses regulatory requirements and/or best management practices (BMPs), as required.

Chapter 3 contains a general description of the current conditions of the resources that could be affected by the Proposed Action. Chapter 4 is an analysis of the environmental consequences of the Proposed Action, the action alternative, and the No Action Alternative. Chapter 5 lists the preparers of this document. Chapter 6 lists persons and agencies consulted in the preparation of this EA. Chapter 7 is a list of source documents relevant to the preparation of this EA. Appendix A contains all interagency correspondence and public involvement regarding the Proposed Action, and Appendix B contains additional materials that are relevant to the resource areas discussed in Chapters 3 and 4.

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2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Through privatization, the Air Force proposes to convey 539 existing housing units distributed among three parcels of land (including infrastructure and utilities) located on CAFB to a private real estate development and property management company. Of these units, the Air Force proposes that the developer would demolish a certain number of units and then construct new units to meet CAFB housing demands. All demolition and construction activities would occur on CAFB property. The Air Force proposes to lease the affected real property to the developer for a period of 50 years. The Proposed Action and Alternatives involve variations on the number of units to be demolished and constructed to meet the minimum CAFB requirement of 453 MFH units. The No Action Alternative would involve the management and maintenance of existing housing units in their current locations under current management policy. This chapter describes the history of the formulation of these alternatives, describes the alternatives in detail, and provides a summary of the activities and issues associated with each alternative.

2.2 HISTORY OF THE FORMULATION OF THE ALTERNATIVES

The privatization initiative required CAFB to assess the status of its current housing inventory and identify actions that would allow for the provision of adequate housing based on CAFB's minimum HRMA housing requirement of 453 units. During this process, alternatives were identified that could potentially meet the need for providing CAFB families with adequate housing. Criteria for the development of alternatives were identified and are described below.

Selection criteria for the alternatives include the following considerations.

- All MFH units must remain within the CAFB boundary due to funding issues. Placing housing off-base would significantly increase the cost, having a negative impact on the project's feasibility.
- All MFH must meet current Air Force housing standards.
- In order to meet the minimum CAFB HRMA requirement, the total number of MFH units must be no less than 453.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Siting the housing areas outside of the existing MFH footprint was considered but eliminated from further consideration. The only viable areas outside of the existing housing areas that are large enough to accommodate the need for additional on-base housing are located to the immediate northwest of existing housing and in the southwest corner of the base. Both areas are undeveloped, contain wetlands, and are within the 100-year floodplain. However, utilizing these areas was not necessary since the existing housing areas could accommodate the need with minimal impact. Therefore, these two areas were initially considered as alternatives but eliminated from further consideration due to the potential for significant environmental impacts and excessive costs.

2.4 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action would involve the following activities.

- Initial conveyance of 539 existing housing units and associated infrastructure (e.g., roads) and utilities distributed among Capitol Village, State Village, and Magnolia Village to a private real estate development and property management company.
  - 202 of these units would remain "as-is" and no action would occur at these units.
    - State Village: 50 units
    - Magnolia Village: 152 units
- Initial lease of all land supporting housing to the developer.
- Demolition of 337 units through a phased approach.
  - Capitol Village: 337 units
- Upon satisfactory demolition of existing housing units at Capitol Village, the developer would return 60 acres of leased property at Capitol Village to CAFB for utilization in future planning efforts as needed, to include a 25-meter security standoff.
- Construction of 251 new units through a phased approach.
  - Capitol Village: 31 single-family units
  - State Village: 116 single-family units
  - Magnolia Village: 104 single-family units
- The potential construction of a 0.5-acre man-made lake in Capitol Village (identified as a desired feature of the privatization effort, but not a requirement).

At completion of the project, 453 units would be owned and operated by a private developer on behalf of CAFB's military families. The Air Force would continue to lease the land supporting the final 453 housing units to the developer for a period of 50 years. This would meet CAFB's minimum housing requirement. All demolition and construction activities would occur on CAFB property. Table 2-1 provides a summary of the project details by housing area. Figures 2-1 and 2-2 at the end of Section 2.5 provide a graphical representation.

Table 2-1. Proposed Action Project-Related Activities

Existing Housing Area	Size of Leased Area (Acres)	Number of Units Currently Available for Conveyance	Year Built	Project-Related Activities		Total End-State Units
				Demolition	Construction	
				Maximum # Units	Maximum # Units *Single Family*	
Capitol Village	99	337	1959-1961	337	31	**453**
State Village	42	50	2001-2002	0	116	
Magnolia Village	69	152	2002	0	104	
Total	***210***	***539***	-	***337***	***251***	

Demolition and construction activities would take place over approximately 154 acres of land. The developer would plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage a rental housing development, to include all paving and drainage, as well as any utilities conveyed to or constructed by the developer. Plans may also involve the addition of quality-of-life improvements, such as community recreation centers, playgrounds, etc., to support the housing areas. As a result, a certain number of acres would be generally available at each location for future community services.

For the EA, the most reasonably foreseeable development scenario for each alternative, based on existing housing area logistics and design/layout, is utilized for impact analysis. Construction of the new units, as well as infrastructure improvements, could take place anywhere within the identified project areas as the exact size and location of construction footprints have yet to be determined. Square footage of driveways and/or roadways to be constructed or demolished would be provided with the developer's proposal. For analysis purposes, assumptions are made based on the amount of impervious surfaces associated with existing housing areas, which is detailed in the pertinent resource sections of the EA. When detailed design plans are available from the chosen developer, the Air Force would review the proposal and determine if supplemental environmental impact analysis would be required.

Table 2-2 provides an estimated total maximum square footage for both construction and demolition (C&D). The estimate for demolition was derived from information provided by the CAFB housing inventory. The estimate for construction was generated from the number of units

and square footage requirements (based on pay grade and bedroom count) identified in the CAFB 2003 HRMA. For example, a three-bedroom house for a Junior Noncommissioned Officer has a maximum gross square footage requirement of 1,760 square feet. The numbers and sizes of units to be constructed under the Proposed Action are shown in Table 2-2.

Table 2-2. Estimated Total Gross Square Footage of Construction and Demolition Under the Proposed Action

Number of Bedrooms	Pay Grade		Demolition		*Construction		
			Max # of Units	Total Gross Sq Footage	Max # of Units	Max Gross Sq Footage/Unit	Total Gross Sq Footage
3	JNCO	E1-E6	252	465,444	31	1,760	**560,770**
	SNCO	E7-E8			35	2,050	
	CGO	O1-O3					
	Prestige/ FGO	E-9/O4-O5			157	2,300	
4	JNCO	E1-E6	85		2	2,220	
	SNCO	E7-E8			13	2,500	
	CGO	O1-O3					
	Prestige/ FGO	E-9/O4-O5			7	2,700	
	SGO	O6			6	2,920	
	GO	O7			0	4,060	
5	JNCO	E1-E6	0			N/A	
	Prestige	E-9					
Total	*N/A*		*337*		*251*	*N/A*	

N/A = Not Applicable; JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; CGO = Company Grade Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer
*Source: U.S. Air Force, 2004a

Table 2-3 provides a summary of the project timeline scenario under the Proposed Action.

Table 2-3. Projected Timeline Scenario for Construction and Demolition Activities Under the Proposed Action

Activity	Year					
	2006	**2007**	**2008**	**2009**	**2010**	**Total**
Demolition						
3-Bedroom	50	50	50	50	52	252
4-Bedroom	0			23	62	85
Sub-Total	***50***	***50***	***50***	***73***	***114***	***337***
Construction						
3-Bedroom	23	50	50	50	50	223
4-Bedroom	28	0				28
Sub-Total	***51***	***50***	***50***	***50***	***50***	***251***

2.5 ALTERNATIVE 1: MAXIMUM DEVELOPMENT SCENARIO

Alternative 1 would involve the following activities:

- Initial conveyance of 539 existing housing units and associated infrastructure (e.g., roads) and utilities distributed among Capitol Village, State Village, and Magnolia Village to a private real estate development and property management company.
- Initial lease of all land supporting housing to the developer.
- Demolition of 539 existing units through a phased approach.
  - Capitol Village: 337 units
  - State Village: 50 units
  - Magnolia Village: 152 units
- Upon satisfactory demolition of existing housing units at Capitol Village, the developer would return 60 acres of leased property at Capitol Village to CAFB for utilization in future planning efforts as needed, to include a 25-meter security standoff.
- Construction of 600 new units at four structures per acre through a phased approach.
  - Capitol Village: Maximum of 111 single-family units
  - State Village: Maximum of 138 single-family units
  - Magnolia Village: 79 single-family units; 272 multi-family units (136 duplexes)
- The potential construction of a 0.5-acre man-made lake in Capitol Village (identified as a desired feature of the privatization effort, but not a requirement).

At the completion of the project, under Alternative 1, a maximum of 600 units would be owned and operated by a private developer on behalf of CAFB's military families. The Air Force would continue to lease the land supporting the final 600 housing units to the developer for a period of 50 years. By allowing for the potential for a total of 600 units, CAFB maintains maximum flexibility in planning for future housing requirements. All demolition and construction activities would occur on CAFB property. Table 2-4 provides a summary of the project details grouped by housing area, while Figures 2-1 and 2-2 provide a graphical representation.

Table 2-4. Alternative 1 Project-Related Activities

Existing Housing Area	Size of Leased Area (Acres)	Number of Units Currently Available for Conveyance	Year Built	Project-Related Activities			Total End-State Units
				Demolition	Construction		
				Max # Units	Maximum # Units		
					Single Family	*Multiple Family*	
Capitol Village	99	337	1959-1961	337	111	0	**600**
State Village	42	50	2001-2002	50	138	0	
Magnolia Village	69	152	2002	152	79	272*	
Total	***210***	***539***	-	***539***	***600***		

* 272 multi-family units equates to 136 duplex structures

Demolition activities under Alternative 1 would take place over approximately 162 acres of land. The privatization process would be the same as that described under the Proposed Action. Once all demolition and construction has been completed, there would be 600 family housing units on CAFB owned and operated by a private developer, while CAFB would retain ownership of the land underlying the housing units. The numbers and sizes of units to be constructed under Alternative 1, which has been estimated by applying the maximum square footage requirement by bedroom-count size standards for each pay grade, is shown below in Table 2-5.

Table 2-5. Estimated Total Gross Square Footage of Construction and Demolition Under Alternative 1

Number of Bedrooms	Pay Grade		Demolition		Construction		
			Max # of Units	Total Gross Sq Footage	Max # of Units	Max Gross Sq Footage/Unit	Total Gross Sq Footage
3	JNCO	E1-E6	414	818,752	155	1,760	**1,221,260**
	SNCO	E7-E8			29	2,050	
	CGO	O1-O3			311		
	Prestige/ FGO	E-9/O4-O5			40	2,300	
4	JNCO	E1-E6	119		27	2,220	
	SNCO	E7-E8			8	2,500	
	CGO	O1-O3			14		
	Prestige/ FGO	E-9/O4-O5			10	2,700	
	SGO	O6			6	2,920	
5	JNCO	E1-E6	5		0	N/A	
	Prestige	E-9	1				
Total	*N/A*		*539*		*600*	*N/A*	

N/A = Not Applicable, JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; CGO = Company Grade Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer

Figure 2-1. Proposed Action and Alternative Project Activities (Magnolia Village and State Village)

Figure 2-2. Proposed Action and Alternative Project Activities (Capitol Village)

Table 2-6 provides a summary of the project timeline scenario under Alternative 1.

Table 2-6. Projected Timeline Scenario for Construction and Demolition Activities Under Alternative 1

Activity	Year										
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Demolition											
3-Bedroom	78	78	78	58	48	48	26	0			**414**
4-Bedroom	0			19	66	34	0				**119**
5-Bedroom				0		6					**6**
Sub-Total	***78***	***78***	***78***	***77***	***114***	***88***	***26***	***0***	***0***	***0***	*539*
Construction											
3-Bedroom	75	75	75	75	50	50	50	35	25	25	**535**
4-Bedroom	25	25	15	0							**65**
Sub-Total	***100***	***100***	***90***	***75***	***50***	***50***	***50***	***35***	***25***	***25***	***600***

2.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, the Air Force would not implement the MFH privatization program at CAFB. Instead, the CAFB would continue to manage and maintain military family housing in accordance with existing Air Force policy. Based on the HRMA, CAFB has a requirement to supply 453 housing units. Given that CAFB currently has 539 units, there is a surplus of 86 housing units. It is reasonable to assume that, in the near future, CAFB would demolish these surplus units (most likely the oldest and least adequate units) to reach the minimum HRMA requirement of 453 units. Should the No Action Alternative be selected, it is likely that demolition of surplus housing units would eventually occur.

2.7 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS IN THE REGION OF INFLUENCE

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the region of influence of the project. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, or recently completed is required. At this time there are no known off-base projects planned or ongoing that would contribute in a cumulative manner to potential impacts associated with this Proposed Action or Alternatives. Short- and long-term planning efforts at CAFB include this action as well as several others. Recently completed projects include the following.

- Demolition and Construction of MFH Units. As mentioned previously, 357 units have been demolished since 1999, and 202 units were constructed between 2001 and 2002.
- New dormitory construction and renovation of Dormitory 544 in 2001

- Construction of a new Corrosion Control Facility
- Construction of an addition to the library
- Construction of a new Radar Approach and Control (RAPCON) facility

On-going projects include:

- Demolition of 123 MFH Units. 123 MFH units (68 in Magnolia Village and 55 in State Village) are scheduled for demolition in 2005.
- Enlargement and alteration of the existing gymnasium to a fitness center, including a new Health and Wellness Center
- Construction of aircraft sun shelters
- Construction of Military Working Dog kennels
- Construction of a new Digital Airport Surveillance Radar
- Construction of a new Security Forces warehouse

Based on information presented in the CAFB General Plan (U.S. Air Force, 2003), reasonably foreseeable planning efforts at CAFB include the following major projects.

- Construction of a new 3-Bay Fuel Systems Maintenance Dock
- Construction of a new Non-Destructive Inspection Facility
- Construction of a T-6 Contractor Operated Main Base Supply Warehouse
- Construction of additional hangar maintenance space
- Construction of a new Logistics Complex
- Enlargement of the Education Center
- Construction of new Military Family Housing Office
- Construction of a new Fire Station

CAFB and the local community update facilities on a continual basis, as necessary. These planned activities have the potential to generate environmental impacts that could exacerbate impacts associated with the proposal described in this chapter unless projects are planned and implemented with consideration for this potential. Each of the federal actions listed above either have been or will be the subject of subsequent NEPA analysis, which will evaluate the existing environment at the time of each proposal. The existing environment described in each of those subsequent NEPA documents will include the actions of this proposal.

2.8 SUMMARY OF IMPACTS

Potential impacts resulting from the Proposed Action, the Alternative Action, and the No Action are summarized in Table 2-7.

Table 2-7. Summary of Potential Impacts

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Earth Resources	It is estimated that approximately 154 acres would be temporarily disturbed as a result of demolition and construction activities. There would be an approximate 20% increase in the amount of impervious surface within the housing areas at CAFB. Construction and design best management practices (BMPs) would be employed to minimize the potential for erosion and, therefore, impacts to earth resources would not be significant. Examples of BMPs are sedimentation ponds and well-maintained silt fencing, which limit or eliminate soil movement, stabilization of runoff and sedimentation control during construction. Specific BMPs to be employed would be determined by permitting requirements associated with the project. The development of a lake may result in flooding due to underlying soil impermeability. Consequently, a state-certified engineer would be involved in the design of the lake to determine the most suitable specifications to minimize any potential impacts associated with flooding. Given the implementation of BMPs and permit requirements, no significant impacts are anticipated.	It is estimated that approximately 162 acres would be temporarily disturbed as a result of demolition and construction activities. There would be a net increase of about 49% in the amount of impervious surface due to the increase in the number of units at CAFB over baseline conditions. All other impacts and associated BMPs and regulatory requirements would be the same as those described under the Proposed Action.	The No Action Alternative would involve the eventual demolition of 86 units. There would be no significant impacts associated with the No Action Alternative. However, typical construction/demolition BMPs for erosion control would be necessary during demolition.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Water Resources	There would be a net increase in the amount of impervious surface, and therefore an increase in stormwater runoff. Any potential impacts to stormwater associated with the Proposed Action would be managed through the implementation of a stormwater pollution prevention plan as part of the construction permit requirements enforced by USEPA and the State of Mississippi, which would include the use of appropriate construction BMPs. A state-certified engineer would be involved in the design of the lake to determine the most suitable specifications to minimize any potential impacts associated with flooding. Given the implementation of BMPs and permit requirements, no significant impacts are anticipated.	There would be a net increase in the amount of impervious surface, and therefore an increase in stormwater runoff. Any potential impacts, permit requirements, and BMPs associated with stormwater under Alternative 1 would be the same as those described under the Proposed Action. Lake construction impacts would be the same as those described under the Proposed Action. Given the implementation of BMPs and permit requirements, no significant impacts are anticipated.	The No Action Alternative would involve the eventual demolition of 86 units. There would be no new construction of housing units or a lake. Typical construction/ demolition BMPs for erosion control would be necessary during demolition. No impacts to water resources would occur.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Biological Resources	The Proposed Action is not expected to have an impact on threatened or endangered flora or fauna because there are none known to occur on CAFB, and activities would occur in areas that are already substantially disturbed. There would be no wetlands impacted by the action. However, while the 0.5-acre man-made lake would create a new isolated wetland that would not immediately fall under the jurisdiction of any federal or state program, the lake would be periodically assessed to determine its status as a wetland, as a change in status may result in the need for compliance with EO 11990, *Protection of Wetlands*, for future development activities within Capitol Village. The 0.5-acre lake may attract migratory birds, which are protected under the Migratory Bird Treaty Act (16 USC 703 - 712; 1997-Supp). Use of the lake by migratory birds may potentially result in additional regulatory requirements when planning future activities in or around the lake. Attraction of migratory birds and waterfowl to the lake also presents Bird-Aircraft Strike Hazard (BASH) issues due to the potential for flocks to collide with aircraft. In an effort to reduce or eliminate any BASH issues, the proposed lake would be designed to provide less attractive habitat to waterfowl. The lake would require extensive coordination with the CAFB BASH program office to ensure that any potential impacts are minimized. Given the implementation of BMPs and permit requirements, no significant impacts are anticipated.	Potential impacts and associated coordination would be the same as those described under the Proposed Action.	The No Action Alternative would involve the eventual demolition of 86 units. There would be no new construction of housing units or a lake. Consequently, no impacts to biological resources would occur.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Air Quality	As a result of construction activities under the proposal, annual emissions over the life of the project (5 years) would increase during the duration of the construction and grading as follows: 26 tons of carbon monoxide (CO), 3 tons of volatile organic compounds (VOCs), 8.5 tons of nitrogen oxides (NO_x), 10 tons of particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), and 1 ton of sulfur dioxide (SO_2). Lowndes County is in attainment for all criteria pollutants, and therefore a conformity determination is not required. It is expected that these additional emissions would not result in any long-term impacts on the air quality of Lowndes County.	As a result of construction activities under the proposal, annual emissions over the life of the project (10 years) would increase during the duration of the construction and grading as follows: 30 tons of CO, 3.6 tons of VOCs, 10 tons of NO_x, 13 tons of PM_{10}, and 1 ton of SO_2. Lowndes County is in attainment for all criteria pollutants, and therefore a conformity determination is not required. It is expected that these additional emissions would not result in any long-term impacts on the air quality of Lowndes County.	The No Action Alternative would involve the eventual demolition of 86 units. There would be no new construction of housing units or a lake. There would be only a minimal increase in air emissions associated with the demolition activity. Consequently, no adverse impacts to air quality would occur.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Land Use	None of the proposed activities would cause a change in the governing land use plan. However, development of a lake under the Proposed Action would create potential land use conflicts associated with compatibility of the lake area with airfield operations. The Federal Aviation Administration (FAA) recommends a distance of five statute miles from approach or departure airspace for wildlife attractants that may cause hazards due to wildlife movement. Development of a lake at Capitol Village would be within five miles of the CAFB airfield, and may therefore result in BASH issues. Extensive coordination with the BASH program office would be required during the design and phase of lake development, as well as during the operation and maintenance of the lake area. New housing units would be constructed between the 65-75 A-weighted decibels (dBA) Air Installation Compatible Use Zone (AICUZ) noise profile. This noise profile is typically considered incompatible for residential land uses. As a result, housing units in these areas would be constructed with specifications to reduce aircraft noise within the units. Given the implementation of BMPs and permit requirements, no significant impacts are anticipated.	Potential impacts and associated BMPs and coordination would be the same as those described under the Proposed Action.	The No Action Alternative would involve the eventual demolition of 86 units. There would be no new construction of housing units or a lake. Consequently, no impacts associated with land use would occur.
Socioeconomics and Environmental Justice	There would be no substantial population changes within the region of influence. The number of workers that may migrate to the area is estimated at about 200, which is less than 1 percent of the total population of Lowndes County. There would be a minor benefit to the local economy associated with the influx of workers, potential job creation, and monetary expenditures associated with infrastructure changes as a result of implementing the proposal. Because there are no impacts anticipated as a result of this alternative, there would be no potential to disproportionately impact low-income or minority populations.	Impacts as a result of Alternative 1 would be expected to be similar to the Proposed Action.	The No Action Alternative would involve the eventual demolition of 86 units. Job creation and monetary expenditures would be substantially less that the Proposed Action or Alternative 1. However, there would still be minimal economic benefit to the local community.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Safety/Protection of Children	During normal construction activities, catastrophic accidents are rare. Strict adherence to all applicable occupational safety requirements would minimize the relatively low risk associated with these activities. The primary safety concern for the Proposed Action is the construction of the lake and associated BASH issue. Extensive coordination with the CAFB BASH program office would be required during the design and operation of the lake. Safety concerns associated with the C&D activities under the Proposed Action may pose special risks to children. The developer would be required to include project design and safety precautions to protect children in the residential areas surrounding the work sites. Construction of the man-made lake may pose risks to children during construction and following the project's completion. Risks may arise from children playing in or around the lake, who are unsupervised, without a personal floatation device, or unable to swim. Consequently, residents would be educated regarding the safety hazards to children associated with the presence of the lake, "No Swimming" signs would be posted along the lakeside, and the lake would be frequently monitored to ensure no swimmers access the lake. Given the implementation of BMPs, no significant impacts are anticipated.	Potential impacts and associated BMPs would be the same as those described under the Proposed Action.	The No Action Alternative would involve the eventual demolition of 86 units. Safety impacts and special risks to children, as well as associated BMPs and regulatory requirements resulting from demolition activities would be the same as those described under the Proposed Action. As the No Action Alternative does not involve construction of a lake, there would be no safety impacts associated with construction of a lake.
Infrastructure	Minor short-term disruptions in utility services associated with construction and demolition may occur; however, these would be localized and of short duration. There would be only a small, short-term increase in the amount of utility use in the surrounding area due to the influx of workers to the area. No significant long-term impacts to transportation or utility system components are anticipated as a result of this proposal.	Potential impacts would be the same as those described under the Proposed Action.	No impacts would be anticipated to utilities or transportation facilities under the No Action Alternative.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Hazardous Materials/Waste	There are no Installation Restoration Program (IRP) sites located within any of the proposed construction sites. C&D activities would not involve the use of any hazardous materials, with the exception of fuel. However, these activities would generate asbestos and lead-based paint waste. These materials would be handled and disposed of in accordance with Air Force guidance and plan requirements. No adverse impacts associated with hazardous materials or wastes are anticipated.	Potential impacts would be the same as those described under the Proposed Action.	Potential impacts would be the same as those described under the Proposed Action.
Solid Waste	It is estimated that approximately 3,857 tons of C&D debris would be generated on an annual average basis as a result of the Proposed Action over the anticipated project duration of five years, with a total of 19,288 tons generated. The maximum amount generated in one year would be 6,325 tons. Based on landfill capacity and current use rates, C&D debris would be recycled and/or reused (to the extent practicable) and remaining wastes would be distributed among the three local landfills to avoid placing a significant burden on landfill capacity. Consequently, no significant impacts are anticipated.	Alternative 1 would generate more C&D debris than the Proposed Action. However, because Alternative 1 would occur over a duration of 10 years rather than five (as with the Proposed Action), it is estimated that approximately 3,444 tons of C&D debris would be generated on an annual average basis, with a total of 34,442 tons. The maximum amount generated in one year would be 6,936 tons. Based on landfill capacity and current use rates, C&D debris would be recycled and/or reused (to the extent practicable) and remaining wastes would be distributed among the three local landfills to avoid placing a significant burden on landfill capacity. As a result, there would be a negligible impact on the local landfills.	The No Action Alternative would involve the eventual demolition of 86 units. Amounts of solid waste would be substantially less that the Proposed Action or Alternative 1. No impacts to local landfills are anticipated.

Table 2-7. Summary of Potential Impacts Cont'd

Resource Area	Proposed Action	Alternative 1 – Maximum Development Alternative	No Action
Noise	Minor short-term noise associated with demolition and construction activities would occur. However, the installation is dominated by aircraft noise and the amount of noise created by demolition and construction activities is minimal in comparison. Noise associated with residential activities would be close to baseline. The Proposed Action would not significantly contribute to the existing noise environment of CAFB. Thus, there would be no significant impacts from construction or demolition noise. New housing units would be constructed between the 65-75-dBA AICUZ noise profile. This noise profile is typically considered incompatible for residential land uses. As a result, housing units in these areas would be constructed with specifications to reduce aircraft noise within the units and no impacts would occur.	Potential impacts would be the same as those described under the Proposed Action.	Potential impacts would be the same as those described under the Proposed Action.

2.9 SUMMARY OF REGULATORY REQUIREMENTS AND BEST MANAGEMENT PRACTICES

State and federal agency consultation and review of CAFB's privatization proposal will be required in compliance with federal and state law. The following regulatory requirements would be mandatory for implementation of the Proposed Action and Alternatives (to include the No Action Alternative).

- A National Pollutant Discharge Elimination System (NPDES) Permit, required for construction activities covering more than one acre of land area, would be required. Requirements associated with this permit would include the following.
  - o Utilization of temporary erosion control measures (such as sediment traps/basins, silt fencing, hay bales, and seeding) to minimize erosion during construction and demolition.
  - o The Mississippi Department of Environmental Quality (MDEQ) must be contacted once project details have been finalized to confirm whether a General Stormwater Construction Permit Coverage and/or a Stormwater Pollution Prevention Plan (SWPPP) are required. An SWPPP may be required for new development. This plan may include requirements to:
    - Create site designs that would minimize the amount of impervious surface area in each development.
    - Design the site and accompanying stormwater controls in such a way as to return the peak discharge to a rate similar to that of the previously undeveloped area.
    - Design and construct paved surface areas to incorporate a slope sufficient enough to direct potential runoff away from surface waters and wetland areas.
    - Design and construct all drainage improvements and related infrastructure in such a manner that the natural hydrologic conditions are not severely altered.
    - Utilize permanent stormwater runoff minimization techniques, including concrete grid and modular pavement, detention basins, exfiltration trenches, level spreaders, stormwater retention basins, or similar techniques.
    - At the request of the MDEQ (see Appendix A), endangered species should be addressed in the Plan.
- At the request of the MDEQ (see Appendix A), debris should be disposed of in a manner consistent with the Mississippi Solid Waste Regulations if it is not recycled or reused.
- At the request of the MDEQ (see Appendix A), MDEQ should be contacted prior to demolition if any of the houses contain asbestos materials.

Best management practices are innovative, dynamic, and improved environmental protection practices utilized to help ensure that actions are conducted in an environmentally responsible manner. BMPs not associated with regulatory actions (e.g., a NPDES permit) are not required, and are either components of management plans or are voluntarily implemented by the proponent. The following are examples of voluntary BMPs that, if implemented as part of the Proposed Action and Alternatives (to include the No Action Alternative), would further offset or minimize potential impacts to the human or natural environment.

- Implement reasonable precautions to reduce fugitive emissions of particulate matter during demolition and construction.
- Design the proposed lake to provide less-attractive habitat to waterfowl; examples of which are terracing (shelf) design and the establishment of tall vegetation (7 to 14 inches).
- Conduct extensive coordination with the CAFB Bird-Aircraft Strike Hazard (BASH) program office during design of the proposed lake.
- Periodic evaluation of the proposed lake for its status as a wetland.
- Inclusion of an aeration system designed to increase dissolved oxygen in the proposed lake.
- Stocking the proposed lake with Mosquito fish (*Gambusia affinis*) to reduce mosquito populations in the lake and eliminate the need for insecticides.
- Construction of housing units to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 A-weighted decibels (dBA) to minimize potential impacts to housing residents. Such specifications would include use of noise-dampening materials such as soundboards and insulation. Specific specifications would be determined at the time of unit design.
- Educate residents regarding the safety hazards to children associated with the presence of the proposed lake.
- Posting of "No Swimming" signs along the proposed lakeside.
- Frequent monitoring of lake access to ensure no swimmers access the proposed lake.
- Proper handling and disposal of hazardous materials.
- Provision of adequate measures to restrict access to C&D sites and consideration of all aspects of child safety during work and non-work hours.
- Maintenance of restricted access during work hours, site preparation, and non-work hours.
- Minimization of slip/trip/fall hazards associated with demolition and construction activities.

- Incorporation of specific engineering design and traffic studies into site plans and related road systems for each new housing area developed. The objective of these reviews would be to make sure that future circulation patterns and new intersections do not create inadequate levels of service at new or existing intersections or along existing roads.
- Recycling and reuse of C&D debris (to the extent practicable).
- Distribution of C&D debris among the three local landfills.
- Notification of Environmental Flight immediately if any unusual odor or soil or groundwater coloring is observed during construction or demolition activities.
- Avoidance of tank areas during C&D activities.
- Utilization of a certified contractor when removing asbestos-containing building materials.
- Review of all construction project programming documents, designs, and contracts by Environmental Flight for appropriate abatement and disposal requirements for Lead Based Paint (LBP).
- Any discovered polychlorinated biphenyls (PCBs) would be turned in to the Defense Reutilization and Marketing Office for proper disposal.
- Proper disposal of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 and MDEQ requirements.
- If required, use of USEPA- and Air Force-approved pesticides by a certified applicant in accordance with the CAFB Integrated Pest Management Plan.
- Use of the least toxic effective chemical and application in accordance with label instructions for all pesticide application.
- Report of all spills and accidental discharges of petroleum, oil, and lubricant products (POLs), chemicals, hazardous waste, or hazardous materials on CAFB, regardless of the quantity.

The potential permits that would be required and the BMPs that would be implemented, as listed above, to implement the Proposed Action and Alternatives are further discussed in Chapter 4 of this document.

The developer is responsible for compliance with all applicable federal, state, and local laws, rules, and regulations, including acquiring all applicable permits and the implementation of permit requirements and BMPs identified within the Housing Privatization Request for Proposal (RFP) and subsequent development plan.

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3. EXISTING CONDITIONS

Chapter 3 describes the existing environmental and socioeconomic conditions likely to be affected by the Proposed Action. The potential environmental and socioeconomic impacts of implementing the Proposed Action or the Alternatives are described in Chapter 4.

In compliance with NEPA, CEQ guidelines, and AFI 32-7061, the description of the existing conditions focuses on those resources and conditions potentially subject to impacts. These resources and conditions include: earth resources, water resources, biological resources, air quality, land use, socioeconomics and environmental justice, safety, infrastructure, solid waste, hazardous materials and waste, and noise.

3.1 EARTH RESOURCES

3.1.1 Definition of the Resource

Earth resources include topography, geology, and soils. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink-swell potential, and erodibility all determine the suitability of the ground to support man-made structures and facilities.

These resources may have scientific, historical, economic, and recreational value. The Region of Influence (ROI) for geology and soils includes the area immediately underlying the CAFB MFH areas that comprise Capitol, State, and Magnolia Villages. This section discusses the basic topography of the region that contains CAFB, the geology of Lowndes County (focusing on the area that contains CAFB), and the soils that occur within CAFB boundaries.

3.1.2 Existing Condition

3.1.2.1 Topography

CAFB is located in the East Gulf Coastal Plains region of Mississippi. Physiography of the region is characterized as having broad valleys, rolling hills, with occasional ridges and steep slopes. The elevation for the Columbus AFB area is approximately 200 feet above mean sea level (U.S. Air Force 1998). The Tennessee-Tombigbee Waterway and river tributaries contribute to an extensive amount of cyclical erosion that has occurred in the area. The wide ridges are composed of upland and terrace soils that have poor drainage. CAFB elevations range

between 178 feet in the northwest corner of the base to 223 feet in the southeast portion of the base.

3.1.2.2 Geology

The underlying geology of CAFB consists of a layer of Cretaceous-age sediments. These sediments dip gently toward the west at approximately 30 feet per mile. A veneer of fluvial deposits associated with the development of the Tombigbee River system conceals much of the Cretaceous-age outcrop. These Cretaceous sediments can be divided into four lateral units, which crop out in different portions of the county along parts of the Tombigbee Waterway/River: the Tuscaloosa Formation, the Eutaw-McShan Formation, the Mooreville Formation, and the Dermopolis Formation (U.S. Air Force, 2001a).

The Tuscaloosa Formation crops out in the northeastern part of the county along the valley walls of the Buttahatchee River. Probably less than 100 feet of the formation is exposed. In Lowndes County, the Tuscaloosa Formation consists of varicolored sands, principally fine-to-medium grained, and of silty clays that are locally lignitic (coal-like). The youngest deposits in Lowndes County are associated with the Tombigbee River system. In its westward migration, the river has produced a series of terrace deposits with present-day alluvium. Terrace deposits cap the highest elevations in the eastern edge of the county and step downward toward the present flood plain and represent alluvial deposits from an earlier stage when the river was higher than it is today (Brent, 1979).

The Eutaw Formation is included in the upper Tombigbee Sand group. The McShan Formation is in the lower Eutaw Formation and crops out in the valley, beneath terrace deposits that create a belt several miles wide. This belt extends from the southeastern corner of the county near Nash Creek, northward to the Buttahatchee River. Throughout most of this belt, the Eutaw-McShan formation is covered by younger deposits. The stratigraphic intervals consist predominantly of fine to very fine well-sorted glauconitic marine sands interbedded with thin, gray, montmorillonitic clays several feet thick. The uppermost Tombigbee Sand member of the Eutaw Formation consists of gray, massive, bedded, very fine glauconitic marine sands with mixtures of silt and clay (Brent, 1979).

The Mooreville Formation crops out from the southeastern corner of the county to Tibbee creek, in a belt that is 3 to 4 miles wide. Gray, massive, bedded marls and calcareous clays that weather to various shades of yellow-brown, are indicative of this formation. The upper layers consist of limestone boulders that occur along the western edge of this outcrop (Brent, 1979).

The western part of Lowndes County, south of Tibbee creek, consists of the Dermopolis Formation. Massive, bedded marls and chalks represent this formation. The marls closely

resemble the underlying Mooreville Formation; thus, it can be difficult to differentiate between the two. The chalkier horizons weather more than marls (Brent, 1979).

3.1.2.3 Soils

The soils that occur at CAFB vary in stability and structure. Three housing areas on the installation are involved in the Proposed Action and Alternatives: Capitol Village, State Village, and Magnolia Village. While all three housing areas are underlain by differing soils, only the primary soils are described here. Figure 3-1 provides a graphical representation of the soil types located throughout the housing area. Table 3-1 lists all of the soils and the associated properties that are found at all three housing areas.

Table 3-1. Soil Types and Characteristics

Location	Soil Type	Erodibility	Permeability & Color	Grain Size
Magnolia Village	Latonia Urban Land	Slight hazard	Rapid, well-drained, gray	Varied – cut and filled
	Pikeville-Smithdale	Varies due to crops	Rapid, yellow-red, yellow brown	Sandy clay loam, gravelly
	Cahaba Fine Sandy Loam	Slight hazard	Moderate, slow run-off, yellow-red	Fine, sandy loam with clay underneath
Capitol Village	Steens Fine Sandy Loam	None	Poorly drained, brown	Very sandy with loam
	Prentiss Loam 0-2% slope	Slight hazard	Moderate, brown	Loamy
	Prentiss Urban Land	Slight to none	Subject to flooding, brown	Varied – cut and filled
	Rosella Silt Loam	Low	Very wet, brown	Fine silt with loam
	Prentiss Loam 2-5% slope	Slight to moderate	Fragipan, brown	Brittle, high sand and silt
State Village	Latonia Urban Land	Slight hazard	Rapid, well-drained, gray	Varied – cut and filled
	Cahaba-Latonia Association	Flood hazard, Poor for urban use	Moderate, brown	Fine, sandy loam and sandy clay
	Pikeville-Smithdale	Varies due to crops	Rapid, yellow-red, yellow brown	Sandy clay loam, gravelly
	Prentiss Loam 0-2% slope	Slight hazard	Moderate, brown	Loamy

Source: Brent, 1979

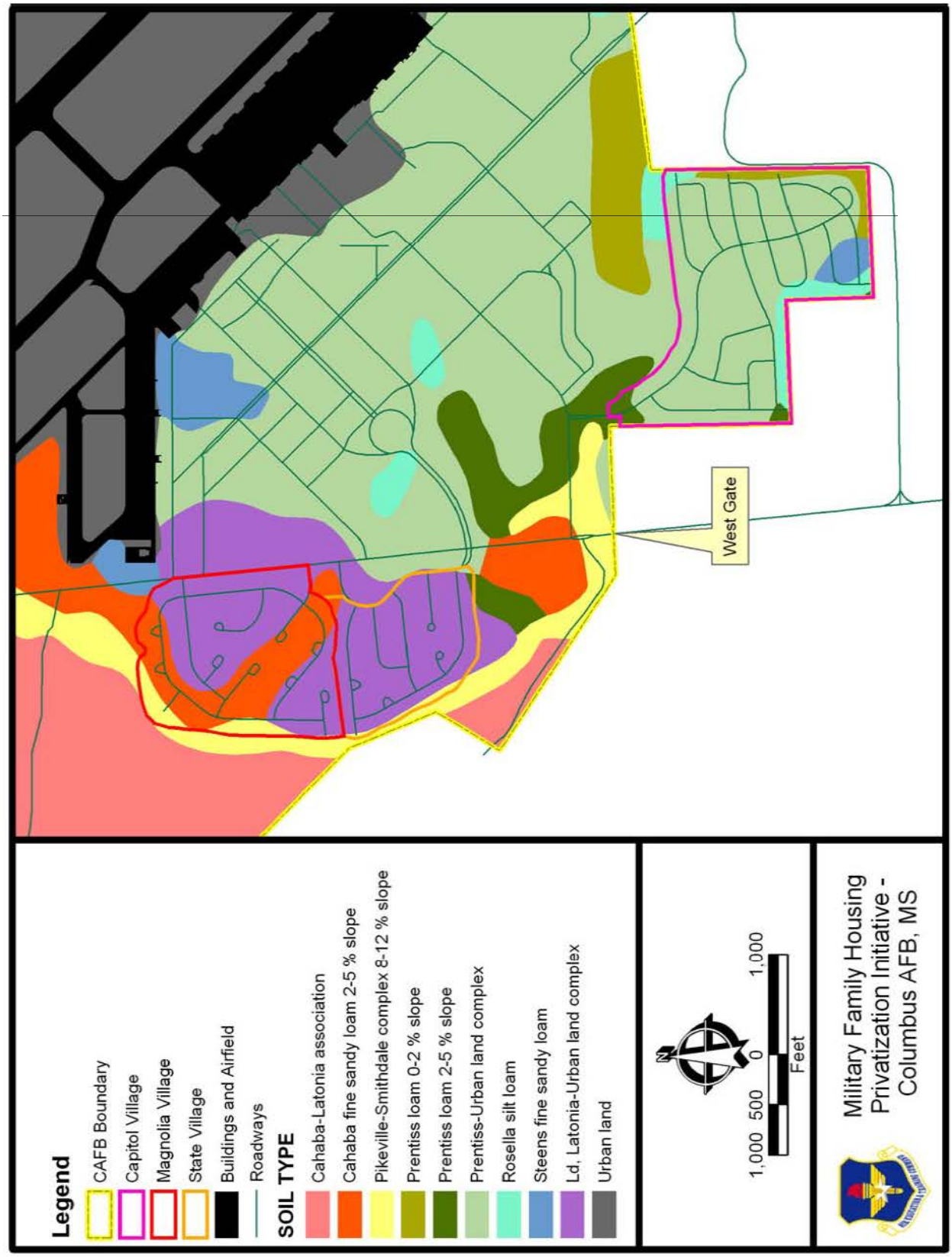

Figure 3-1. Soil Units Associated With CAFB MFH Areas

The major upland soils of interest are primarily of the Prentiss-Rosella-Steens series. Half of CAFB and much of the residential sections fall within this series. Capitol Village housing lies completely within this soil series. Subsurface layers are made up of fine sandy and silt loams. Sub soils are usually slightly heavier than loams or clays. Some of these soils are underlain with fragipans (restrictions) at depths from 12 to 25 inches. Fragipans are formed from brittle, loamy subsurface soils that are high in sand, silt, and clay. These fragipans restrict movement of water, as they tend to become very dry, thus restricting root growths of many plants. These restrictions tend to cause the soils to be extremely saturated in wet weather and extremely dry in dry weather. However, when a soil with a fragipan becomes wet, it has a tendency to rupture very suddenly, rather than slowly deform. Thus, it can create sudden flooding of an area. Additionally, this soil type has shown to have poor absorption for septic tanks (U.S. Air Force, 2001a; Brent, 1979).

3.2 WATER RESOURCES

3.2.1 Definition of the Resource

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

Other issues relevant to water resources include the downstream water and watershed areas affected by existing and potential runoff, and hazards associated with 100-year floodplains. Floodplains are defined by EO 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year" (an area inundated by a 100-year flood). The benefits of floodplains include natural moderation of floods, water quality maintenance, groundwater recharge, and habitat for many plant and animal species.

3.2.2 Existing Condition

3.2.2.1 Surface Water

CAFB features many unnamed creeks, tributaries, and intermittent (seasonal) streams (Figure 3-2) that ultimately discharge into the Stinson Creek and Tombigbee and Buttahatchee Rivers. In addition, several man-made stormwater conveyances (ditches and culverts) have been

installed to direct stormwater away from housing areas (USDA, 1979). Such waterways exist west of the Magnolia and State Village housing areas and north of the Capitol Village housing areas.

3.2.2.2 Groundwater

CAFB is situated over four aquifers. Three of these are confined and one is unconfined. The three confined aquifers, the Eutaw, the Tuscaloosa, and the Pennsylvanian, underlie an unconfined or shallow aquifer. This unconfined aquifer is associated with alluvial deposits of the Pleistocene. It is approximately 20 to 30 feet in thickness, with a water table of 10 feet below the surface. There are several private wells in the vicinity of the base and two non-potable wells on the base that draw from this aquifer. The most utilized aquifer in northeastern Mississippi is the Tuscaloosa aquifer. It has a thickness ranging from 100 to 300 feet and is recharged along Mississippi's northeastern border. Heavy industrial and public usage in Lowndes County has led to a decline of the aquifer's water table of more than 40 feet since 1942 (U.S. Air Force, 1998).

3.2.2.3 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. Floodplains and riparian habitat are biologically unique and highly diverse ecosystems, providing a rich diversity of aquatic and terrestrial species, and acting as a functional part of natural systems. Floodplain vegetation and soils store floodwaters during flood events and act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers. This process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Floodplains also reduce downstream flooding by increasing upstream storage in wetlands, sloughs, back channels, side channels, and former channels. Figure 3-2 shows the location of floodplain areas in relation to the worksites associated with the Proposed Action and Alternatives. Based on data from the Federal Emergency Management Agency (FEMA) and the latest housing Metes and Bounds Survey, the current housing areas of CAFB are located outside of the 100-year floodplain area.

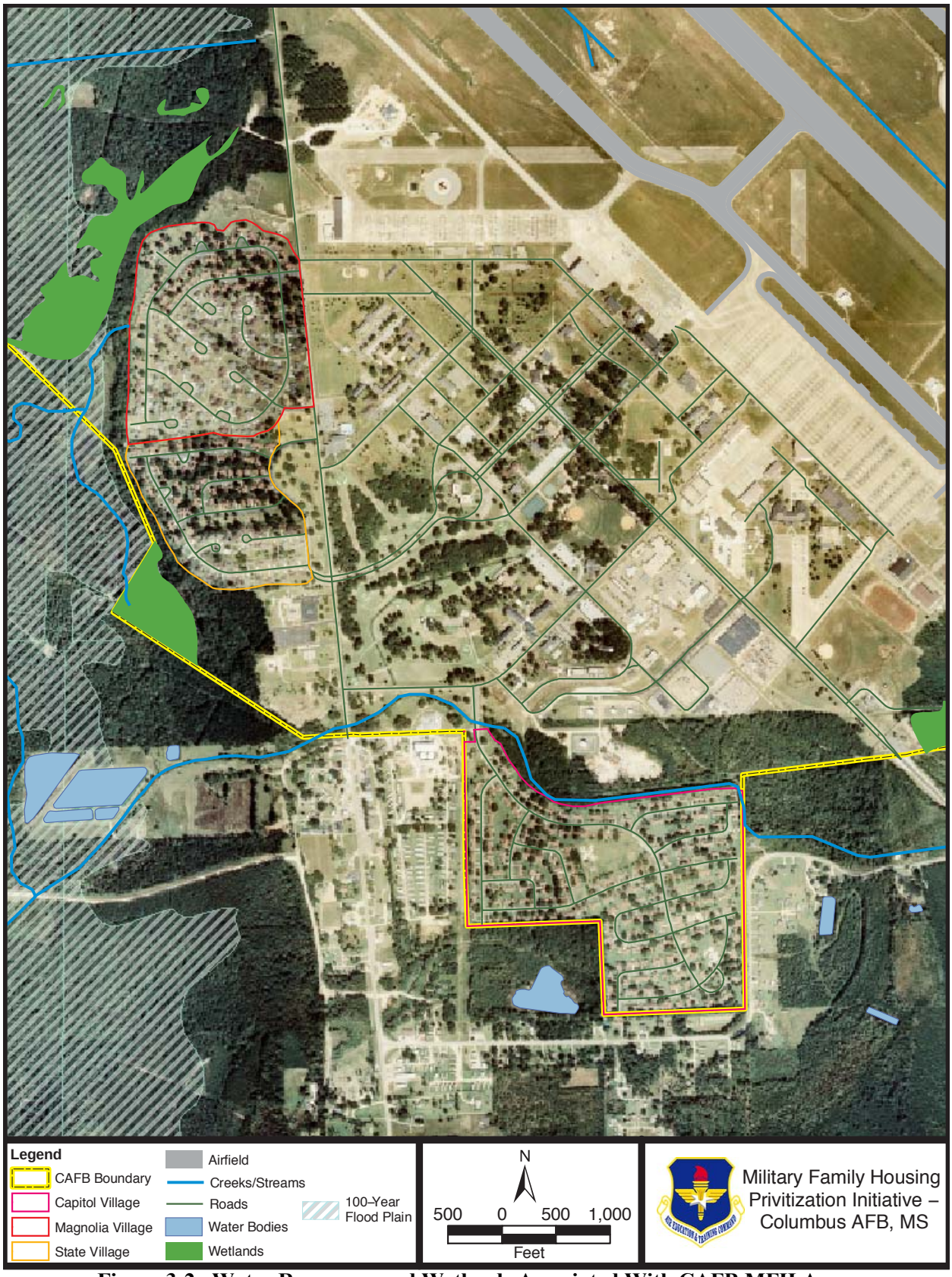

Figure 3-2. Water Resources and Wetlands Associated With CAFB MFH Areas

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats, including wetlands, in which they occur. Although the existence and preservation of biological resources are intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic values to society. This section focuses on plant and animal species and vegetation types that typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute.

3.3.2 Existing Condition

3.3.2.1 Wildlife and Vegetation

Wildlife and vegetation in the Capitol Village, State Village, and Magnolia Village housing areas are typical of that found in an urban setting. The housing units have grass lawns with ornamental shrubbery near the houses and trees scattered throughout the areas.

CAFB contains woodland and grassland vegetative communities that provide habitat for a variety of wildlife species. Confirmed mammal species observed on the base include gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), swamp rabbit (*Sylvilagus aquaticus*), and white-tailed deer. Other common mammals include species of bats and rodents. Bird species common to the lowland areas of the base include red-shouldered hawk, Cooper's hawk (*Accipiter cooperii*), rock dove (*Columba livia*), Carolina wren (*Thryothorus ludovicianus*), and wood duck (*Aix sponsa*) (U.S. Air Force, 1998).

Woodland species include oak (*Quercus sp.*), maple (*Acer sp.*), willow (*Salix sp.*), bald cypress (*Taxodium distichum*), and sweetgum (*Liquidambar styraciflua*). Approximately 40 percent of the forested area consists of loblolly pine (*Pinus taeda*), totaling 337 acres. Columbus AFB actively manages pine and hardwood species for timber production to produce a 50-60 year pine turnover and 80-year hardwood turnover. Grass species located along roadways, runways, and cleared areas include plumegrass (*Erianthus sp.*), switchgrass (*Panicum virgatum*), beggartick (*Bidens sp.*), and tickclover (*Desmodium sp.*) (U.S. Air Force, 1998).

A complete list of wildlife species that are likely to occur on CAFB can be found in Appendix B.

3.3.2.2 Threatened, Endangered, and Special Status Species

According to U.S. Fish and Wildlife Service (USFWS) correspondence regarding the Proposed Action (Appendix A), no federally listed threatened or endangered species or associated habitats

exist at the main base areas of CAFB. However, according to the USFWS, the bald eagle, a federally listed threatened species, may occur in the vicinity of the base during winter migrations or during nesting in forested areas near waterways at the periphery of the base. There are no documented occurrences of the eagle at the installation. Additionally, six federally listed mussel species are found in the Buttahatchee River, which is adjacent to CAFB. These species are identified in Appendix A.

3.3.2.3 Wetlands

Wetlands are defined in the USACE *Wetland Delineation Manual* 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 for life in saturated soil conditions" (USACE, 1987). The majority of jurisdictional wetlands in the United States meet three wetland delineation criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. These resources are protected under Section 404 of the Clean Water Act (33 USC § 1344) and at the state level with the MDEQ 401 *Water Quality Certification Program*. The wetland delineation criteria are defined as follows.

Hydrophytic Vegetation – The term hydrophytes (water-tolerant plants) refers to vegetation that is specially adapted to flourish in soils that are predominantly saturated, or are partially or completely submerged.

Hydric Soils – These soils are characterized by a substrate that consists mainly of "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (rooting zone)" (Federal Register, 1994). These poorly-drained soils are usually low in oxygen, or exhibit no oxygen (anaerobic), in the topsoil due to water saturation.

Wetland Hydrology – This is evident by a substrate that is nonsoil and is saturated with water, or covered by shallow water at certain periods of the growing seasons of each year. More specifically, "the area is inundated either permanently or periodically at mean water depths less than 6.6 feet (2 meters), or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation" (USACE, 1987).

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (Cowardin, et. al, 1979). These areas are sensitive habitat and are inundated (water covered), or water is present either at or near the surface of the soil for distinguishable periods of time throughout the year. Local hydrology and soil saturation largely affects soil formation and development, as well as the plant

and animal communities found in wetland areas (USEPA, 1995). Wetland areas of CAFB are depicted on Figure 3-2.

No wetland areas occur *within* the proposed work sites. National Wetlands Inventory data identifies two Palustrine wetland systems *adjacent* to the proposed areas of construction. One such wetland area is northwest of Magnolia Village, and the other is southwest of State Village. The nearest wetland area is a forested ecosystem over 100 feet from the proposed work sites.

3.4 AIR QUALITY

3.4.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of part per million (ppm) or micrograms per cubic meter (μ/m^3). For the air quality analysis, the ROI centers on Lowndes County, since the proposed activities would occur specifically in this county.

Pollutant concentrations are compared to the National Ambient Air Quality Standards (NAAQS) and state air quality standards to determine potential effects. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare within a reasonable margin of safety. The NAAQS identify the maximum allowable concentrations for the following criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in diameter (PM_{10}), and lead (Pb) (40 CFR 50). Volatile organic compounds (VOCs) are precursors to ozone formation, which is a criteria pollutant. Ozone is a gas composed of three oxygen atoms and is not usually emitted directly into the air, but at ground level is created by a chemical reaction between NO_x and VOCs in the presence of heat and sunlight. As a result, VOCs are also regulated. In the case of Mississippi, the state has incorporated the NAAQS by reference (Mississippi Commission on Environmental Quality [MCEQ], 2002). The primary and secondary NAAQS are provided in Appendix B.

The USEPA designates whether areas of the United States meet (i.e., attain) the NAAQS, based on the measured ambient air pollutant concentrations. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that are not in compliance are known as "non-attainment" areas. Those areas that cannot be classified on the basis of available information as either meeting or not meeting the NAAQS for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

3.4.2 Existing Condition

The MDEQ operates air quality monitors in various counties throughout the state (MCEQ, 2004). Although no ambient air monitors are employed in Lowndes County, monitoring sites are spread throughout the state, including sites in Grenada, Lee, Hinds, Jackson, and Harrison counties. The entire state of Mississippi is considered in "attainment" for criteria pollutants per MDEQ (MDEQ, 2004).

The Clean Air Act also establishes a national goal of preventing degradation or impairment in attainment areas. As part of the Prevention of Significant Deterioration (PSD) program, areas such as national parks and wilderness were designated by Congress as Class I, II, or III. Class I areas are areas where *any* appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development. The area surrounding CAFB is classified as Class II. Currently there are no designated Class III areas in the United States. Under the PSD program, before a new major source of air emissions is constructed, its emissions are estimated to determine if significant emissions rate (SER) thresholds are exceeded. If a source is to be modified, then its emissions are evaluated and compared to the SER thresholds to determine if the modifications are significant. The SER thresholds are used to ascertain whether pollution controls or air quality dispersion modeling are necessary for the construction project (USEPA, 1990). No designated PSD Class I areas occur in the state of Mississippi. Details regarding PSD air quality evaluations are provided in Appendix B.

3.4.2.1 Baseline Emissions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of sources, characterize emissions from each source and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establishes relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as necessity of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy. These inventories include stationary sources and address equipment and processes such as boilers, electric generators, surface coating, and fuels handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

For comparison purposes, the USEPA's 1999 National Emissions Inventory (NEI) data for Lowndes County is presented in Table 3-2. The county data includes emissions from: point sources (a stationary source that can be identified by name and location); area sources (a point source whose emissions are too small to track individually, such as a home or small office

building or a diffuse stationary source, such as wildfires or agricultural tilling); and mobile sources (vehicles or equipment with a gasoline or diesel engine; airplanes; or ships).

Table 3-2. Baseline Emissions Inventory for Lowndes County

Source Category	Pollutants (tons/year)				
	CO	NO_x	SO_2	VOCs	PM_{10}
Point Sources	9,167	6,121	3,899	5,179	1,353
On-Road Sources	3,991	581	55	358	49
Non-Road Sources	14,674	1,988	75	1,357	63
Area Sources	3,610	144	15	2,883	7,341
Lowndes County – Total	**31,444**	**8,834**	**4,044**	**9,778**	**8,806**

Source: USEPA, 1999

The NEI criteria pollutant database for Lowndes County only includes four of the six criteria pollutants (CO, NO_x, SO_2, and PM_{10},). The NEI also includes emissions of VOCs, which are ozone precursors as previously mentioned. The NEI does not include lead as one of the criteria pollutants.

For the analysis of the Proposed Action and Alternatives, a threshold of individual pollutant emissions not exceeding 10 percent of the total Lowndes County emissions for each pollutant has been selected. Emissions associated with construction activities are the main issues generated by the Proposed Action and Alternatives and will be the focus of the air analysis in Chapter 4.

3.5 LAND USE

3.5.1 Definition of the Resource

Land use comprises natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas. CAFB land use is addressed in this section.

Certain land use designations are particular to military installations. Areas at the end of each runway are identified as Accident Potential Zones (APZs) that delineate geographic areas around the airfield where historic aircraft mishap data have shown where most aircraft accidents occur. APZs were developed based on Air Force studies that evaluated the location of accidents that occurred within 10 nautical miles of airfields. Three zones were established based on these crash patterns: the clear zone, accident potential zone 1 (APZ I), and accident potential zone 2

(APZ II). The clear zone, the area closest to the runway end, is the most hazardous and must be clear of any development. Some development is allowed in APZs I and II, although this development is usually limited to light industrial, manufacturing, transportation, and similar land uses. However, uses that concentrate people in small areas are not considered acceptable. None of the housing areas are within APZs at the installation.

Similarly, explosive safety quantity-distance (ESQD) clearance zones provide safe setback areas around explosive-handling facilities. The majority of explosive activities and facilities on Air Force bases are governed by Air Force Regulation (AFR) 127-100, *Explosives Safety Standards*. This regulation defines safe clearances for similar activities, inhabited buildings, roadways, and personal contact with explosive activities (U.S. Air Force, 2001a). None of the housing areas are within ESQDs at the installation.

Noise is one of the major factors in determining appropriate land uses, since elevated sound levels are incompatible with residential areas. The Air Installation Compatible Use Zones (AICUZ) program, which delineates both noise contours and APZs, promotes compatible development around Air Force installations. An AICUZ study provides installation commanders and local governments with recommendations for land use restrictions.

3.5.2 Existing Condition

3.5.2.1 Land Use Designations

Ten land use categories (based on function of the activity within the category) have been established for land management at the base within the CAFB General Plan: (1) airfield and direct mission; (2) aircraft operations/maintenance facilities; (3) industrial facilities; (4) administrative; (5) community facilities (both commercial and services); (6) medical, dental, and veterinary; (7) housing (unaccompanied officers and airmen, as well as accompanied housing); (8) outdoor recreation; (9) transportation, open areas, buffer areas, and undesignated areas; and (10) water areas (U.S. Air Force, 2001a). Table 3-3 shows the land use designations for CAFB.

Table 3-3. CAFB Land Use Designations

Grounds Categories	Land Use Categories	Description
I	Airfield	Runways, taxiways, aprons
SI	Aircraft Operations and Maintenance	Maintenance shops, hush house, flight simulators, hangars, fire station
SI	Industrial	Water treatment plant, transportation, cold storage
I	Administrative	Offices, engineering
I	Community	
	Commercial	Mall concessionaires, credit union, barber shop
	Service	Chapel, theater, education center, post office
I	Medical	Composite clinic, dental clinic
I	Housing	
	Accompanied	Family housing
I	*Unaccompanied*	Apartments, visitor's housing
I, SI	Outdoor Recreation	Playgrounds, golf course, picnic areas, playing courts
I, SI, UI	Open Space/Roads	Roads, fields, forests
UI	Water	Wetlands, lakes, ponds

I = Improved, SI = Semi-Improved, UI = Unimproved

Improved grounds require intensive and continued maintenance including mowing, irrigation, and landscaping. Land that is located around offices and residential buildings is included in this category. Land use categories that are usually associated with improved grounds are: housing (accompanied), housing (unaccompanied), community (service), community (commercial), medical, and administrative. Outdoor recreation and selected open space areas may be improved (heavily landscaped open areas including golf courses, parks, playgrounds, and athletic fields).

Semi-improved grounds are those that require infrequent or unscheduled mowing and maintenance, and little or no irrigation. Land use categories that are usually associated with semi-improved grounds are: outdoor recreation (unimproved parks and picnic areas, open fields), light industrial, aircraft operations and maintenance, and airfield.

Unimproved grounds do not require any maintenance except occasional brush control. Land use categories that are usually associated with unimproved grounds are open space, such as wetlands, and water.

"Other" grounds include structures and pavement. This category is unique to CAFB. According to AFI 32-7064 § 2.3.5, the land under structures should be included in the improved category.

3.5.2.2 AICUZ

As discussed previously, the AICUZ program delineates both noise contours and promotes compatible development around Air Force installations. Sound levels are typically measured in decibels using Daily Day-Night Average Sound Levels (L_{dn}) as the standard of measurement. Numerous studies have shown a relationship between L_{dn} sound levels and the percentage of the population likely to be highly annoyed. These studies have shown that noise levels become geometrically more objectionable as the levels increase. For example, as L_{dn} increases from 40 to 60, the number of highly annoyed people is shown to increase from less than 1 percent of the affected population to about 6 to 7 percent. An additional increase from 60 L_{dn} to 65 L_{dn} will increase the percent of people who become highly annoyed to about 12 to 13 percent, a doubling in the annoyance factor for only a 5-decibel (dBA) increase in noise level. (Note: Sound levels are discussed in more detail in Section 3.11, *Noise.*) Residential areas are typically inconsistent with noise levels above L_{dn} of 65 dBA.

According to an AICUZ study for CAFB conducted in 1998, the Magnolia, State, and Capitol residential areas are between the Ldn 60 to 75 dBA average day-night noise contour range associated with aircraft operations (U.S. Air Force, 1998a).

3.6 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.6.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with the human environment, particularly population and economic activity. Population is described by the change in magnitude, characteristics, and distribution of people. Economic activity is typically composed of employment distribution, personal income, and business growth. Any impact on these two fundamental socioeconomic indicators can have ramifications for secondary considerations, such as housing availability and public service provision. CAFB is located in Lowndes County in east central Mississippi, adjacent to Alabama. In order to provide a framework or context within which to place the Proposed Action, it is helpful to present information for a Region of Influence that is wider than a single county. Lowndes County is one of seven counties comprising the Golden Triangle Planning and Development District, a state-designated planning region (Golden Triangle Planning and Development District, 2004). The other six counties in the ROI are Choctaw, Clay, Noxubee, Oktibbeha, Webster, and Winston. These seven counties (as well as 17 others) located in northeastern Mississippi are also part of the Appalachian Region, a multi-state economic development region (Appalachian Regional Commission, 2004).

To comply with NEPA, the planning and decision-making process for actions proposed by federal agencies involves a study of other relevant environmental statutes and regulations, including EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which was issued on 11 February 1994. The essential purpose of EO 12898 is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies.

3.6.2 Existing Condition

3.6.2.1 Employment

Full- and part-time employment in the seven-county ROI increased from just over 84,000 jobs in 1990 to about 92,300 in 2000, at an average annual rate of 1 percent. The following sectors of the economy contributed most to total non-farm employment in 2000: federal, state, and local government (22.3 percent); manufacturing (21.9 percent); services (20.6 percent); and retail trade (16.5 percent). The structure of the local economy in Lowndes County is similar to the ROI: federal, state, and local government (18.2 percent); manufacturing (18.3 percent); services (22.6 percent); and retail trade (18.9 percent).

Unemployment rates for Lowndes County were consistently below the state average between 1990 and 1995 but have been consistently higher than the state average between 1996 and 2003.

3.6.2.2 Military Activity Contribution to the Local Economy

CAFB is the largest employer in Lowndes County with 3,111 employees (1,492 military and 1,619 civilian) and a payroll exceeding $100 million annually. In addition to the base personnel, there are 1,942 family members and 5,782 retirees serviced by the base (Mississippi Military Communities Council, 2004). As of fiscal year 2003, the base had an economic impact of over $240 million in the region.

The military share of employment in Lowndes County has declined from 11.1 percent to 5.2 percent over the period from 1980 to 2000 (U.S. Department of Commerce, 2004a). The number of military jobs in 2000 (about 1,810) is also lower than in 1980 (about 3,315). For the entire seven-county ROI, the share of non-farm employment contributed by the military was

2.9 percent in 2000 (down from 5.9 percent in 1980), while for Mississippi as a whole, the share declined from 4 percent in 1980 to 2.5 percent in 2000.

3.6.2.3 Population

Over the period from 1990 to 2000, the population of the ROI increased at a modest rate (at an average annual rate of 0.5 percent) with an increase of about 9,100 residents (U.S. Department of Commerce, 2004b). Over the same time period, the population of Mississippi grew at an average annual rate of 1 percent. Lowndes County experienced an even more modest population growth rate (0.4 percent annually, on average) with the addition of almost 2,300 residents between 1990 and 2000.

The City of Columbus is the largest incorporated place in the ROI with a population of almost 26,000 in 2000, comprising over 40 percent of the Lowndes County population. Between 1990 and 2000, the population of Columbus grew at an annual rate of 0.9 percent with the addition of almost 2,150 residents. Other incorporated places in Lowndes County (Artesia, Caledonia, and Crawford) had fewer than about 1,000 residents each in 2000.

While the population of Mississippi is projected to grow at an average annual rate of 0.8 percent over the period from 2005 through 2015, the rate for Lowndes County is forecast to be 0.2 percent (identical to the rate for the ROI).

3.6.2.4 Housing

Of the 25,104 housing units in Lowndes County in 2000, about 9 percent were vacant (U.S. Department of Commerce, 2004b). The corresponding vacancy rate for the ROI was 9.5 percent and 9.9 percent for Mississippi. Just over two-thirds of occupied housing units in Lowndes County are owner-occupied, and the homeowner vacancy rate stood at 1.5 percent in 2000. The rental vacancy rate was 9.4 percent: somewhat higher than the rates for both the ROI and the state. Over the period from 1990 to 1999, an average of 283 housing units were authorized for construction in Lowndes County (U.S. Department of Commerce, 2004c).

3.6.2.5 Public Schools

The Columbus Municipal School District operates 11 kindergarten, elementary, middle, and high schools with a student enrollment of almost 5,200 students and about 1,100 employees. There are 335 full-time teachers in the district and an overall student-teacher ratio of 15:1 (Columbus Municipal School District, 2004).

3.7 SAFETY AND PROTECTION OF CHILDREN

3.7.1 Definition of the Resource

This section addresses ground safety associated with activities conducted at CAFB, as well as the protection of children, as required by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (*Protection of Children*).

Ground safety relates to issues associated with human activities and operations and maintenance activities that support unit operations. Specific issues include construction site job safety and the potential attraction of wildlife to an area as a result of the proposed lake construction. Birds are considered a potential aircraft strike hazard, especially near airfields. Unexploded ordnance is not an issue as records and interviews indicate that no ordnance has ever been expended or stored at the Magnolia, State, or Capitol residential areas (U.S. Air Force, 2004c).

EO 13045 was issued in 1997 to identify and address issues that affect the protection of children. All federal agencies, the EO declares, must assign a high priority to addressing health and safety risks to children, coordinating research priorities on children's health, and ensuring that their standards take into account special risks to children. The EO states that, "…'environmental health risks and safety risks' mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." The ROI for safety and protection of children comprises the CAFB housing areas.

3.7.2 Existing Condition

3.7.2.1 Protection of Children

Children are more sensitive to some environmental effects than the adult population, such as airborne asbestos and lead paint exposures from demolition, as well as safety issues with regard to equipment and the potential for trips, falls, and traps within structures being demolished, and noise. According to statistics from the 2000 census, 689 children under age 18 (or 33.4 percent of the total base population) live on base. Approximately 7 percent of the child population (48 children) is younger than five years old (U.S. Department of Commerce, 2004b).

3.7.2.2 Job Site Safety

Day-to-day construction operations and maintenance activities conducted by staff at CAFB are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health

(AFOSH) requirements. Developers working on the installations are required to prepare appropriate job site safety plans, which explain how job safety will be assured throughout the life of the project. Developers are also required to follow applicable Occupational Safety and Health Administration (OSHA) requirements.

3.7.2.3 Bird-Aircraft Strike Hazard Program

Bird strike hazards are addressed in the CAFB Plan 91-202, *Bird-Aircraft Strike Hazard (BASH) Plan*. This plan was developed in support of AFI 91-202/AETC Supplement 1 to reduce the hazards for collision between aircraft and bird populations. The plan establishes a bird hazard working group, outlines procedures for reporting hazardous bird activity, specifies methods for informing aircrews of such hazards and how to avoid them, and identifies procedures for reducing environmental conditions that attract birds to airfields.

The Federal Aviation Administration (FAA) recommends a distance of 5 statute miles from approach or departure airspace for wildlife attractants that may cause hazards to aircraft (FAA, 1997). The FAA has identified certain types of land uses that may attract wildlife, which are therefore incompatible with safe airfield operations. The FAA has also identified land uses that may attract wildlife under certain circumstances but may be generally compatible with safe airfield operations depending on their location and operation (FAA, 1997).

Land uses that are incompatible with safe airfield operations are:

- Putrescible (i.e., subject to rot) waste disposal operations (e.g., some landfills).
- Wastewater treatment facilities.
- Wetlands.
- Dredge spoil containment areas.

Land uses that may be compatible with safe airfield operations include:

- Enclosed waste facilities.
- Recycling centers.
- Composting operations.
- Ash disposal.
- C&D debris landfills.
- Water detention or retention ponds.

- Landscaping.
- Golf courses.
- Agricultural crops.

The CAFB BASH Plan 91-202 identifies the base golf course, the wooded areas surrounding the airfield, and a small pond located on the northwest section of the airfield as significant bird attractants (U.S. Air Force, 1997a).

3.8 INFRASTRUCTURE

3.8.1 Definition of the Resource

Resources discussed in this section include transportation facilities on CAFB and the local utility services. The ROI for these resources is limited to CAFB and the housing areas.

3.8.2 Existing Condition

3.8.2.1 Wastewater

The City of Columbus has been providing wastewater treatment services for the installation since October 1997. Prior to 1997, CAFB operated its own wastewater treatment plant. Wastewater throughout the installation principally flows by gravity feed to the city wastewater interceptor main located close to the South Gate. There are four lift stations and associated force main pipes serving CAFB: two for the main installation and two for family housing. One lift station serves Capitol Village, and a common lift station serves State and Magnolia Villages. Planned improvements to the sanitary sewer system include continuation of sealing the joints of the installation sewer mains to reduce the infiltration of stormwater into the system (U.S. Air Force, 2003).

Permitted daily flow for CAFB's wastewater system is 2 million gallons per day (MGD), with an average daily flow of about 0.45 MGD. Housing accounts for approximately 15 percent, at about 0.07 MGD (Pierce, 2004).

3.8.2.2 Potable Water

The installation drinking water supply is treated and supplied to the installation by Columbus Light and Water Company. The water, which is pumped through eight wells from the Coker Aquifer, is delivered to the installation's new clear well, where its pressure is boosted before the base distributes it to the installation population. No further treatment of the drinking water is done by CAFB (U.S. Air Force, 2003).

The CAFB potable water system design capacity is 2 MGD. Average daily usage of potable water on CAFB is about 0.35 MGD, with housing accounting for about 31 percent of that usage, at about 0.11 MGD (Pierce, 2004).

The installation routinely monitors the drinking water for contaminants. Water quality sampling is conducted by the Bioenvironmental Engineering Element (14 MDOS/SGOAB). Sampling is conducted on a recurring basis for a variety of regulated contaminants, including lead, copper, and total coliform. Sampled concentrations of contaminants in drinking water are compared against USEPA maximum contaminant levels (MCLs). These MCLs represent the highest level of a contaminant that is allowed in drinking water. To date, drinking water contaminant levels at the installation have been well below the MCLs in all cases (Gomez, 2004).

3.8.2.3 Energy

Electricity at CAFB is provided by the Tennessee Valley Authority (TVA). The electrical distribution system has a 15-megawatt capacity and, during FY03, base usage was 40,676,000 kilowatt-hours (kWh), or 111,441 kWh per day. CAFB MFH units are not individually metered. However, there is a bulk *electric* utility meter at the entrance to each housing village for power and energy monitoring, and for reimbursable billing purposes. In FY03, about 8,143,000 kWh of electricity (22,309 kWh per day) were used in all base family housing (Pierce, 2004).

The base converted to natural gas in April 1997. The Mississippi Valley Gas Company supplies gas to CAFB and has an estimated annual delivery capacity of 700,800 thousand cubic feet (mcf), or 1,920 mcf daily. Natural gas usage for FY03 was 139,200 mcf (381 mcf/day). As previously state, CAFB MFH units are not individually metered. However, there is a bulk *natural gas* utility meter at the entrance to each housing village for power and energy monitoring, and for reimbursable billing purposes. In FY03, about 68,561 mcf of natural gas (188 mcf/day) were used in all base family housing (Pierce, 2004).

3.8.2.4 Transportation

CAFB is accessed from the four-lane U.S. Highway 45 to the east via a road to the East Gate and from State Highway 373 through the South Gate. It is estimated that approximately 6,735 vehicles per workday enter and exit CAFB via the two gates. While traffic volume over a 24-hour period is greater at the South Gate, during the peak flow periods (7:20-7:30 A.M., 11:30 A.M.-12:15 P.M., and 4:15-4:25 P.M.) traffic is greater at the East Gate, likely because of the direct access to U.S. Highway 45 (U.S. Air Force, 1998).

3.9 SOLID WASTE

3.9.1 Definition of the Resource

The State of Mississippi defines *municipal solid waste* (MSW) as any "non-hazardous solid waste resulting from the operation of residential, commercial, governmental, industrial or institutional establishments…(MDEQ, 2004)." This includes general household waste as well as C&D debris. In Mississippi, MSW is handled in accordance with various Federal mandates, listed below.

The Solid Waste Disposal Act (42 USC §§ 3251 et seq.) established guidelines for solid waste collection, transport, separation, recovery, and disposal systems. The Resource Conservation and Recovery Act (RCRA) (42 USC §§ 6901 et seq.) amended this Act by shifting the emphasis from disposal to recycling and reuse of recoverable materials.

Mississippi also has solid waste management regulations pertaining to solid waste facilities, state resource recovery and management programs, certification of resource recovery equipment, used oil, and domestic sludge classification, utilization, and disposal criteria. The MDEQ develops and adopts rules that govern proper management of solid waste in the state. Most of the responsibility for solid waste management under the law rests with local governments (MDEQ, 2004). Generally, counties operate the solid waste disposal facilities to serve the cities and towns within their jurisdictions.

Air Force regulatory requirements and management of solid waste are established by Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, which requires compliance with applicable federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by AFI 32-7042. Furthermore, AFI 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan addressing handling, storage, collection, disposal, and reporting of solid waste. AFI 32-7080 contains the solid waste requirement for preventing pollution through source reduction, resource recovery, and recycling.

3.9.2 Existing Condition

Solid waste management programs at CAFB are managed under the 14th Civil Engineering Squadron, Environmental Flight (Blythe, 2004). Municipal solid waste management is handled in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance* and incorporates 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 to incorporate the following: a solid waste management plan; procedures

for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention (U.S. Air Force, 1997b).

CAFB MSW is disposed of in the Golden Triangle Solid Waste Authority Landfill, in Clay County. This facility is currently operating three cells (10 acres each) and has permitted an additional 25 cells (10 acres each). Its expected life span is about 20 years, or until 2024 (Price, 2004). CAFB MSW is also disposed of in the Prairie Bluff Landfill located in Chickasaw County. This landfill has approximately 236 permitted acres and has an estimated life expectancy of at least another 20 years (MDEQ, 2003).

Much of the waste generated at the CAFB housing areas is recyclable (paper, cardboard, aluminum, and glass products). Family housing residents separate recyclable materials and set them on the curbside for pickup by the recycling center staff. The materials are then transferred to the CAFB Recycling Center. Environmental Flight supplies waste and recycling containers to housing occupants. In addition to the curbside program, recycling bins are located around the base for drop-off. The current solid waste contractor, Mississippi Industrial Waste (based in Columbus, Mississippi) arranges for non-recyclable trash pickup inside the family housing areas (Blythe, 2004).

Annual totals for C&D and MSW debris generated at CAFB are provided in Table 3-4. The large increase in solid waste recycled during 2003 is the result of concrete and asphalt debris waste generated by construction projects, runway repairs, and road repairs during the second quarter (Lockhart, 2004).

Table 3-4. Solid Waste (in Tons) Generated at CAFB

Columbus AFB	*Year*			
	2000	**2001**	**2002**	**2003**
MFH Solid Waste Landfilled	787	786	674	650
Industrial Solid Waste Landfilled*	1,089	733	675	769
Solid Waste Recycled	604	773	640	23,061
Total Generated	2,480	2,292	1,989	24,480

*The data for industrial waste includes DoD employees at CAFB
Source: Blythe, 2004; Lockhart, 2004

Table 3-5 reflects MSW debris facilities servicing CAFB. These facilities also accept C&D debris, although information regarding the amounts of C&D debris accepted at these sites from CAFB is unavailable.

Table 3-5. Landfills Accepting CAFB Waste

Facility	Owner/Operator	Waste Received in 2003 (tons)	Estimated Remaining Capacity (tons)	Life Expectancy (years)
Golden Triangle Regional Landfill	Golden Triangle Regional Solid Waste Management Authority	135,078	2,701,560	20+
Prairie Bluff Sanitary Landfill	Waste Management of Mississippi, Inc.	229,403	4,588,060	20+
Columbus Rubbish Class I Landfill Site	City of Columbus/ George Wade	44,657	401,913	9

Source: MDEQ, 2003

3.10 HAZARDOUS MATERIALS AND WASTE

3.10.1 Definition of the Resource

For the purposes of this discussion, *hazardous materials* and *hazardous substances* are defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC § 9601 (4) as:

(a) Any substance designated pursuant to section 311 (b)(2)(A) of the Federal Water Pollution Control Act.

(b) Any element, compound, mixture solution, or substance designated pursuant to section 102 of this Act.

(c) Any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the Solid Waste Disposal Act has been suspended by Act of Congress).

(d) Any toxic pollutant listed under section 307 (a) of the Federal Water Pollution Control Act.

(e) Any hazardous air pollutant listed under section 112 of the Clean Air Act.

(f) Any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (a) through (f) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, synthetic gas usable for fuel, or mixtures of natural gas and synthetic gas.

Hazardous materials are subject to and managed according to both federal and Mississippi state regulations. Federal laws regarding management of hazardous materials include the Emergency Planning and Community Right-To-Know Act (EPCRA) (42 USC § 1001 et seq.) as part of the Superfund Amendments and Reauthorization Act (SARA) Title III (10 USC § 2701 et seq.). Management of hazardous materials in the workplace is regulated under OSHA regulations at Title 29 CFR 1910.1200.

Under federal law, the transportation of hazardous materials is regulated in accordance with the Hazardous Materials Transportation Act, 49 USC § 5101 (replaced 1801) et seq. For the transportation of hazardous materials, Mississippi has adopted federal regulations that implement the Hazardous Materials Transportation Act, found at 49 CFR 178.

State laws pertaining to hazardous materials management include the Mississippi Code of 1972 Title 17, Chapter 17 and guidance issued by the Hazardous Waste section of the MDEQ.

The following issue items were determined to be relevant for this assessment and are addressed in this section.

- *Installation Restoration Program (IRP) Sites* – The IRP is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations.
- *Storage Tanks* – Underground storage tanks (UST) and aboveground storage tanks (AST) containing hazardous materials.
- *Asbestos Containing Building Materials* (ACBM) – Renovation or demolition of buildings with ACBM has a potential for releasing asbestos fibers into the air. Asbestos fibers could be released due to disturbance or damage to various building materials such as pipe and boiler insulation, acoustical ceilings, sprayed-on fireproofing, and other material used for soundproofing or insulation.
- *Lead-Based Paint* (LBP) – Lead-based paint is defined as surface paint that contains lead in excess of 1 milligram per square centimeter as measured by an X-ray fluorescence (XRF) spectrum analyzer, or 0.5 percent lead by weight. Waste containing levels of lead exceeding a maximum concentration of 5 milligrams per liter, as determined using the USEPA Toxic Characteristic Leaching Procedure, is defined as RCRA-regulated hazardous waste under 40 CFR 261, as adopted by MDEQ, and has specific handling, storage, and disposal requirements.
- *Polychlorinated Biphenyls* (PCBs) – PCBs are defined as any chemical substances or combination of substances that contain 50 parts per million or more of PCBs.

- *Chlordane* – Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. Because of concern about damage to the environment and harm to human health, the USEPA banned all uses of chlordane in 1983 except to control termites. In 1988, the USEPA banned all uses. This pesticide may have been used for termite control in the housing areas. However, no records of the chemical's implementation are available.
- *Hazardous Materials Management* – Hazardous materials, listed under CERCLA and EPCRA, are defined as any substance that may present substantial danger to public health, welfare, or the environment due to quantity, concentration, or physical, chemical, or infectious characteristics. Examples of hazardous materials include petroleum products/fuels natural gas, synthetic gas, and toxic chemicals. Hazardous wastes, listed under RCRA, are defined as any solid, liquid, or contained gaseous or semisolid waste, or any combination of wastes that pose a substantive present or potential hazard to human health or the environment. In addition, hazardous wastes must meet either a hazardous characteristic of ignitability, corrosivity, toxicity, or reactivity under 40 CFR 261, or be listed as a waste under 40 CFR 263.

3.10.2 Existing Condition

3.10.2.1 Installation Restoration Program Sites

Plans to manage IRP sites on CAFB are addressed in the *Columbus AFB IRP Management Action Plan* (U.S. Air Force, 2001a). There are no IRP sites located within the housing areas; however, there are several IRP sites located within close proximity as shown in Figure 3-3. Based on environmental investigations conducted for these IRP sites and discussions with installation personnel, none of the sites are likely to cause, or contribute to, a release of any hazardous substance or any petroleum product on the subject properties (U.S. Air Force, 2004c).

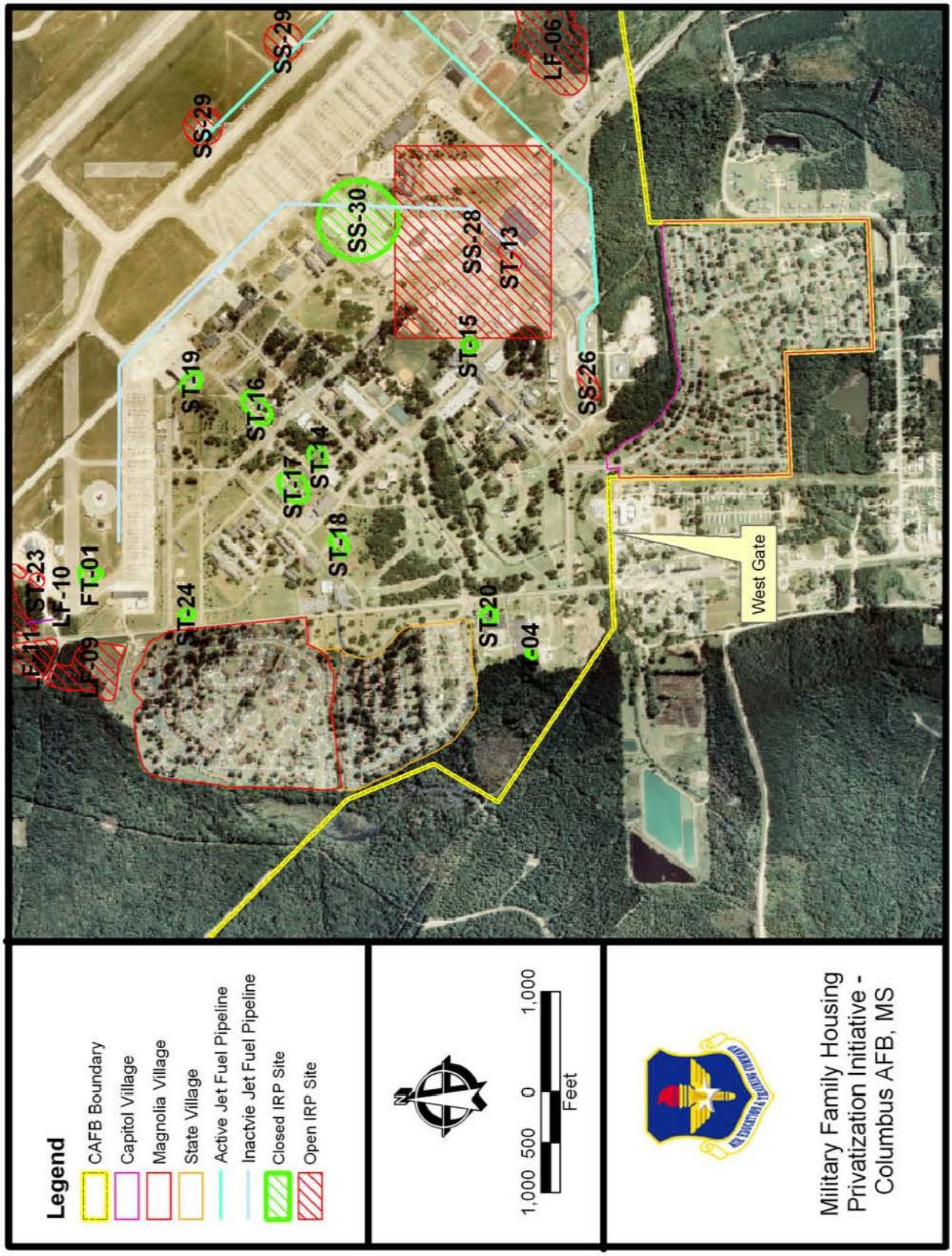

Figure 3-3. IRP Sites Associated With the MFH Project Locations

3.10.2.2 Storage Tanks

Environmental Flight manages five regulated USTs on the installation, two tanks at the Army and Air Force Exchange Service and three at the Military Gas Station. Base personnel implement the CAFB *Hazardous Waste Management Plan* (HWMP), which establishes responsibilities and provides procedures to base personnel for responding to and remediating hazardous substance releases (U.S. Air Force, 2003a).

Table 3-6 lists the ASTs that contain hazardous materials located within or in close proximity to MFH areas. The ASTs were built in 1999 with double-walled steel construction. No USTs are located in any of the subject properties. There have been no reported spills of fuel associated with the ASTs (U.S. Air Force, 2004c).

Table 3-6. Storage Tanks Located Within or Near MFH Areas

Tank Type	Location	Tank Purpose
AST	Magnolia Village, Building 8672 – located on the western edge ~50 yards west of Clay Street and 75 yards west of the nearest residence, fenced in.	500-gallon diesel tank to supply emergency power to sewage lift station located on site.
AST	Capitol Village, Building 7222 – located at the southern end of Atlanta drive adjacent to the property fence line and ~10 yards from the nearest residence, fenced in.	500-gallon diesel tank to supply emergency power to sewage lift station located on site.

Source: U.S. Air Force, 2004c

3.10.2.3 Asbestos

Asbestos is a naturally occurring mineral whose crystals form long, thin fibers. Asbestos was widely used in manufacturing in the late 1800s because of its insulating properties, its ability to withstand heat and chemical corrosion, and its soft, pliant nature. Building materials and processes that incorporated asbestos included sprayed-on fireproofing, acoustical plaster, pipe, boiler and mechanical equipment insulation, drywall joint compound, asbestos cement siding, roofing shingles and tars, floor tiles and mastic, and electrical wire insulation. In 1989, the USEPA prohibited the use of most commercially available asbestos-containing materials used in the United States. Since that time, knowledge of the adverse health effects associated with exposure to airborne asbestos has increased.

Friable (brittle) asbestos becomes hazardous when fibers become airborne and are inhaled. Because of the persistence and small size of asbestos fibers (<5 microns), they become trapped in the lungs for years to later develop into diseases including asbestosis, lung cancer, and mesothelioma. It can take from 10 to 40 years or more for the diseases to develop.

Asbestos management at Air Force installations is established in AFI 32-1052, *Facility Asbestos Management*. AFI 32-1052 incorporates by reference applicable requirements of 29 CFR 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.140, 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 purposes of maintaining a permanent record of the current status and condition of all asbestos-containing material (ACM) in the installation facility inventory and documenting all asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan that details how the installation will conduct asbestos-related projects. Asbestos is regulated by the USEPA with the authority promulgated under the Occupational Safety and Health Act, 29 USC § 669 et seq. Emissions of asbestos fibers to ambient air are regulated under Section 112 of the CAA.

CAFB has implemented an *Asbestos Management Plan* in accordance with AFI 32-1052 (U.S. Air Force, 2002). This plan addresses procedures to identify all ACBM in facilities, review all in-house and contract projects that could disturb ACBM, and train all personnel involved in the removal and management of ACBMs. The installation manages asbestos in-place where possible; removing it only when there is a threat to human health or the environment, or it is in the way of construction or demolition (U.S. Air Force, 2004c).

A survey of ACBM at MFH units was conducted by Galson Corporation in 1993. The ACBM survey covered approximately 75 percent of the housing units on the installation. The survey team evaluated the location of friable and non-friable ACBM. Friable materials can be reduced to powder with hand pressure, and include materials such as fireproofing, pipe insulation, and other thermal insulation. Non-friable materials include floor tile, adhesives, plaster, stucco, and sheetrock compounds. Because friable materials are more likely to release asbestos fibers into the air when disturbed, they are considered a greater health concern. The survey identified friable asbestos in the flexible ducting associated with the heating, ventilation, and air conditioning systems, while non-friable asbestos was identified in vinyl composition tile and roof shingles. The Environmental Flight (14 CES/CEV) maintains a database of asbestos locations in MFH. Housing units built during 2001–2002 do not contain ACBMs (U.S. Air Force, 2002).

3.10.2.4 Lead-Based Paint

The Lead-Based Paint Poisoning Prevention Act (42 USC § 4821 et seq.), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992 (Public Law [P.L.]. 102-550, also known as Title X), requires that lead-based paint hazards in federal housing be identified and eliminated. In 1993, OSHA, under 29 CFR 1926, restricted the permissible exposure limit for general industrial workers to 50 micrograms per cubic centimeter of air, which would include workers in the construction field.

To ensure that any threat to human health and the environment from lead-based paint has been identified, Air Force policy requires that a lead-based paint survey of high-priority facilities be conducted. High-priority facilities include military family housing, transient lodging facilities, schools, day care facilities, playgrounds, and other facilities frequented by children under the age of seven. The CAFB *Lead-Based Paint Management Plan* provides specific policy and guidance to identify and address LBP hazards and to protect the public from exposure to these hazards. The Plan also provides guidance on proper management and disposal of material containing LBP (U.S. Air Force, 2001b).

LBP was commonly used in and on buildings and other structures until 1978. When in good condition, lead-based paint does not pose a health hazard. However, when it is in a deteriorated condition (cracking, peeling, chipping), or is damaged by renovation or maintenance activities, LBP can release lead-containing particles that pose a threat of lead contamination to the environment and a health hazard to workers and building occupants who may inhale or ingest the particles.

Hazards of lead exposure include severe damage to the nervous system, brain, and kidneys in adults and children. In pregnant women, high levels of exposure to lead may cause miscarriage. Children are more sensitive to the effects of lead than adults and may develop blood anemia, kidney damage, colic, muscle weakness, and brain damage, which can potentially cause death, following ingestion of lead particles (Agency for Toxic Substances and Disease Registry [ATSDR], 1999).

A 1993 survey conducted by Galson Corporation evaluated the presence of lead-based paint in units in all three MFH areas. The LBP survey included XRF spectrum testing. Structures identified as containing LBP included interior baseboards, windowsills, metal doorframes, window frames, exterior wood trims, soffits, and façades. An additional survey conducted in MFH areas during 1997 by the Bioenvironmental Engineering Element (14 MDOS/SGOAB) also identified structures containing LBP in housing units on the base. Structures identified as containing LBP included window troughs and windowsills. Detailed records of sampling results at MFH are maintained by Bioenvironmental Engineering (U.S. Air Force, 1997c). Housing units built during 2001–2002 have no LBP-containing materials or structures.

LBP surveys of MFH may also be conducted to determine appropriate disposal of construction materials, or at the request of MFH residents, if they are concerned about the presence of lead in the household. All new MFH residents are also provided with a pamphlet that provides information on potential health hazards associated with LBP exposure and guidance on LBP-related questions and issues (U.S. Air Force, 1999).

3.10.2.5 Polychlorinated Biphenyls

The management of PCB compounds is regulated under the Toxic Substances Control Act (TSCA) 15 USC § 2605 and USEPA implementing regulations at 40 CFR 761, which banned the manufacture and distribution of PCBs, with the exception of PCBs used in enclosed systems. By federal definition, PCB transformers contain 500 ppm PCBs or more, whereas PCB-contaminated transformers contain PCB concentrations of 50 ppm or greater, but less than 500 ppm. PCB items consist of any PCB-related containers or equipment that contain a concentration of 50 ppm or more. The USEPA, under the TSCA, regulates the removal and disposal of all sources of PCB items containing 50 ppm or more. The rules are more stringent for PCB transformers than for PCB-contaminated transformers.

PCBs persist in the environment, accumulate in organisms, and concentrate in the food chain. Exposure to PCBs and their by-products have been linked to chloracne (a skin disorder), bleeding and neurological disorders, liver damage, spontaneous abortions, human embryo deformation, cancer, and death.

Commercial PCBs are used in electrical systems such as transformers, capacitors, and voltage regulators because they are electrically non-conductive and stable at high temperatures. The manufacture of PCBs was banned under the TSCA in 1978, but the TSCA does not ban use of PCBs as long as they are completely enclosed, such as in a transformer. Additional requirements under the TSCA include an inventory of PCB-containing transformers and proper labeling.

There are electric power transformers located on power poles in MFH areas. A survey conducted in 1992 declared that power transformers at CAFB were PCB-free. PCBs may also be contained within the ballasts of older fluorescent light fixtures installed in MFH residences. In the event PCBs are discovered, they are turned in to the Defense Reutilization and Marketing Office for proper disposal. CAFB policy also specifies that housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261.

3.10.2.6 Pesticides

The construction of a man-made lake may require the use of chemicals for pest control. The USEPA regulates the use of pesticides under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act, a federal statute that provides the basis for regulation, sale, distribution, and use of pesticides in the United States. The sale and application of certain types of pesticides are restricted by law because of the probability of adverse effects on humans and the environment if these pesticides are improperly used. These types of pesticides are referred to as "restricted-use" pesticides (USEPA, 2004). Mississippi's Department of Agriculture, Bureau of Plant Industry, regulates state pesticide programs.

Columbus AFB's *Pest Management Plan*, as required by DoD Directive 4150.7, describes pest-management operations and management, health and safety, regulatory compliance, and environmental protection (U.S. Air Force, 2001c). According to the Plan, only USEPA- and Air Force Pest Management Board-approved herbicides and pesticides will be used on CAFB. All pesticides and herbicide applications will be of the least toxic effective chemical and applied in accordance with label instructions. There are no restricted-use pesticides used on CAFB. Further, the application of these substances will be kept to an absolute minimum throughout the base. Only trained and licensed staff apply the herbicides and pesticides, and application is performed at or below the manufacturer's suggested rate (U.S. Air Force, 2001c).

3.10.2.7 Chlordane

Chlordane is a man-made chemical that was used as a pesticide in the United States from 1948 to 1988. It is a thick liquid whose color ranges from colorless to amber, depending on its purity. It may have no smell or a mild, irritating smell.

Before 1978, chlordane was used as a pesticide on agricultural crops, lawns, and gardens and as a fumigating agent. Because of concerns over cancer risk, evidence of human exposure and build-up in body fat, persistence in the environment, and danger to wildlife, the USEPA canceled the use of chlordane on food crops and phased out other aboveground uses. From 1983 until 1988, chlordane's only approved use was to control termites in homes. The pesticide was applied underground around the foundation of homes. When chlordane is used in the soil around a house, it kills termites that come into contact with it. In 1988, when the USEPA canceled chlordane's use for controlling termites, all approved use of chlordane in the United States stopped (ATSDR, 1999).

In soil, chlordane attaches strongly to particles in the upper layers and is unlikely to migrate to groundwater. Chlordane is known to remain in some soils for over 20 years, with persistence greater in heavy, clayey or organic soil than in sandy soil, and more rapidly evaporates from light, sandy soils (in 2 to 3 days) than from heavy soils. In water, some chlordane attaches strongly to sediment and particles in the water column and some is lost by evaporation. It is not known whether much breakdown of chlordane occurs in water or in sediment. Chlordane breaks down in the atmosphere by reacting with light and with some chemicals in the atmosphere. However, it is sufficiently long lived that it may travel long distances and be deposited on land or in water far from its source. Chlordane, or the chemicals that chlordane changes into, accumulates in fish, birds, and mammals. Chlordane stays in the environment for many years and is still found in food, air, water, and soil. Chlordane is still commonly found in some form in the fat of fish, birds, mammals, and almost all humans (ATSDR, 1999).

The Bioenvironmental Engineering Element collected soil samples during 15 July 2004 around four housing units located off Alabama Street in State Village (Units Number 120, 122, 124, 126) and tested these for the presence of chlordane. Soil samples were collected around the foundation of each of the four units. Chlordane was not detected in any of the soil samples taken from this area (U.S. Air Force, 2004d).

3.10.2.8 Hazardous Waste Management

Unless otherwise exempted by CERCLA regulations, RCRA Subtitle C (40 CFR Parts 260 through 270) regulations are administered by the USEPA and are applicable to the management of hazardous wastes. Hazardous waste must be handled, stored, transported, disposed, or recycled in accordance with these regulations. Impacts to hazardous waste management would be considered significant if the federal action resulted in noncompliance with applicable federal and Mississippi Department of Environmental Quality regulations or caused waste generation that could not be accommodated by current CAFB waste management capacities.

CAFB is registered as an industrial large quantity hazardous waste generator (U.S. Air Force, 1998).

Routine household hazardous wastes are generated in MFH areas, including batteries, fluorescent bulbs, pesticides, and paint-related products. Used oil or other automotive fluids may also be generated as part of "do-it-yourself" vehicle maintenance activities. The Family Housing Brochure, provided to all incoming residents, contains guidance information on proper disposal of household hazardous waste. Residents are advised to turn in motor oils at the skills development center/auto hobby shop for disposal. Paint materials issued by the Pride Store (Building 366) and associated paint-related wastes may be returned to the Pride Store for disposal. In addition, CAFB has a Household Hazardous Waste Turn-in program at the Recycling Center and an annual Household Hazardous Waste Amnesty Day, sponsored by 14 CES/CEV, to allow residents to dispose of household hazardous wastes. For help with disposal of other hazardous wastes, residents are advised to contact the Environmental Flight (U.S. Air Force, 2003a).

The installation does not store hazardous materials and wastes in MFH areas; however, residents of these areas may purchase cleaning supplies and other chemicals for personal use that contain constituents that are classified as hazardous materials. The use of these chemicals is not tracked by the installation, and the quantity of these materials is unknown (U.S. Air Force, 2004c).

Small spills of hazardous materials (i.e., mineral oil) associated with leaking electric power transformers have occurred in MFH areas. The quantity and location of these spills is not available. According to installation personnel, all spill sites were appropriately remediated. This included removal of contaminated soils where required (U.S. Air Force, 2004c).

3.11 NOISE

3.11.1 Definition of the Resource

Noise, as addressed in this document, is sound that injures, annoys, interrupts, or interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses (e.g., industrial plants or some military training activities). Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flying a specific flight track), or randomly (e.g., military training conducted in a training area). There is wide diversity in responses to noise that vary not only according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal).

3.11.2 Existing Condition

Aircraft operations dominate the background noise environment at CAFB (U.S. Air Force, 2001a). According to an AICUZ study for CAFB conducted in 1998, the Magnolia, State, and Capitol residential areas are between the Ldn 60 to 75 dBA average day-night noise contour range associated with aircraft operations (U.S. Air Force, 1998a). These noise contours have been determined through noise modeling in support of the AICUZ program, one function of which is to consider land use near military airfields. See Chapter 3.5, Land Use, for more discussion on AICUZ.

Noise associated with residential activity (e.g., traffic) also contributes to the existing noise environment. Based on the population density of the Magnolia, State, and Capitol residential units, the average noise was determined to be L_{dn} 60.2 dBA.

3.11.2.1 Noise Measurements and Thresholds

Based on numerous sociological surveys and recommendations of federal interagency councils, the most common noise benchmark referred to is an L_{dn} of 65 dBA. This threshold is often used to determine residential land use compatibility around airports, highways, or other transportation corridors. Two other average noise levels are also useful:

- A Day-Night Average Noise Level of 55 dBA was identified by the USEPA as a level "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). Noise may be heard, but there is no risk to public health or welfare.

- A Day-Night Average Noise Level of 75 dBA is a threshold above which effects other than annoyance may occur. It is 10 to 15 dBA below levels at which hearing damage is a known risk (OSHA, 1983). However, it is also a level above which some adverse health effects cannot be categorically discounted.

Public annoyance is the most common impact associated with exposure to elevated noise levels. When subjected to Day-Night Average Sound Levels of 65 dBA, approximately 12 percent of persons so exposed will be "highly annoyed" by the noise. At levels below 55 dBA, the percentage of annoyance is correspondingly lower (less than 3 percent). The percentage of people annoyed by noise never drops to zero (some people are always annoyed), but at levels below 55 dBA, it is reduced enough to be essentially negligible (Finegold et al., 1994).

The Day-Night Average Sound Level sums individual noise events and determines the average of the resulting level over a specified length of time, usually a 24-hour period. Thus, it is a composite metric representing the maximum noise levels, the duration of the events, and the number of events that occur. However, this metric also considers the time of day during which noise events occur. This metric adds 10 decibels to those events that occur between 10:00 P.M. and 7:00 A.M. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the daytime.

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4. ENVIRONMENTAL CONSEQUENCES

This chapter of the EA assesses potential environmental consequences associated with the Proposed Action and its alternatives. Potential impacts are addressed in the context of the scope of the Proposed Action and the Alternatives as described in Chapter 2, and in consideration of the potentially affected environment as characterized in Chapter 3. A summary table (Table 4-1) of the Proposed Action and Alternatives is provided below for reference.

Table 4-1. Activities Associated With the Proposed Action and Alternatives

Alternative	Size of Leased Area (acres)			Number of Existing Units to be Conveyed			Max # of Units Potentially Demolished			Max # Units Potentially Constructed			Total End-State Units
	CV	SV	MV	CV	SV	MV	CV	SV	MV	CV	SV	MV	
PA	99	42	69	337	50	152	337	0		31	116	104	453
1								50	152	111	138	351*	600
NA	0			0			86	0		0			453

PA = Proposed Action; NA = No Action; CV = Capitol Village; SV = State Village; MV = Magnolia Village
* Includes 272 multi-family units (136 duplex structures)

Each resource area describes the methodology behind the analysis and impact determination. Impacts are addressed as either a consolidated discussion, in cases where impacts would be the same across the Proposed Action and Alternatives (to include the No Action Alternative), or individually under the Proposed Action, Alternative 1, or the No Action Alternative. Cumulative impacts are addressed for each resource area, and regulatory requirements that would be implemented as part of the Proposed Action or Alternatives are identified. Applicable BMPs, examples of which are described for each resource area, would be incorporated into the MFH Privatization RFP where appropriate, or would be required in association with permits as part of either the design or development requirements.

While the developer is responsible for acquiring all applicable permits and the implementation of associated BMPs, it is ultimately the responsibility of the Air Force to ensure that actions occurring on Air Force property adhere to all applicable regulatory requirements.

4.1 EARTH RESOURCES

4.1.1 Methodology

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

The representative geology of the installation is not of concern for the Proposed and Alternative Actions. Thus, analysis for this section focuses on impacts related to soils for the three housing areas on CAFB associated with demolition and construction of housing units and infrastructure (roads, underground utilities, etc.), as well as the impact of creating a 0.5-acre lake (21,780 square feet).

4.1.2 Impacts

C&D activities at all locations, under all Alternatives (including the No Action Alternative) would occur on soils and terrain that are not naturally associated with erosion. However, land disturbance and construction associated with new units and infrastructure would disturb the terrain such that erosion issues associated with potential stormwater runoff outweigh natural soil erosion concerns. This is more of an issue at State and Magnolia Villages due to the proximity of a Tombigbee River tributary. The construction activities under the Proposed Action and Alternative 1 disturb more than 1 acre of land area, and would therefore require a state-issued NPDES permit and a Storm Water Pollution Prevention Plan. The NPDES permit and SWPPP conditions would identify the BMPs to be implemented. Proper implementation of BMPs during construction would offset the potential for erosion impacts.

State and Magnolia Villages are buffered to the west by at least 125 feet of vegetated forest cover, which serves to act as a filtering mechanism to catch sediments carried by stormwater runoff. This also helps to offset potential erosion impacts to nearby water bodies. Given the implementation of BMPs that would minimize potential erosion and the vegetative buffer between State and Magnolia Villages and the Tombigbee River, impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure are expected to be minimal under all Alternatives.

4.1.2.1 Proposed Action

As stated previously, impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure are expected to be minimal. However, the Proposed Action may potentially include a man-made, 0.5-acre (21,780 ft^2) lake. Design specifications for the lake will not be available until the proposal stage of the MFH Privatization process.

The Prentiss-Rosella-Steens soils series underlies most of Capitol Village. This is a soil series that, while not subject to a high amount of erosion, is considered vulnerable to flooding. This is due to the fragipans that exist beneath the subsoil. Fragipans are soil formations that are brittle in texture and form a very hard cement-like substance. However, when wet, they become saturated to the extent of rupturing, rather than slowly eroding. The construction of a 0.5-acre lake, at about 5 to 6 feet in depth, within the middle of the housing area may potentially result in flooding of the area during heavy storm events, depending on the parameters of lake construction. This is due to the low permeability of the soils in the area. High banks and minimal water level would help to minimize this potential.

4.1.2.2 Alternative 1 – Maximum Development Scenario

While Alternative 1 involves the demolition and construction of more units and infrastructure overall than that of the Proposed Action, the same permit requirements and BMPs for erosion control would apply, thereby minimizing any potential erosion impacts. Therefore, impacts to earth resources associated with erosion resulting from demolition and construction of housing units and related infrastructure under Alternative 1 are expected to be minimal.

Impacts to earth resources associated with the potential construction of a 0.5-acre man-made lake would be the same as those described under the Proposed Action.

4.1.2.3 No Action Alternative

Under the No Action Alternative the man-made lake would not be created in Capitol Village, and there would be the demolition of only 86 units. As stated previously, impacts to earth resources associated with erosion resulting from demolition of housing units and related infrastructure are expected to be minimal.

4.1.2.4 Cumulative Impacts

There are several other ground-disturbing activities either currently underway, or planned over the short-term in the ROI (Section 2.7). It is likely that several hundred acres of soil could be disturbed as a result of the projects described in Section 2.7 over the next several years.

Appropriate BMPs as described above would be employed to minimize potential erosion during construction activities and appropriate vegetation would be re-established on the sites to ensure rapid soil stabilization. Cumulative impacts to earth resources on CAFB are expected to be minor.

4.1.2.5 BMPs/Coordination

The potential for impacts to earth resources from housing unit demolition and construction is expected to be minimal. Thus, no mitigations for erosion control would be required. However, this assumes that BMPs would be implemented as a condition of permitting requirements. The list of BMPs for controlling erosion during or after construction activities is extensive, and only a few that are typically utilized are listed below. The control of on-site erosion, off-site water runoff, and measures to contain sediment are essential components of NPDES permitting and SWPPP requirements. A few typical BMPs for soil erosion include:

- Recondition damaged soils.
- Stabilize slope soils.
- Transport runoff within non-erosive water conveyance systems.
- Intercept and diffuse the erosive energy of runoff at predetermined intervals.
- Transition water flows to non-erosive discharge points.

4.2 WATER RESOURCES

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

4.2.1 Methodology

Water availability impacts are assessed by determining the potential increases in use that may affect availability of water resources. Floodplain and surface water impact analysis was conducted by first identifying floodplain and riparian areas associated with water bodies at CAFB and their proximity to potential development sites (as shown in Figure 3-2). Next, analyses were done using relevant literature to calculate the potential and the extent of all impacts in the affected areas.

4.2.2 Impacts

Other than a small, short-term increase in population associated with construction workers (as discussed in Section 4.6), the Proposed Action and Alternatives do not involve increases in local population. As a result, impacts to local groundwater supply associated with the Proposed Action and Alternatives is not expected.

Siltation from land disturbances and construction activities may adversely impact aquatic systems. Increased freshwater (salinity of <0.5 parts per thousand) from storm events can potentially alter the salinity of surface waters and have adverse consequences on local and migratory fisheries. Stormwater runoff may also introduce additional hydrocarbons (from vehicular traffic) from the construction of new transportation infrastructure. These hydrocarbons can create a chemical imbalance in natural hydrologic systems (USEPA, 1993). Stormwater runoff can also exacerbate nutrient loads from nonpoint sources originating from urban land uses.

The Proposed Action and Alternatives (to include the No Action Alternative) include both demolition and construction activities in the same areas. Neither the Proposed Action nor the Alternatives (to include the No Action) are within the 100-year floodplain area, as defined by the latest Metes and Bounds Survey at CAFB.

Under both the Proposed Action and Alternative 1, a 0.5-acre lake may potentially be constructed at Capitol Village. Given the lake's relatively small size, it is not likely to alter the existing floodplain and no floodplain impacts are anticipated. As discussed under Section 4.1, the underlying soils are susceptible to flooding. As a result, construction of the lake may result in localized flooding of the area during heavy storm events. Consequently, a state-certified engineer would be involved in the design of the lake to determine the most suitable specifications to minimize any potential impacts from flooding.

4.2.2.1 Proposed Action

As stated previously, none of the housing areas are located within 100 feet of a wetland or within the 100-year floodplain. In addition, BMPs for erosion control would be implemented as part of NPDES permitting requirements. It is anticipated that there would be an overall increase of about 20 percent in the amount of impervious surface present in the housing areas. However, development and implementation of a Stormwater Management Plan for the housing development project would be required, and the associated stormwater management measures and BMPs would ensure no adverse impacts associated with stormwater runoff collection and retention. No impacts to surface waters or floodplains are expected.

Construction of a man-made lake would require specific design considerations and coordination with a State-certified engineer to minimize any potential impacts associated with potential flooding.

4.2.2.2 Alternative 1 – Maximum Development Scenario

Under Alternative 1, there would be an 11-percent increase in the number of housing units at CAFB (600 units versus 539 current units), with an overall increase in the amount of impervious surface throughout the housing areas of about 49 percent. The issues associated with water resources under Alternative 1 are the same as those described previously under Section 4.2.2 and the Proposed Action. Although the potential for impacts is slightly higher relative to more development under this Alternative, the same BMPs and permitting requirements would apply as those described previously. As a result, impacts to water resources under Alternative 1 are expected to be minimal.

4.2.2.3 No Action Alternative

The potential for impacts to water resources is minimal under the No Action Alternative, as there would be demolition only, and no new unit or lake construction. BMPs would still be required for erosion control during demolition activities. No impacts to water resources are expected under this Alternative.

4.2.2.4 Cumulative Impacts

Indirect impacts can include increased nutrient loads from urban land uses and their effect on nearby wetlands and surface waters. As natural areas are converted to accommodate new buildings, roads, parking lots, and other impervious surfaces, the volume and speed of stormwater runoff are greatly increased.

The non-military lands adjacent to the Proposed Action and Alternative locations that have not already been developed would likely eventually be developed, contributing to potential cumulative impacts to the water resources of the area. New development would place increased demands on the local water supply and promote stormwater runoff, leading to water quality degradation. Additionally, the military would likely re-develop some of the demolition sites with other structures, as well as develop other currently undeveloped areas or redevelop other areas (Section 2.7). Site design plans, safety plans, and permits for new developments would need to address these potential problems so that water resources are protected.

4.2.2.5 BMPs/Coordination

The potential for impacts to water resources is expected to be minimal. Thus, no mitigations would be required. This assumes that BMPs would be implemented as a condition of permitting

requirements and stormwater management. The following is a list of BMPs that would, if properly implemented, minimize any potential impacts. These BMPs are examples of typical requirements associated with permitting actions.

- Installation of entrenched sediment fence (silt fence) and staked hay bales prior to, during, and throughout the entire construction process to prevent fill material and runoff from entering surface waters
- Inclusion of stormwater features designed to control runoff associated with the additional impervious surface, land clearing, grading, and excavating
- The design and construction of paved surface areas to incorporate a slope sufficient enough to direct potential runoff away from wetland areas; all drainage improvements and related infrastructure should be designed and constructed in such a manner that the natural hydrologic conditions are not severely altered
- Restoration of native vegetation and grading of demolition sites as soon as practicable to reduce soil erosion
- Once design plans are available, performance of a comprehensive MDEQ-approved hydrologic calculation to effectively calculate the volume of stormwater runoff associated with post-construction conditions and allow for proper design and implementation of stormwater management systems
- Training of all construction personnel regarding proper management techniques

The following are BMPs associated with construction of the lake not associated with any regulatory requirements that, if implemented, would minimize any potential impact to water resources.

- Inclusion of an aeration system designed to increase dissolved oxygen in the lake
- Stocking the lake with Mosquito fish (*Gambusia affinis*) to reduce mosquito populations in the pond and eliminate the need for insecticides

4.3 BIOLOGICAL RESOURCES

4.3.1 Methodology

Evaluation of impacts is based upon (1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, (2) the rarity of a species or habitat regionally, (3) the sensitivity of the resource to proposed activities, and (4) the duration and magnitude of

ecological ramifications. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species. Sensitive habitats and jurisdictional wetland information was mapped using various hydrologic data, soil types, and vegetative plant communities from the National Wetlands Inventory, USDA Soil Surveys, FEMA, and CAFB.

4.3.2 Impacts

Demolition and construction activities under the Proposed Action and Alternatives (to include the No Action Alternative) would occur within developed, maintained areas with a disturbed landscape.

The AETC Tree Conservation Policy requires that siting decisions for new buildings and additions to buildings retain and incorporate existing trees into landscape designs to the maximum extent possible (U.S. Air Force, 1997d). If trees must be removed to make way for project construction, every attempt must be made to relocate them elsewhere on the installation. To comply with this policy throughout the Proposed Action, trees and shrubs should be retained to the greatest extent possible. There would be no impacts to vegetation outside the developed regions of the base. Use of BMPs during construction would minimize the potential for adverse effects to vegetation at and near the construction sites.

Since the project area is essentially urban, there would be no or minimal impacts to wildlife with the exception of birds that associate with and nest on or in man-made structures. Other considerations related to wildlife are associated with the attraction of migratory birds, which is an issue due to the potential construction of a 0.5-acre man-made lake at Capitol Village under the Proposed Action and Alternative 1.

Migratory birds are protected under the Migratory Bird Treaty Act (16 USC §§ 703–712; 1997-Supp), which protects migratory waterfowl and all seabirds by limiting the transportation, killing, or possession of those birds. Use of the lake by migratory birds may potentially result in additional regulatory requirements associated with protection of migratory birds (e.g., coordination with federal or state regulatory agencies) when planning future activities in or around the lake. Attraction of migratory birds and waterfowl to the lake also presents Bird-Aircraft Strike Hazard issues due to the potential for flocks to collide with aircraft.

As stated in Chapter 3, the FAA recommends a distance of 5 statute miles from approach or departure airspace for wildlife attractants that may cause hazards due to wildlife movement (FAA, 1997). In an effort to reduce or eliminate any BASH issues, the proposed lake should feature a terrace (shelf) design and slopes that are vegetated with tall (7- to 14-inch), native grasses.

These techniques result in less-attractive habitat to waterfowl, such as geese and other birds, by reducing the animals' ability to spot potential predators along the slope of the lake. Studies show that by removing palatable forage (food) sources and replacing them with less attractive vegetation, optimum habitat for these animals is reduced (Barras, 2002). The lake would require extensive coordination with the CAFB BASH program office to ensure that any potential impacts are minimized.

The man-made lake may create a new isolated wetland with no connection to other surface waters. By definition as an isolated wetland, it would not fall under the jurisdiction of any federal or state program (USACE, 2004). However, the lake would be periodically assessed to determine its status as an isolated wetland, as a change in status may result in the need for compliance with EO 11990, *Protection of Wetlands*, for future development activities within Capitol Village.

The entire scope of the project would take place in locations designated as uplands, and therefore eliminates any wetland permitting issues with the USACE and the MDEQ. Neither the Proposed Action nor the Alternatives (to include the No Action) are within 100 feet of a wetland area (USACE, 2002). Studies show that a 100-foot buffer helps control erosion and protect water resources from neighboring land uses and nutrient inputs such as fertilizer, leaking sewage lines, and animal waste (Wenger, 1999).

As stated in Section 3.3.2.2, there are no federally listed threatened or endangered species or associated habitats at the main base areas of CAFB. However, according to the USFWS, the bald eagle, a federally listed threatened species, may occur in the vicinity of the base during winter migrations or during nesting in forested areas near waterways at the periphery of the base. At the request of the USFWS (see Appendix A), CAFB conducted a survey for the eagle in August 2004 in the vicinity of the proposed project location. No occurrences of the eagle in the area were documented, and no occurrences of the eagle have been documented on CAFB during previous endangered species surveys.

Additionally, according to the USFWS six federally listed mussel species are found in the Buttahatchee River, which is adjacent to CAFB. These species are identified in the USFWS correspondence in Appendix A. No impacts to these species are anticipated, as the Buttahatchee River is to the north of the base and not adjacent to the project locations.

4.3.2.1 Proposed Action

Potential impacts associated with the Proposed Action would be the same as those described above. No impacts to vegetation or wildlife are expected given the disturbed nature of the

project landscape. However, the construction of the man-made lake may attract migratory birds, thus resulting in the potential for additional future regulatory requirements in the lake area associated with protection of migratory birds, as well as BASH concerns. Development of the lake would be coordinated with the CAFB BASH program office and take into consideration design elements to minimize wildlife attraction. Although no impacts to wetlands are expected, the man-made lake may create a new isolated wetland with no connection to other surface waters. As mentioned previously, it would not fall under the jurisdiction of any federal or state program (USACE, 2004). However, the lake would be periodically assessed to determine its status as an isolated wetland, as designation otherwise may result in the need for compliance with EO 11990, *Protection of Wetlands*, for future development activities within Capitol Village. No impacts to threatened or endangered species are expected.

4.3.2.2 Alternative 1 – Maximum Development Scenario

Potential impacts would be the same as those described under Section 4.3.2 and the Proposed Action.

4.3.2.3 No Action Alternative

Impacts to biological resources are not expected under the No Action Alternative, as there would be demolition only, and no new unit or lake construction.

4.3.2.4 Cumulative Impacts

Localized loss of habitat or direct impacts to species can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. However, there would be no net loss of habitat at or around CAFB, as the project would occur within already developed areas of the base. Analysis of potential impacts has not identified any direct impacts to threatened or endangered species. The Proposed Action or Alternatives (to include the No Action Alternative) would not have an incremental effect on the biological resources of CAFB or the local area.

4.3.2.5 BMPs/Coordination

Impacts to vegetation, wetlands, and threatened and endangered species are not expected. However, construction of the lake in Capitol Village conflicts with the FAA recommendation to maintain a distance of 5 statute miles from approach or departure airspace for wildlife attractants (FAA, 1997) and may potentially result in the attraction of migratory birds and waterfowl, creating BASH safety issues and the potential for future regulatory requirements associated with migratory bird protection. As a result, BMPs and coordination would be implemented as part of

the Proposed Action and Alternatives to minimize any potential impacts. The following are examples of BMPs and coordination that may be implemented.

- Design the proposed lake to feature a terrace (shelf) design and slopes vegetated with tall (7- to 14-inch) native grasses.
- Periodic evaluation of the lake for its status as a wetland.

4.4 AIR QUALITY

4.4.1 Methodology

This section discusses the potential impacts to air quality as a result of the Proposed Action and Alternatives. For the analysis of the Proposed Action and Alternatives, a threshold on an individual pollutant-by-pollutant basis has been established (Section 3.4).

Although a conformity determination is not required since Lowndes County is designated as being in attainment, the U.S. Air Force Air Conformity Applicability Model (ACAM) was used to provide a level of consistency with respect to emissions factors and calculations. Air emissions were estimated using AP-42 values (MCEQ, 2001a) and the ACAM, and compared to the established 10 percent criterion for Lowndes County emissions on an individual pollutant basis.

Air emissions are evaluated against 10 percent of the total Lowndes County emissions for each corresponding pollutant as represented in the USEPA 1999 NEI (USEPA, 1999). Emissions associated with demolition and construction activities are the main issues generated by the Proposed Action and Alternatives and will be the focus of the air analysis. Air quality issues associated with operational activities after the completion of construction are not included in this evaluation.

Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris loading, and on-site truck traffic to remove debris have been individually developed. The individual calculations for these three events have been summed to develop a recommended PM_{10} emissions factor based on the square footage of the demolished area.

Fugitive dust, nitrogen oxide (NO_x), and carbon monoxide (CO) constitute the majority of the emissions from construction activities and the project overall. Construction operations include more than just actual construction of the residential structures. It incorporates grading operations, construction worker trips, stationary equipment (e.g., generators and saws), mobile

equipment, residential architectural coatings, and acres paved. Approximately 93 percent of the total PM_{10} emissions for the project are associated with grading activities during the early stages of each construction phase. $PM_{10,}$ CO, and NO_x are the primary pollutants of concern, constituting 91 percent of overall project emissions. A majority of the CO emissions are associated with stationary equipment (e.g., saws and generators), while the NO_x emissions are primarily associated with mobile sources.

4.4.2 Impacts

4.4.2.1 Proposed Action

Table 4-2 provides a detailed breakdown of the project's construction emissions on the basis of activity.

Table 4-2. Proposed Action Estimated Construction Emissions by Activity

Source Category		Emissions (Tons)				
		CO	**NO_x**	**SO_2**	**VOC**	**PM_{10}**
Life of Project	Grading Equipment	0.40	1.60	0.15	0.15	0.15
	Grading Operations	0	0	0	0	46.45
	Acres Paved	0	0	0	0.03	0
	Mobile Equipment	15.92	37.95	4.68	3.49	3.08
	Residential Activities	0	0	0	8.20	0
	Stationary Equipment	107.91	2.79	0.15	4.02	0.10
	Workers Trips	3.84	0.20	0	0.25	0.05
	Totals	**128.07**	**42.54**	**4.98**	**16.14**	**49.83**

Based on the Proposed Action details given in Chapter 2 regarding the gross square footage to be demolished, the PM_{10} emissions as a result of this demolition activity is approximately 2.5 tons for the entire project. The total quantity of emissions estimated for the project, by year, is given in Table 4-3.

Table 4-3. Proposed Action Estimated Annual Project Emissions

Year	Emissions (Tons)				
	CO	**NO_x**	**SO_2**	**VOC**	**PM_{10}**
2006	25.74	8.55	1.00	3.24	10.48
2007	25.74	8.55	1.00	3.24	10.48
2008	25.43	8.44	0.99	3.22	10.47
2009	25.42	8.45	0.99	3.22	10.47
2010	25.74	8.55	1.00	3.22	10.48
Totals	**128.07**	**42.54**	**4.98**	**16.14**	**52.39**
Lowndes County	**31,444**	**8,834**	**4,044**	**9,777**	**8,806**
Percentage of County Emissions	***0.41%***	***0.48%***	***0.12%***	***0.17%***	***0.59%***

Source: USEPA, 1999

The five-year comparison of the overall activities to the Lowndes county annual emissions was provided to illustrate a conservative approach in evaluating the air quality impacts to the established criterion. Air emissions were evaluated against each individual pollutant as represented in the 1999 NEI. If the construction activities exceeded ten percent or the annual emissions on a corresponding pollutant-by-pollutant basis, then air quality would be impacted. Since the 10-percent criterion was not exceeded with the sum of the five-year construction schedule then it was assumed that it would not be exceeded on an annual basis.

As indicated in Table 4-3, the individual pollutant emissions from the project would not exceed 10 percent of the total Lowndes County emissions for each corresponding pollutant. The highest pollutant percentage is for $PM_{10,}$ which is approximately 0.59 percent of Lowndes County's total PM_{10} emissions based on the USEPA 1999 NEI. In calculating emissions, certain assumptions were made regarding the amount of acres disturbed and time frame of grading activities. Specific details regarding the assumptions and calculations associated with the emissions estimates are located in Appendix B.

4.4.2.2 Alternative 1 – Maximum Development Scenario

Table 4-4 provides a breakdown of the project's construction emissions on the basis of activity.

Table 4-4. Alternative 1 Estimated Construction Emissions by Activity

Source Category		Emissions (Tons)				
		CO	**NO_x**	**SO_2**	**VOC**	**PM_{10}**
Life of Project	Grading Equipment	0.99	3.73	0.38	0.40	0.31
	Grading Operations	0	0	0	0	109.43
	Acres Paved	0	0	0	0.08	0
	Mobile Equipment	38.68	92.24	11.39	8.42	7.43
	Residential Activities	0	0	0	17.47	0
	Stationary Equipment	262.29	6.81	0.35	9.82	0.21
	Workers Trips	7.21	0.40	0	0.37	0.06
	Totals	**309.17**	**103.18**	**12.12**	**36.56**	**117.44**

Based on the Alternative 1 details, the PM_{10} emissions as a result of this demolition activity is approximately 4.5 tons for the entire project. The total amount of emissions estimated for the project, by year, is given in Table 4-5.

Table 4-5. Alternative 1 Estimated Annual Project Emissions

Year	Emissions (Tons per Year)				
	CO	**NO_x**	**SO_2**	**VOC**	**PM_{10}**
2005	51.26	17.12	2.01	6.04	20.07
2006	51.41	17.17	2.02	6.05	20.08
2007	45.93	15.44	1.82	5.06	18.04
2008	38.79	13.03	1.53	4.28	15.12
2009	25.88	8.61	1.01	3.17	10.42
2010	25.98	8.61	1.01	3.23	9.86
2011	25.90	8.60	1.01	3.23	10.42
2012	18.12	6.02	0.71	2.26	7.47
2013	12.95	4.29	0.50	1.62	5.15
2014	12.95	4.29	0.50	1.62	5.31
Totals	309.17	103.18	12.12	36.56	121.94
Lowndes County	31,444	8,834	4,044	9,777	8,806
Percentage of County Emissions	***0.98%***	***1.17%***	***0.30%***	***0.37%***	***1.38%***

Source: USEPA, 1999

As indicated in Table 4-5, the individual pollutant emissions from the project would not exceed 10 percent of the total Lowndes County emissions for each corresponding pollutant. The highest pollutant percentage is for PM_{10}, which is approximately 1.38 percent of Lowndes County's total PM_{10} emissions based on the USEPA 1999 NEI. Specific details regarding the assumptions and calculations associated with the emissions estimates are located in the Appendix B.

4.4.2.3 No Action Alternative

The No Action Alternative would involve demolition of 86 units. Although the demolition of 86 units would create increased emissions, those emissions would not cause an appreciable impact to air quality based on the established criterion of 10 percent of the total Lowndes County emissions for each corresponding pollutant as represented in the USEPA 1999 NEI.

4.4.2.4 Cumulative Impacts

The project would incrementally contribute air pollution emissions during construction and demolition. This contribution would relate to regional air quality goals and attainment standards, but the contribution from the project would be negligible. Air emissions associated with the project represent only a small percentage of Lowndes County's annual emissions. Project emissions would not contribute to other county emissions in any appreciable manner.

4.4.2.5 BMPs/Coordination

Impacts to air quality are expected to be minimal. As a result, no mitigations are required. The implementation of BMPs to minimize fugitive dust emissions is recommended, as

PM_{10} emissions are approximately 21 percent of the total emissions portfolio. As previously indicated, grading activities associated with the construction phase create the majority of those emissions. The emissions produced would be on a temporary basis and create an elevated short-term PM_{10} concentration, which would fall off rapidly with distance from the source. Therefore, it is anticipated that the effects to overall air quality would be minor. In order to minimize the potential impact to air quality and in accordance with MCEQ Rule Air Pollution Control (APC)-S-1 § 3(a) (MCEQ, 2001b), reasonable precautions should be taken to reduce emission of unconfined particulate matter. These precautions include:

- Paving and maintenance of roads, parking areas, and yards.
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of dust suppressants to unpaved roads, yards, open stock piles, and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate matter from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture, and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

4.5 LAND USE

4.5.1 Methodology

Land use impacts can result if an action displaces an existing use or reduces the suitability of an area for its current, designated, or formally planned use. In addition, a proposed activity may be incompatible with local plans and regulations that provide for orderly development to protect the general welfare of the public, or may conflict with management objectives of a federal or state agency of an affected area. Compatible land use development would need to comply with federal and state environmental laws and regulations.

4.5.2 Impacts

Implementation of the Proposed Action or Alternatives (to include the No Action Alternative) would be compatible with the future land use planning designations for the housing areas as identified in the CAFB General Plan (U.S. Air Force, 2001a), as the project locations are already designated as housing areas and would remain as such after completion of the project.

However, development of a lake under the Proposed Action and Alternative 1 would create potential land use conflicts associated with compatibility of the lake area with airfield operations. As discussed previously, the FAA recommends a distance of 5 statute miles from approach or departure airspace for wildlife attractants that may cause hazards due to wildlife movement (FAA, 1997). Development of a lake at Capitol Village would be within 5 miles of the CAFB airfield, and may therefore result in BASH-related issues. Extensive coordination with the BASH program office would be conducted during the design phase of lake development, as well as during the operation and maintenance of the lake area.

According to an AICUZ study for CAFB conducted in 1998, the Magnolia, State, and Capitol residential areas are between the L_{dn} 60 to 75 dBA average day-night noise contour range associated with aircraft operations (U.S. Air Force, 1998a). As a result, housing units constructed between the 65-75 dBA noise areas would need to be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents. Such specifications would include use of noise-dampening materials such as sound boards and insulation. Specific specifications would be determined at the time of unit design.

4.5.2.1 Proposed Action

Impacts to land use under the Proposed Action would be associated with the potential construction of the 0.5-acre man-made lake at Capitol Village and the potential for BASH impacts to the airfield.

4.5.2.2 Alternative 1 – Maximum Development Scenario

Impacts to land use would be the same as those for the Proposed Action.

4.5.2.3 No Action Alternative

There would be no impacts to land use under the Proposed Action, as there would be no lake construction, and no changes in land use status for the housing areas.

4.5.2.4 Cumulative Impacts

There would be no land use changes that would incrementally contribute to the changing character of the area. As a result, cumulative impacts associated with land use and planning are not expected as a result of this action.

4.5.2.5 BMPs/Coordination

Impacts associated with land use changes would not occur. However, there may be land use conflicts associated with airfield BASH issues and construction of the man-made lake at Capitol Village. Consequently, the following coordination would be required to minimize BASH impacts.

- Extensive coordination with the CAFB BASH program office regarding the design and operation and maintenance of the lake.

Adverse impacts to housing residents may result due to the exposure of residential areas to AICUZ aircraft sound levels exceeding 65 dBA. The following BMP, if implemented, would ensure that no adverse noise impacts to residents resulting from the implementation of the Proposed Action or Alternative 1 would occur.

- Construct housing units to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents. Such specifications would include use of noise-dampening materials such as sound boards and insulation. Specific specifications would be determined at the time of unit design.

4.6 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.6.1 Methodology

Impacts associated with the proposed project are addressed for both the Proposed Action and Alternative 1. These actions differ in two measurable ways: construction activity for the Proposed Action takes place over a five-year period versus 10 years for Alternative 1; and the Proposed Action calls for the construction of 251 new housing units and demolition of 337 units versus 600 new units and demolition of 539 units under Alternative 1.

In addition to the demolition and construction of housing units, utilities and community infrastructure are included in the project. Roads, sidewalks, and underground utilities are provided in addition to the following community facilities: tot lots; play areas; basketball courts;

soccer field; combined community recreation and swimming pool center; group picnic area; lighted tennis and volleyball courts; and an artificial lake.

The impacts of construction are estimated through the use of Impact Analysis for Planning (IMPLAN), an input-output economic model (Minnesota IMPLAN Group, Inc., 2000). The model provides estimates of the direct labor required to accomplish construction of the proposed housing and ancillary facilities. Project-related expenditures on materials and services, as well as the personal spending by direct workers, provide an added stimulus to the regional economy. In order to fulfill the demand for these materials and services, local and regional businesses must increase their output. This results in additional economic activity and attendant employment. The cycling effect of repeated demand for goods and services is referred to as the "multiplier effect." The sum of the employment multiplier effect generates secondary employment and, when added to direct employment, comprises the total employment effect of the project.

In order to comply with EO 12898, ethnicity and poverty status in Lowndes County were examined and compared to regional, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action. Because there are no anticipated impacts to areas surrounding CAFB as a result of the Proposed Action or Alternatives, the potential to disproportionately affect low-income or minority populations is negligible.

4.6.2 Impacts

4.6.2.1 Proposed Action

Employment

It is estimated that construction would take place almost evenly during each of the five years comprising the construction phase of the project, and investments and costs are almost evenly spread over these years.

It is anticipated that construction of the proposed facility would create an average of 64 new direct jobs (predominantly in the construction sector of the economy) during each of the five years of construction. In addition to these direct jobs, employment would be created in other industry groups as a result of: (1) the purchase of goods and services needed in the construction process, and (2) the consumption of goods and services made possible by wage and salary expenditures of the direct workers. These secondary jobs would number 57 annually, on average. This beneficial impact to the local economy would be short-term, occurring during construction activities. It is anticipated that adequate labor resources would be available locally to fulfill the needs of the proposed project.

Even if this were not the case and all construction workers and their families moved to the local area, impacts would be small, as described in the following resource-specific sections.

Population

Assuming the in-migration to Lowndes County of the construction workforce required for the project and their accompanying family members, is estimated that a total population increase of about 200 persons may occur. This number comprises a small fraction (0.77 percent) of the population of the county in 2000 and a much smaller proportion of the ROI population (0.11 percent). Such an increase is minor and impacts to population would be negligible.

Housing

The demand for about 200 additional housing units to accommodate workers and their families migrating into the county equates to a minor share of existing housing resources in the county (0.8 percent) and fewer than the number of housing units constructed annually in Lowndes County over the period 1990–1999. The housing vacancy rate of about 9 percent (as of 2000) signifies that adequate housing units would exist to accommodate new residents associated with the proposed project. Impacts to housing resources would be negligible.

Public Schools

Impacts to Columbus Municipal School District could be associated with the addition of about 40 new students. Such an increase would comprise less than 1 percent of the student enrollment of the school district and would be spread throughout the district and grade levels. Impacts to public schools would be negligible.

4.6.2.2 Alternative 1 – Maximum Development Scenario

Although actions anticipated under Alternative 1 include the construction of a greater number of housing units, the construction activity is spread over 10 years rather than five. On an average annual basis, the level of project-related effects is virtually identical to that of the Proposed Action. For this reason, impacts would be as stated for the Proposed Action.

4.6.2.3 No Action Alternative

The No Action Alternative involves only the demolition of 86 units at some time in the future. Impacts associated with this level of activity would be significantly less than that identified and analyzed under the Proposed Action. Therefore, no socioeconomic impacts would occur.

4.6.2.4 Cumulative Impacts

The creation of jobs as a result of Proposed Action or Alternative 1 implementation would provide a long-term benefit over the five-year or 10-year life of the project, respectively. The need for housing associated with the influx of new workers, as well as the increase in spending within the local economy would certainly provide a benefit. Lowndes County also has enough housing, based on its occupancy rate to provide housing for new workers. As a result, given the nature of the economy to grow to meet local demands and the length of time over which these factors may occur, these incremental impacts are anticipated to be beneficial, but minimal.

4.6.2.5 BMPs/Coordination

Minor, although beneficial, impacts are expected to occur under all Alternatives (to include the No Action). As a result, no mitigations, BMPs, or coordinating activities are required.

4.7 SAFETY AND PROTECTION OF CHILDREN

4.7.1 Methodology

This section discusses potential safety effects resulting from the Proposed Action and Alternatives. Impacts are assessed according to the potential to increase or decrease safety risks to ground personnel, the public, and property. If any proposal-related activity indicated a major variance from existing conditions, it would be considered a substantial safety impact.

This section also discusses potential impacts that would pose special risks to children (under 18) in accordance with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children)*. Impacts are associated with hazardous materials, safety, noise, and other conditions in the project areas associated with the Proposed and Alternative Actions. Analysis focuses on the exposure of children to the anticipated associated environmental effects.

4.7.2 Impacts

Safety

The primary safety concern for the Proposed Action and Alternative 1 is the construction of the lake and the associated BASH-related issues. This lake would be located in Capitol Village, less than a mile from the airfield. The FAA identifies retention ponds as features that may be compatible with safe airfield operations as long as there is no apparent attraction to wildlife that may be hazardous to aircraft operations (FAA, 1997). Worker safety on the job and general

public safety is not an issue, as the developer would adhere to general OSHA requirements for construction site safety.

Protection of Children

Children possess different physiologic and behavioral characteristics than adults that make them more vulnerable to environmental effects. Case studies show that children have become ill or died from environmental exposures that either did not affect adults or affected them less severely (Johnson, et al., 1999).

The risks that could potentially be associated with the Proposed Action and Alternatives for the housing project are exposure to asbestos and lead-based paint, safety concerns including those associated with construction of a lake in addition to typical construction/demolition activities, and noise from construction and demolition.

Hazardous materials including asbestos and lead-based paint would be removed from the area. Thus, children, as well as the community as a whole, would benefit from the elimination of potential exposure. The proper planning and implementation of responsible handling and disposal techniques would offset the potential for impacts to any age group.

Safety concerns associated with the construction/demolition activities under the Proposed Action and Alternatives may pose special risks to children. While C&D activities would not use explosive or hazardous materials, other unique risks to children exist. The developer performing these activities would be required to include project design and safety precautions to protect children in the residential areas surrounding the work sites. These project areas may be attractive to children for play; therefore, precautions would include adequate measures to restrict access to C&D sites. Additionally, the developer would be required to consider all aspects of child safety during work and non-work hours. This would include maintenance of restricted access during all aspects of the project—work hours, site preparation, and non-work hours—and the minimization of hazards for slips, trips, and falls associated with C&D activities.

Construction of the man-made lake within the vicinity of the military family housing area may pose risks to children not only during construction but also following the project's completion. Like the construction/demolition sites, the area designated for lake construction may be attractive to children for play. Therefore, safety precautions around the lake site for child protection would also be implemented here. Precautionary measures applied to housing sites would also be considered and modified for the lake site. Risks to children located in these residential areas may arise following completion of the lake construction project. A study by the National SAFE KIDS campaign (2004) found that although drowning among children has declined in recent years,

water-related deaths still rank second in causes of injury to individuals between the ages of one and 14 years. Furthermore, 37 percent of the drownings occurred in natural bodies of water including lakes, rivers, and ponds. Risks may arise from children playing in or around the lake, who are unsupervised, without a personal floatation device, or unable to swim.

Children are more sensitive to noise than adults. Mild hearing loss as a child or young adult may influence significant premature hearing loss. Some researchers propose that even minor hearing damage at a young age may make a person more susceptible to permanent loss (National Institute for Occupational Safety and Health [NIOSH], 1999). This is called the "damaged-ear" theory. Noise associated with the military family housing project would be associated primarily with C&D equipment. Sounds from these activities would be intermittent and short in duration, and would not contribute in any appreciable manner to the existing noise environment (Section 4.11). As a result, special risks to children from C&D noise under the Proposed Action and Alternative (to include the No Action Alternative) are not anticipated.

4.7.2.1 Proposed Action

As stated previously, the primary safety impact is associated with the development of the lake at Capitol Village and the BASH issues resulting from the potential attraction of wildlife that are hazardous to aircraft operations.

Benefits to children would result from the minimization of potential exposure to asbestos and lead-based paint. However, issues associated with demolition and construction worksite safety and the propensity for children to find access to these sites, as well as the safety of children in relation to the lake, may result in adverse impacts. BMPs associated with the lake to minimize any potential impacts are described in Section 4.7.2.5.

4.7.2.2 Alternative 1 – Maximum Development Scenario

Potential impacts under Alternative 1 would be the same as those described previously under Section 4.7.2 and the Proposed Action. BMPs associated with the lake to minimize any potential impacts are described in Section 4.7.2.5.

4.7.2.3 No Action Alternative

Potential impacts would be associated with special risks to children and the demolition activities associated with the No Action Alternative. BMPs associated with the lake to minimize any potential impacts are described in Section 4.7.2.5.

4.7.2.4 Cumulative Impacts

Several ponds, lakes and wetlands are currently located within 1 mile of the airfield at various locations to the north, south and east of the airfield, many of which are several acres in size. If the current status of bird-aircraft strike hazards is manageable under the existing CAFB BASH Plan, and hazards are successfully reduced, the addition of a 0.5-acre lake may pose an additional but minimal risk to safety. Proper implementation of safety BMPs would also reduce the potential risks to children, thereby minimizing the potential for an incremental safety risk to children living in the MFH area.

4.7.2.5 BMPs/Coordination

Safety impacts are associated with lake development/operation and BASH-related issues. Minimization of impacts to children is associated with worksite safety and development of the lake. Impacts would be expected to be minimal with the implementation of occupational safety standards for worksite safety and BMPs.

Lake Development/Operation

- Coordination of the design and operation of the lake with the CAFB BASH program office
- Resident education regarding the safety hazards to children associated with the presence of the lake
- Posting of "No Swimming" signs along the lakeside
- Frequent monitoring of lake access to ensure no swimmers access the lake

Worksite Safety

- Proper handling and disposal of hazardous materials
- Provision of adequate measures to restrict access to C&D sites and consider all aspects of child safety during work and non-work hours
- Maintenance of restricted access both during work hours, site preparation, and non-work hours
- Minimization of slip/trip/fall hazards associated with demolition and construction activities

4.8 INFRASTRUCTURE

4.8.1 Methodology

Level of service (LOS) is the primary transportation and utility service-related issue. Criteria for evaluating impacts to transportation and utility service include the potential for disruption and/or permanent degradation of the resource. The ROI for the proposal as it relates to infrastructure is the area surrounding and including the housing areas as well as overall utility use.

4.8.2 Impacts

4.8.2.1 Proposed Action

Under the Proposed Action there would be a decrease in the amount of utility service needed at the base. Those residents moving into the local community would utilize utility services directly from the county. However, since residents on the installation currently use county water, sewer, and gas utilities, and TVA electricity, no additional burden would be placed on utility providers. There may be a slight, short-term increase in county population of about 200 persons associated with job creation. This is less than a 1-percent increase in the total county population and would not place an appreciable burden on utilities or providers in the local area. No adverse impacts to utility providers are expected. Minor benefits from additional revenues due to new residents (workers) utilizing utilities may occur.

The density of the housing areas under the Proposed Action would decrease from its present state. Impacts to traffic in residential areas would be beneficial as wider roads may be provided and there would be less car traffic on residential streets. A temporary traffic influx would be associated with C&D activities during work hours. However, these increases are expected to be minor and would not significantly impact the LOS of local roadways or the entrance gate service. The local road system must be developed to meet all local requirements and standards, including obtaining the best possible alignment, grade, sight distance, and drainage for new roads relative to the new development and associated terrain.

4.8.2.2 Alternative 1 – Maximum Development Scenario

Under Alternative 1 there would be an increase of 61 units at the installation. Depending on the occupancy rate, this may result in about a 10-percent increase in the amount of utility service needed at the base. In addition, there may be a slight, short-term increase in county population of about 200 persons associated with job creation. Overall, this is less than a 1-percent increase in the total county population and would not be expected to place an appreciable burden on utilities or providers in the local area. No adverse impacts to utility providers are expected. Minor benefits from additional revenues due to additional residents utilizing utilities may occur.

The density of the housing areas under the Proposed Action would increase from its present state. Impacts to traffic in residential areas may be adverse but minor due to increased car traffic on residential streets. Design of roadways and residential areas would consider the accommodation of more traffic under this Alternative. A temporary traffic influx would also be associated with C&D activities during work hours. However, these increases are expected to be minor and would not significantly impact the LOS of local roadways or the entrance gate service. The local road system must be developed to meet all local requirements and standards, including obtaining the best possible alignment, grade, sight distance, and drainage for new roads relative to the new development and associated terrain.

4.8.2.3 No Action Alternative

There would be no changes to the utility or transportation infrastructure of the installation under the No Action Alternative. A temporary traffic influx would be associated with demolition activities during work hours. However, these increases are expected to be minor and would not significantly impact the LOS of local roadways or the entrance gate service. No impacts to utility or transportation infrastructure are anticipated.

4.8.2.4 Cumulative Impacts

Incremental impacts associated with utility infrastructure are associated with increasing use of utilities in the area. Overall, there would be only a small increase in population associated with worker influx over a period of five to 10 years, thus resulting in only a small increase in utility usage throughout Lowndes County. Consequently, impacts to utilities of a cumulative nature would be minor. In general, there would be only a short-term increase in traffic on the base due to construction activity during work hours. However, overall cumulative transportation impacts would depend on the Alternative selected; under the Proposed Action and No Action Alternative cumulative impacts would be beneficial in that there would be less crowding and traffic within residential areas. Under Alternative 1, roadways within residential areas may become more congested due to higher population and traffic density.

4.8.2.5 BMPs/Coordination

A slight increase in traffic congestion may occur under Alternative 1 due to the increased density of the housing areas over baseline conditions (which would be increased in order to accommodate 600 units). The increase in number of units under Alternative 1 is about 11 percent. This increased density would result in increased traffic on residential streets. The implementation of the following BMP would minimize adverse impacts to residents associated with transportation.

- Incorporation of specific engineering design and traffic studies into site plans and related road systems for each new housing area developed as a part of Alternative 1. The objective of these reviews would be to make sure that future circulation patterns and new intersections do not create inadequate levels of service at new or existing intersections or along existing roads.

4.9 SOLID WASTE

This section discusses potential impacts from solid waste generation, which includes municipal solid waste and C&D debris resulting from the Proposed Action and Alternatives.

4.9.1 Methodology

Impact analysis was conducted by first enumerating the potential generation of solid waste from the Alternatives. The maximum potential amount of debris was compared to the current capacity for waste disposal associated with the potential project and surrounding areas (as described in Chapter 3, Section 3.9).

4.9.2 Impacts

Solid waste would be generated during construction and demolition of MFH units under the Proposed Action and Alternatives. Non-hazardous solid waste includes C&D debris such as removed building materials and land clearing debris. Based on sampling studies documented in "Characterization of Building-Related Construction and Demolition Debris In The United States" (Franklin Associates, 1998), it was determined that 4.38 pounds per square foot (lbs/ft^2) and 77.6 lbs/ft^2 of debris would be generated during residential construction and demolition, respectively.

Under the Proposed Action and Alternatives (to include the No Action Alternative), any cut vegetation would not be put into the solid waste stream (dumpsters or roll-offs) but instead taken to designated areas of the Golden Triangle Landfill for mulching and soil stabilization. To the greatest extent possible, C&D waste would be recycled, especially wood, scrap metal, and wiring. Where feasible, CAFB may reuse concrete material as rip-rap in spillways to prevent erosion. All concrete must be crushed on-site using a crusher that operates at less than 200 tons/hour (DuBoise, 2004).

Coordination between CAFB, waste contractors, developers, and local landfill operators prior to demolition or construction would minimize any potential impacts associated with disposal of demolition and construction debris.

4.9.2.1 Proposed Action

The Proposed Action may involve a net population increase in the county associated with an influx of workers in the area (approximately 200 persons), thereby resulting in a net change in the amount of municipal solid waste (household) generated in the county. However, impacts to landfill capacity from generation of MFH household solid waste would be negligible. Thus, no potential impacts to municipal solid waste associated with household waste are expected.

The total amount of debris that could potentially be generated during the C&D activities of MFH units is shown in Table 4-6. Detailed information and calculations regarding C&D debris generation is located in Appendix B.

Table 4-6. Estimated C&D Debris Generated by the Proposed Action

Year	Construction		Demolition		Total Tons of Debris
	Square Feet	Tons of Debris[a]	Square Feet	Tons of Debris[b]	
2006	124,010	272	69,057	2,679	2,951
2007	108,500	238	69,057	2,679	2,917
2008	115,000	252	69,057	2,679	2,931
2009	115,000	252	100,823	3,912	4,164
2010	98,260	215	157,450	6,110	6,325
Totals	560,770	1,229	465,444	18,059	19,288

Figures do not include driveways or roadway. Recycling of C&D debris would reduce total amounts.

[a] Calculation based on average C&D debris generated (4.38lb/ft^2) during new construction

[b] Calculation based on average C&D debris generated (77.6 lb/ft^2) for homes on concrete slabs

The Proposed Action involves the construction of 251 new housing units and the demolition of 337 existing units. It is estimated to produce 1,229 tons of construction debris and 18,059 tons of demolition debris. The annual average distribution and amount of C&D debris taken from CAFB, as opposed to other sources and deposited in local landfills, was unavailable. In the analysis, the amount of debris generated during construction and demolition of MFH units under the Proposed Action was calculated and compared to the average annual amount of waste received at landfills that accept C&D waste, as shown in Table 4-7.

Table 4-7. Estimated Percent Annual Increase in C&D Debris at Local Landfills Under the Proposed Action

Year	Estimated Maximum Potential Amount of C&D Debris Received (tons)	Estimated Annual Percent Increase per Landfill		
		Golden Triangle Regional Landfill	Prairie Bluff Sanitary Landfill	Columbus Rubbish Landfill
2006	2,951	2.2	1.3	6.6
2007	2,917	2.2	1.3	6.5
2008	2,931	2.2	1.3	6.6
2009	4,164	3.1	1.8	9.3
2010	6,325	4.7	2.8	14.2

Although it is unlikely that all MFH material would enter only one landfill, this assumption was used for comparative analysis. For each respective landfill, the MFH debris would potentially increase the percent use at Golden Triangle Regional Landfill from between 2 percent to about 5 percent, at the Prairie Bluff Sanitary Landfill from between 1 percent to 3 percent, and at the Columbus Rubbish Landfill from between nearly 7 percent to 14 percent over the life of the project. Consequently, C&D debris would be recycled or reused to the extent practicable to minimize any impacts to local landfill capacity. In addition, distribution of C&D debris among all three landfills would further minimize the potential for adverse impacts to landfill capacity.

4.9.2.2 Alternative 1 – Maximum Development Scenario

Alternative 1 may involve a net population increase in the county associated with an additional 61 units over baseline, as well as additional workers in the area (approximately 200 persons), thereby resulting in a net change in the amount of municipal solid waste (household) generated in the county. However, impacts to landfill capacity from generation of MFH household solid waste would be negligible. Thus, no potential impacts to municipal solid waste associated with household waste are expected.

The total amount of debris that could potentially be generated during the C&D activities under Alternative 1 is shown in Table 4-8. Detailed information and calculations regarding C&D debris generation is located in Appendix B.

Table 4-8. Estimated C&D Debris Generated by Alternative 1

Year	Construction		Demolition		Total Tons of Debris
	Square Feet	Tons of Debris[a]	Square Feet	Tons of Debris[b]	
2006	211,090	462	118,483	4,597	5,059
2007	211,090	462	118,483	4,597	5,059
2008	183,830	403	118,483	4,597	5,000
2009	148,850	326	116,964	4,538	4,864
2010	99,234	217	173,169	6,719	6,936
2011	99,234	217	133,675	5,187	5,404
2012	99,234	217	39,495	1,533	1,750
2013	69,464	152			152
2014	49,617	109			109
2015	49,617	109			109
Totals	1,221,260	2,674	818,752	31,768	34,442

Figures do not include driveways or roadway. Recycling of C&D debris would reduce total amounts.

[a] Calculation based on average C&D debris generated (4.38lb/ft^2) during new construction

[b] Calculation based on average C&D debris generated (77.6 lb/ft^2) for homes on concrete slabs

The demolition of the 539 units and construction of 600 units could potentially produce up to 7,000 tons of C&D debris in a year. The annual average distribution and amount of C&D debris taken from CAFB as opposed to other sources and deposited in local landfills was unavailable.

Analysis calculated the amount of debris potentially generated during construction and demolition of MFH units under Alternative 1 and compared that to the average annual amount of waste received at landfills accepting C&D waste, as shown in Table 4-9.

Table 4-9. Estimated Percent Annual Increase in C&D Debris at Local Landfills Under Alternative 1

Year	Estimated Maximum Potential Amount of C&D Debris Received (tons)	Estimated Annual Percent Increase per Landfill		
		Golden Triangle Regional Landfill	Prairie Bluff Sanitary Landfill	Columbus Rubbish Landfill
2006	5,059	3.7	2.2	11.3
2007	5,059	3.7	2.2	11.3
2008	5,000	3.7	2.2	11.2
2009	4,864	3.6	2.1	10.9
2010	6,936	5.1	3.0	15.5
2011	5,404	4.0	2.4	12.1
2012	1,750	1.3	0.8	3.9
2013	152	0.1	0.1	0.3
2014	109	0.1	0.1	0.2
2015	109	0.1	0.1	0.2

Although it is unlikely that all MFH material would enter only one landfill, this assumption was used for comparative analysis. For each respective landfill, the MFH debris would potentially increase percent use at Golden Triangle Regional Landfill from between less than 1 percent to 5 percent, the Prairie Bluff Sanitary Landfill from between less than 1 percent to 3 percent, and at the Columbus Rubbish Landfill from between less than 1 percent to 15 percent over the life of the project. Consequently, C&D debris would be recycled or reused to the extent practicable to minimize any impacts to local landfill capacity. In addition, distribution of C&D debris among all three landfills would further minimize the potential for adverse impacts to landfill capacity.

4.9.2.3 No Action Alternative

Under the No Action, the total amount of debris that could potentially be generated during the demolition activities of 86 units is shown in Table 4-10. This action was authorized under a previous action and calls for no new construction. As it is unknown which particular units would potentially be demolished, an average square foot per unit at CAFB was utilized. Detailed information and calculations regarding C&D debris generation is located in Appendix B.

Table 4-10. Estimated C&D Debris Generated by No Action Alternative

Number of Units	Average Square Footage/Unit*	TOTAL Square Feet	Total Demolition Debris generated (tons)[a]
86	1,519	130,634	5,069

*Square footage based on average size of 3, 4, and 5 bedroom units combined.

[a] Calculation based on average C&D debris generated (77.6 lb/ft^2) for homes on concrete slabs

The No Action Alternative involves the demolition of 86 housing units and poses no new construction. It is estimated to produce 5,069 tons of demolition debris and no construction debris. Under the No Action Alternative, demolition debris would be significantly less than that analyzed under the Proposed Action and Alternative 1. The amount of potential demolition debris from MFH activities under the No Action Alternative is not expected to create constraints to area landfills. Thus, no negative impacts are anticipated.

4.9.2.4 Cumulative Impacts

If all C&D debris generated for the Proposed Action or Alternative 1 were to be delivered to a single landfill it would potentially shorten the lifespan of that landfill. However, recycling, reuse, and distribution of C&D debris among the three landfills would minimize the potential effect, resulting in minimal cumulative impacts.

4.9.2.5 BMPs/Coordination

Adverse impacts to landfill capacity and lifespan may result if all C&D debris were to be delivered to a single landfill. As a result, the following BMPs, if implemented, would ensure that no adverse impacts to local landfills result from the implementation of the Proposed Action or Alternative 1.

- Recycling and reuse of C&D debris (to the extent practicable)
- Distribution of C&D debris among the three local landfills

4.10 HAZARDOUS MATERIALS AND WASTE

Impacts associated with hazardous materials and wastes are associated with the potential for the use of hazardous materials or the generation of hazardous waste to pose risks to the environment or public health and safety.

4.10.1 Methodology

Units within housing areas have documented occurrences of asbestos-containing materials and lead-based paint. As a result, the presence of hazardous building materials such as ACM and lead-based paint and the potential for adverse health and safety impacts was analyzed. Analysis evaluated the presence of IRP, CERCLA, or RCRA contaminated sites and the potential for ground-disturbing activities to impact these sites, as well as the potential for residential exposure if housing areas are placed in close proximity to these sites.

4.10.2 Impacts

The Proposed Action and Alternatives (to include the No Action Alternative) involve similar actions at the same locations. As a result, impacts across all Alternatives are addressed below.

Installation Restoration Program Sites

No active IRP sites are located within the existing MFH areas. Should any unusual odor or soil or groundwater coloring be encountered during activities, Environmental Flight would be contacted immediately. No impacts related to IRP issues are anticipated from MFH activities.

Storage Tanks

Two aboveground storage tanks are located within or adjacent to existing MFH sites. Avoidance of these tank areas during C&D activities would negate impacts from the disturbance of storage tanks. No impacts from the ASTs are anticipated, as building developers would avoid disturbance of the tank areas.

Asbestos

MFH units at CAFB are suspected of, or have been identified as, having some asbestos containing building material. ACBM identified in MFH area units included flexible ducting associated with the heating ventilation and air conditioning systems and in vinyl composition tile and roof shingles.

AFI 32-1052, Facilities Asbestos Management, requires that when safety and budgetary considerations permit, complete removal of asbestos-containing material would be included in military construction program facility projects. A certified developer must be used when removing asbestos-containing building materials, and personnel must adhere to established procedures set forth for the safe handling and transport of these materials. With management requirements met, there are no anticipated long-term adverse impacts resulting from asbestos contamination from demolition of buildings.

New units constructed would not have ACBM. There would be beneficial impacts to MFH residents upon the removal of potential exposure to ACBM.

Lead-Based Paint

Materials containing LBP have been found in all housing units in CAFB MFH areas. Materials identified as containing LBP included interior baseboards, windowsills, metal doorframes, window frames, exterior wood trims, soffits, and façades.

Environmental Flight would review all construction project programming documents, designs, and contracts. Projects requiring alteration or demolition of an existing housing structure trigger the requirement for LBP surveys. Project designs would stipulate the appropriate abatement and disposal requirements for LBP. LBP-containing materials do not have to be treated as hazardous waste as long as these materials are not removed from a structure prior to demolition, and the Toxicity Characteristic Leaching Procedure of 5 milligrams per liter is not exceeded (MDEQ, 2001c).

New units constructed would not contain LBP. Beneficial impacts to MFH residents would occur, as potential exposure to LBP would be eliminated.

Polychlorinated Biphenyls

Electric power transformers located on power poles in MFH areas are free of PCBs. PCBs may be contained within the ballasts of older fluorescent light fixtures installed in MFH residences. In the event PCBs are discovered, they are turned in to the Defense Reutilization and Marketing Office for proper disposal. CAFB policy also specifies that housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 or MDEQ requirements.

No PCB containing materials would be utilized during construction. Therefore, no adverse impacts associated with PCBs would occur.

Chlordane

Chlordane was not detected in any soil samples taken from the State Village housing area in a sampling effort conducted on 15 July 2004 by the CAFB Bioenvironmental Engineering Element. It is therefore believed that chlordane is not present in the housing areas, and impacts from chlordane are not anticipated.

Pesticides

The proposed construction of a 0.5-acre lake may require the use of pesticides for nuisance insect control. Only USEPA- and Air Force-approved pesticides must be used by a certified applicant. All pesticide applications would use the least toxic effective chemical and would be applied in accordance with label instructions. The application of pesticides would be kept to an absolute minimum.

No impacts from the use of pesticides are expected, as applicators would adhere to respective management requirements.

Hazardous Materials and Hazardous Waste Management

The proposed MFH units would be constructed following normal residential construction, which would limit the use, to the extent possible, of hazardous materials. Petroleum, oil, and lubricant (POL) products may be used for construction equipment. These materials would be stored in the proper containers, and secondary containment would be used to prevent the spread of accidental spills. All spills and accidental discharges of POLs, chemicals, hazardous waste, or hazardous materials on CAFB, regardless of the quantity, must be reported. Any spill that poses a threat to life, health, or the environment, or has the potential to cause a fire, would be reported to the Base Fire Department by dialing 911. If the Fire Department declares an emergency condition, they can take control of the situation, including the tasking of the organization's cleanup detail.

Routine household hazardous wastes, including batteries, fluorescent bulbs, pesticides, paint/paint cans, pool chemicals, and used oil or other lubricants may be generated in CAFB MFH areas. Guidance information is provided on proper disposal of household hazardous waste and encourages MFH residents to take their wastes to on-base/off-base collection centers for recycling and disposal. Used oil, filters, and greases may be disposed of at the skills development center/auto hobby shop. Paint materials issued by the Pride Store (Building 366) and associated paint-related wastes may be returned to the Pride Store for disposal. In addition, CAFB has a Household Hazardous Waste Turn-in program at the Recycling Center and an annual Household Hazardous Waste Amnesty Day, sponsored by 14 CES/CEV, to allow residents to dispose of household hazardous wastes.

No impacts from hazardous materials and hazardous wastes are expected, as developers would adhere to respective requirements outlined above and in Section 4.10.2.5.

4.10.2.1 Proposed Action

No adverse impacts associated with hazardous materials or waste are anticipated under the Proposed Action, as standard operating procedures would be implemented as described in Section 4.10.2.5. Beneficial impacts would result from the removal of asbestos and lead-based paint materials in the older housing units.

4.10.2.2 Alternative 1 – Maximum Development Scenario

As with the Proposed Action, no adverse impacts associated with hazardous materials or waste are anticipated under Alternative 1, as requirements would be implemented as described in Section 4.10.2.5. Beneficial impacts would result from the removal of asbestos and lead-based paint materials in the older housing units.

4.10.2.3 No Action Alternative

No adverse impacts associated with hazardous materials or waste are anticipated under the No Action Alternative, as requirements would be implemented as described in Section 4.10.2.5. Beneficial impacts would result from the removal of asbestos and lead-based paint materials in the older housing units.

4.10.2.4 Cumulative Impacts

No adverse impacts associated with hazardous waste have been identified with respect to the implementation of the Proposed Action or any of the Alternatives. Therefore, these activities would not contribute to any cumulative impacts associated with hazardous materials and/or waste.

4.10.2.5 BMPs/Coordination

The potential for impacts associated with hazardous materials and waste are related to handling and disposal of hazardous materials and waste, as well as the proximity of project locations to contaminated areas or storing hazardous substances. The following actions would be implemented to ensure that no impacts related to hazardous materials or wastes occur.

- Contact Environmental Flight immediately if any unusual odor or soil or groundwater coloring is observed during construction or demolition activities.
- Avoid tank areas during C&D activities.
- A certified developer must be used when removing asbestos-containing building materials.
- Environmental Flight must review all construction project programming documents, designs, and contracts. Project designs must stipulate appropriate abatement and disposal requirements for LBP.
- In the event PCBs are discovered, they must be turned in to the Defense Reutilization and Marketing Office for proper disposal. Housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 and MDEQ requirements.
- Only USEPA- and Air Force-approved pesticides must be used by a certified applicant. All pesticide applications must use the least toxic effective chemical and would be applied in accordance with label instructions.
- All spills and accidental discharges of POLs, chemicals, hazardous waste, or hazardous materials on CAFB, regardless of the quantity, must be reported.

4.11 NOISE

4.11.1 Methodology

Noise associated with the Proposed Action and Alternatives (to include the No Action Alternative) would result from demolition and construction activities. All activities would occur within the same location, under varying degrees, across all Alternatives. Concerns regarding noise relate to certain potential impacts such as hearing loss, non-auditory health effects, annoyance, speech interference, and sleep interference (National Research Council, 1977). C&D noise was analyzed using representative noise scenarios based on the number of units to be constructed/demolished under each alternative.

The findings of numerous research projects on the effects of noise and its wider repercussions indicate that an outdoor sound level of 65 dBA is "unacceptable," and an outdoor level of less than 55 dBA is desirable.

4.11.2 Impacts

Demolition and construction would occur over a multi-year period, and at any one time, demolition and construction projects at multiple locations would be expected to be ongoing simultaneously. Therefore, noise associated with active construction sites would be expected to be intermittent and transitory over time. As identified in Section 3.5.2.2 and 4.5.2, portions of the housing areas are between the 65-75 dBA aircraft noise contours. Impacts associated with construction in these areas would be the same as those described in Section 4.5.2.

Primary sources of noise during C&D activities would be expected to be truck and vehicle traffic, heavy earth moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on-site. Table 4-11 shows sound levels associated with typical heavy construction equipment under varying modes of operation.

Table 4-11. Typical Equipment Sound Levels

Equipment	Sound Level (in dBA) Under Indicated Operational Mode [1]		
	Idle Power	Full Power	Moving Under Load
Forklift	63	69	91
Backhoe	62	71	77
Dozer	63	74	81
Front-End Loader	60	62	68
Dump Truck	70	71	74

[1] Measured at 125 Feet

Source: U.S. Air Force, 1998b

4.11.2.1 Proposed Action

Noise associated with the Proposed Action would be from demolition and construction initially, and then eventually from day-to-day residential activity. Since the Proposed Action results in a net decrease in residential units, and possibly a decrease in the population, the contribution of residential activity to the average noise environment would diminish. Aircraft operations would still dominate the average noise environment.

Demolition and Construction Noise Analysis

The first step in the analysis was to estimate equipment usage and calculate the total acoustic energy that would be expected to be generated on the site. Methods for this analysis are presented in Appendix B. These data also provided information on an individual equipment item's relative contribution to the total amount of acoustic energy generated on the site. Next, individual equipment was spatially distributed throughout the construction zone considering "most likely" areas of operation. This yielded an equipment-weighted contribution to total site acoustic energy at different points throughout the site. With this spatial distribution, it was then possible to calculate a mean and standard deviation for the distribution along an axis running through the site.

These data were then used to normally distribute the total site energy throughout the site. Finally, the normally distributed energy from multiple source points throughout the site was aggregated at a range of points at varying distances from the site edge. This allowed a determination at those points of the total acoustic energy that had emanated off-site.

Calculations based on this conservative scenario provided equivalent noise levels (average acoustic energy) over an eight-hour period [$L_{eq(8)}$], which was then normalized to a full day $L_{eq(24)}$. Since no construction activity would be expected to occur at night, this would be equivalent to Day-Night Average Noise Levels. The 8-hour and 24-hour equivalent noise levels emanating off-site are shown in Table 4-12. Due to the conservative nature of the scenario, and the fact that sound attenuation due only to spherical spreading was considered, actual levels resulting off-site would be expected to be lower. Within a few hundred feet of the construction site, demolition noise would diminish to an acceptable L_{dn} of between 55 to 65 dBA.

Table 4-12. Demolition Noise Associated With the Proposed Action

Distance From Site Edge (In Feet)	8 Hour Equivalent Noise Level (In dBA)	24-Hour Equivalent Noise Level (In dBA)
100	61.9	57.2
500	55.8	51.0
1,000	53.0	48.2

Construction noise was analyzed similar to demolition noise. The results are shown in Table 4-13. Like demolition noise, construction noise diminishes to reasonable levels over a short distance from the project site.

Table 4-13. Construction Noise Associated With the Proposed Action

Distance From Site Edge (In Feet)	8 Hour Equivalent Noise Level (In dBA)	24-Hour Equivalent Noise Level (In dBA)
100	59.4	54.6
500	52.7	47.9
1,000	50.2	45.4

It should be noted that specific noise events associated with these calculations would vary in terms of intensity and duration.

On-site, all workers potentially exposed to elevated noise associated with their activities would comply with all hearing protective requirements specified by OSHA.

Off-site, noise experienced on a day-to-day basis would depend on the specific activity underway and its proximity to the site edge where a receptor may be present. Nevertheless, the relatively low time-averaged noise levels calculated indicate that neither project-related demolition nor construction activities would be excessively intrusive.

Also, it should be noted that most, if not all of the areas involving demolition and construction are situated within areas already exposed to elevated noise from airfield operations and vehicular traffic. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. Furthermore, demolition and construction-related noise is intermittent and transitory, ceasing at the completion of the project.

Average Noise from Residential Population

Aside from C&D noise, population increases (or decreases) affect the long-term residential noise environment. An equation for calculating average residential population noise is (USEPA, 1974):

L_{dn} = 10 Log (Population Density) + 22, where 22 is a constant

Once construction is complete, primary noise sources would be related to aircraft noise and noise from the residential population. Based on the number of units that would be built on the available acreage, the population density per square mile would be about 5,500 persons (Appendix B). Average noise levels based on population density would be 59.4 dBA for the Proposed Action.

4.11.2.2 Alternative 1 – Maximum Development Scenario

Demolition and construction noise for this Alternative would be essentially the same as the Proposed Action for the annual average noise created, though the duration of the C&D noise would be longer. Noise levels for this Alternative were calculated for use as the representative upper range scenario, previously discussed in Tables 4-12 and 4-13.

Based on population density calculations, sound levels associated with the increased number of residential units under this Alternative would be approximately 60.6 dBA. This level of noise, though slightly higher than the Proposed Action, does not represent a substantial increase.

Overall, noise impacts associated with this Alternative are expected to be minimal. Calculated estimated levels during all phases are similar to those levels associated with urban or suburban residential communities (USEPA, 1974).

4.11.2.3 No Action Alternative

Under the No Action Alternative, the Air Force would not implement the MFH privatization program at Columbus. The eventual demolition of 86 units would result in comparatively less noise overall than the Proposed Action or Alternative 1. Residential noise levels would remain relatively unchanged at 59.4 dBA.

4.11.2.4 Cumulative Impacts

No adverse noise impacts have been identified with respect to the implementation of the Proposed Action or Alternatives. Noise associated with C&D activities would be short-term and would cease upon project completion. Noise associated with residential activities would stay relatively unchanged. As a result, the Proposed Action or Alternatives would not contribute to any cumulative impacts associated with noise.

4.11.2.5 BMPs/Coordination

Adverse impacts to housing residents may result due to the exposure of residential areas to AICUZ aircraft sound levels exceeding 65 dBA. BMPs associated with noise would be the same as those described under Section 4.5.2.

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Socioeconomics
Senior Analyst
PhD Geography
M.A. Geography
B.A. Geography
Experience: 38 years environmental science

Luis Diaz, SAIC
Technical Review
Environmental Engineer
B.S. Aerospace Engineering
M.S. Environmental Engineering
Experience: 11 years of environmental engineering

Jennifer Latusek, SAIC
Special Risks to Children
Environmental Scientist
M. Environmental Management
B.S. Marine Biology
Experience: 3 years environmental science

W. James McKee, SAIC
Biological Resources, Noise, Safety
Environmental Scientist
B.S. Marine Biology
Experience: 19 years environmental science

Henry McLaurine, SAIC
Air Quality
Environmental Scientist
M.S. Biology
B.S. Environmental Science
Experience: 12 years environmental science

Mike Nation, SAIC
GIS
Environmental Scientist
B.S. Environmental Science/Policy, Minor in Geography; A.A. General Science
Experience: 4 years environmental science

Diana O'Steen, SAIC
Document Production
Assistant Editor, Document Management Specialist
Experience: 14 years document management

Jeff Reece, SAIC
Socioeconomics
M.S. Civil and Sanitary Engineering
B.S. Chemical Engineering
Experience: 20 years environmental science

Dave Robau, SAIC
Water Resources, Wetlands
Wetland Scientist
B.S. Environmental Science
Experience: 3 years environmental science

Amy Sands, SAIC
Solid Waste, Hazardous Materials/Waste
NEPA Specialist Planner
B.S. Environmental Science
Experience: 1.5 years environmental science and GIS

Tara Utsey, SAIC
Technical Editing
Technical Editor
Experience: 8 years editing and 10 years document production

6. LIST OF PERSONS AND AGENCIES CONTACTED

Brannon, Miranda. 14 CES/CEVR. CAFB Restoration Program Manager

Brumfield, Milton. Mississippi Department of Environmental Quality (IICEP)

Bunkley, William. U.S. Army Corps of Engineers, Permit Evaluation Section (IICEP)

DuBoise, Krysta. MDEQ, Mining & Solid Waste Management

Fafinski, Sarah. 14CES/CEVN. CAFB Natural Resources Program Manager

Gomez, Capt Kendra. 14 MDOS/SGOAB. CAFB Bioenvironmental Engineering

Lockhart, Frank. Contractor, FPMI. CAFB NEPA Program Manager

Lunceford, Kathy. Vicksburg Ecological Service, Fish and Wildlife Service (IICEP)

O'Brien, Barbara. 14 CES/CEOR. CAFB Facilities Maintenance Supervisor

Pierce, Richard. 14 CES/CEOE. CAFB Energy/Utility Program Manager

Price, Lloyd. Assistant Director, Golden Triangle Regional Landfill

Sanders, Chris. MDEQ Mining & Solid Waste Management

Slancauskas, Edward. 14 CES/CEH. Chief, Housing Program, CAFB

Smith, Michael. 14 CES/CEV. Chief, Environmental Flight, CAFB

Tharpe, Mildred. State Clearinghouse for Federal Programs (IICEP)

Waller, Tom. 14 CES/CEH. CAFB Housing Privatization Program Manager

White, Susan. 14 CES/CERR. CAFB Real Property

Zebryk, Ted. Regulatory Division, Mobile District Corps of Engineers

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APPENDIX A

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP) PROCESS AND PUBLIC INVOLVEMENT INFORMATION

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP)

Through the process of Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), outlined in Air Force Instruction (AFI) 32-7060, federal, state and local agencies are notified and allowed sufficient time to evaluate potential environmental impacts of a proposed action. This is accomplished by coordinating with regulatory agencies throughout the Environmental Impact Analysis Process. The Air Force determined conducting IICEP with the following regulatory agencies was appropriate for the Military Family Housing (MFH) privatization initiative at Columbus AFB:

- Mississippi Department of Environmental Quality (MDEQ)
- U.S. Army Corps of Engineers
- Mississippi State Clearinghouse for Federal Programs
- U.S. Fish and Wildlife Service (USFWS)

Initial IICEP was conducted with the agencies listed above during the development of the Description of the Proposed Action and Alternatives in order to identify any concerns associated with the project. Comments and information provided by these agencies were incorporated into the Draft EA, which was then sent to the agencies for regulatory review. Any comments from these agencies regarding regulatory review of the Draft EA were incorporated into this Final EA. A summary of regulatory review comments associated with the Draft EA is provided below.

- MDEQ
  - Contact the MDEQ once project details have been finalized to confirm whether a General Stormwater Construction Permit Coverage and/or a Stormwater Pollution Prevention Plan (SWPPP) are required.
  - If an SWPPP is required, endangered species should be addressed in the Plan.
  - Debris should be disposed of in a manner consistent with the Mississippi Solid Waste Regulations if it is not recycled or reused.
  - Contact MDEQ prior to demolition if any of the houses contain asbestos materials.
- U.S. Army Corps of Engineers
  - No response.
- Mississippi State Clearinghouse for Federal Programs
  - The project is found to be consistent with the Golden Triangle Planning and Development District Development Program.
- USFWS
  - The USFWS has no objection to the proposed project.

Copies of the correspondence between the Air Force and the aforementioned public agencies are provided in the following pages.

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INITIAL DOPAA IICEP AND RESPONSES

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

14 July 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. William R. Bunkley
US Army Corps of Engineers
Permit Evaluation Section
CESAM-OP-SP
P.O. Box 2288
Mobile AL 36628-0001

Dear Mr. Bunkley,

The United States Air Force is preparing an Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) that should be addressed in the EA. A short description of the purpose and need, as well as a description of the proposed activities associated with the Proposed Action and Alternatives is given below and figures are attached for your reference.

The purpose of the Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families would choose to live. The Air Force proposes to lease the underlying land and convey to a private developer all military family housing units on Columbus AFB (Figure 1) with associated utilities, and other infrastructure improvements. Through a combination of demolition of some existing units, renovation/repair of others, and construction of new units, the developer would provide and manage 452 units for 50 years. Construction and demolition activities would be distributed among Capitol , State, and Magnolia Villages, with the possible construction of a 2-acre man-made lake in Capitol Village (as a desired feature). In addition, after demolition activities, 60 acres of land in Capitol Village would be returned to Columbus AFB for future base development. These areas are identified in Figure 2, while the project activities are identified in Figures 3 and 4.

Alternative 1 is the same as the Proposed Action, except all units would be demolished and 600 units would be rebuilt, distributed among Capitol, State and Magnolia Villages (Figures 3 and 4).

Under the No Action Alternative, privatization of military family housing units on CAFB would not occur. Columbus AFB would continue to manage its housing program, to include routine maintenance and repair, but no new construction, whole-house renovation, or additional demolition would be accomplished. A project to demolish 210 units in State and Magnolia Villages, previously assessed under a separate EA, may continue, regardless of what action is taken under the privatization proposal.

In addition to identifying resources within your agency's purview that may be potentially impacted, we also request any point-of-contact information or relevant documentation that is available that would assist in preparing the EA. To facilitate cumulative impact analysis, we would also appreciate identification of major projects in the vicinity that may contribute to cumulative effects.

Please provide any comments or information by 12 August 2004. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
Figure 1 – Location of CAFB
Figure 2 – Location of CAFB Housing Areas
Figure 3 – State and Magnolia Village Project Activities
Figure 4 – Capitol Village Project Activities

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

14 July 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Ms. Mildred Tharpe
State Clearinghouse for Federal Programs
1301 Woolfolk Building, Suite E
501 North West Street
Jackson MS 39213

Dear Ms. Tharpe,

The United States Air Force is preparing an Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) that should be addressed in the EA. A short description of the purpose and need, as well as a description of the proposed activities associated with the Proposed Action and Alternatives is given below and figures are attached for your reference.

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Sincerely,

E. E. Slancauskas
Chief, Housing Flight

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

14 July 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Ms. Kathy Lunceford
Vicksburg Ecological Service
Fish and Wildlife Service
6578 Dogwood View Parkway, Suite A
Jackson MS 39213

Dear Ms. Lunceford,

The United States Air Force is preparing an Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) that should be addressed in the EA. A short description of the purpose and need, as well as a description of the proposed activities associated with the Proposed Action and Alternatives is given below and figures are attached for your reference.

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Please provide any comments or information by 12 August 2004. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

14 July 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. Milton Brumfield
Mississippi Department of Environmental Quality
P.O. Box 20305
Jackson MS 39289-1305

Dear Mr. Brumfield,

The United States Air Force is preparing an Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) that should be addressed in the EA. A short description of the purpose and need, as well as a description of the proposed activities associated with the Proposed Action and Alternatives is given below and figures are attached for your reference.

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Please provide any comments or information by 12 August 2004. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

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Figure 1 – Location of Columbus AFB

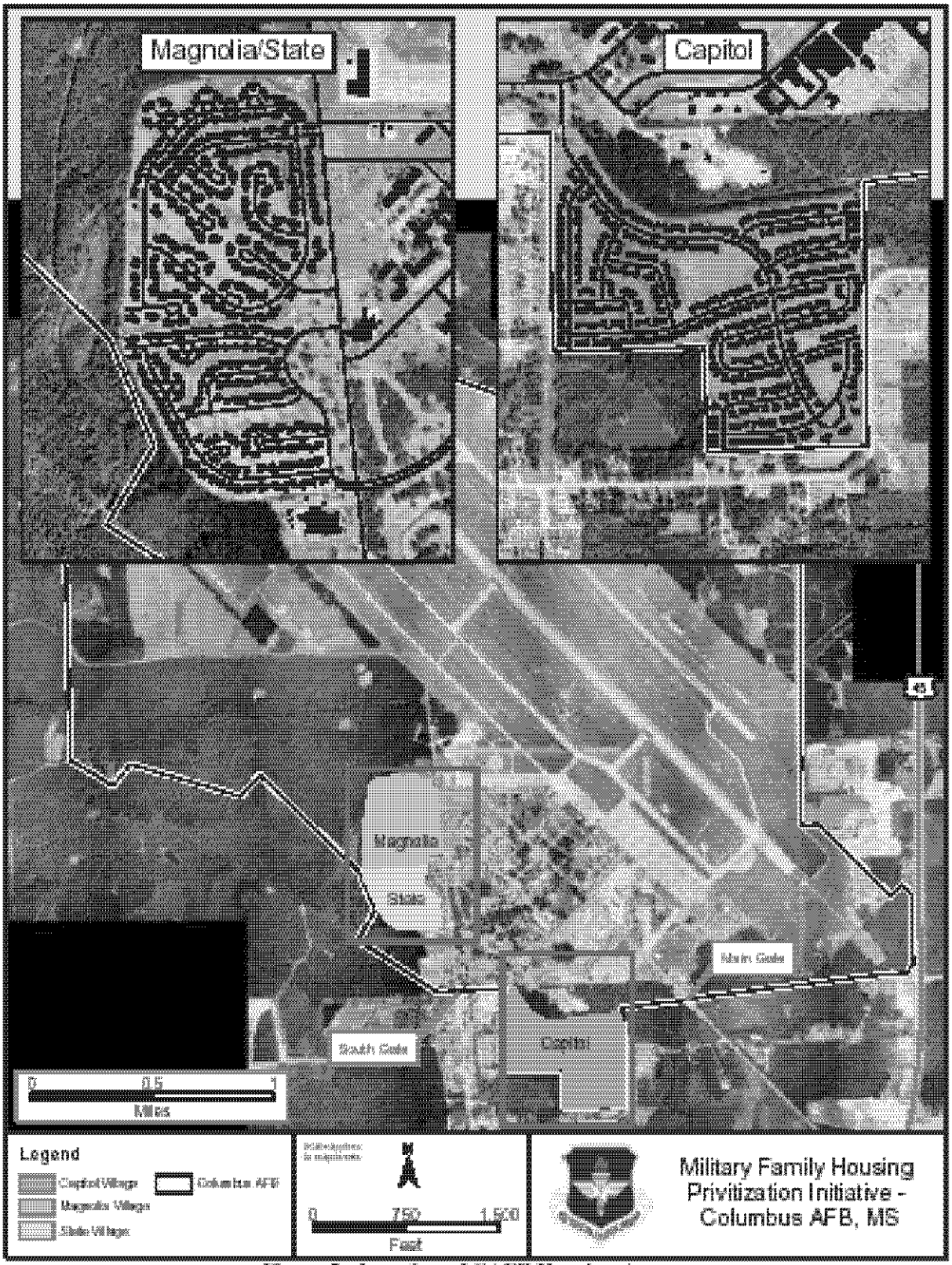

Figure 2. Location of CAFB Housing Areas.

Figure 3. State and Magnolia Village Project Activities.

Figure 4. Capitol Village Project Activities

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mississippi Field Office
6578 Dogwood View Parkway, Suite A
Jackson, Mississippi 39213
April 5, 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB, Mississippi 39710-6010

Dear Mr. Slancauskas:

The U.S. Fish and Wildlife Service (Service) has received your letter dated July 14, 2004, regarding demolition of existing structures and construction of new residential housing on the Columbus Air Force Base (CAFB), Lowndes County, Mississippi. Our comments are submitted in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e), and the Endangered Species Act (16 U.S.C. 1531 et seq.).

There are no federally listed species or their habitats located on the subject site. However, six federally listed mussel species are found adjacent to CAFB in the Buttahatchie River: the endangered heavy pigtoe mussel (*Pleurobema taitianum*), the endangered southern combshell mussel (*Pleurobema penita*), the endangered southern clubshell mussel (*Pleurobema decisum*), the endangered ovate clubshell mussel (*Pleurobema perovatum*), the threatened orange-nacre mucket (*Lampsilis perovalis*), and the threatened Alabama moccasinshell mussel (*Medionidus acutissimus*). All of the listed species require clean, swiftly moving waters with pools and riffles.

Previous extensive mining activities on the Buttahatchie River have created bank sloughing, stream captures, increased water turbidity, and decreased flows. Additional work activities that could increase sedimentation and water turbidity may have adverse impacts on these species. Therefore, the Service recommends that bank stabilization techniques such as buffer strips, erosion cloth, silt fencing, and/or herbaceous plantings be used between the proposed work areas and the river and its tributaries.

Also, the threatened bald eagle (*Haliaeetus leucocephalus*) could be found in the general vicinity of the proposed project. The bald eagle is the only species of "sea eagle" regularly occurring on the North American continent. The bald eagle is predominantly a winter migrant in the southeast; however, increasing occurrences of nesting have been observed. The bald eagle nests in the transitional area between forest and water. Their nests are constructed in dominant living pines or bald cypress trees. Eagles often use alternate nests in different years with nesting activity beginning between September and January of each year. Young are usually fledged by mid-summer.

The bald eagle is very sensitive to human disturbance, especially during the courtship, mating, and nesting season. Therefore, the Service recommends a survey for bald eagle nests and activity within 1500 feet of each of the proposed project sites. If any evidence of the bald eagle is found, please contact this office.

If you have any questions, please feel free to contact this office, telephone: (601) 321-1132.

Sincerely,

Kathy W. Lunceford
Mississippi Environmental Coordinator

STATE OF MISSISSIPPI
DEPARTMENT OF FINANCE AND ADMINISTRATION

MEMORANDUM

TO: COLUMBUS AIR FORCE BASE
HQ 14TH FLYING TRAINING WING
680 SEVENTH ST., SUITE 234
COLUMBUS AFB MS 39710 6010

DATE: AUG - 4 2004

FROM: STATE CLEARINGHOUSE FOR FEDERAL PROGRAMS

SUBJECT: REVIEW COMMENTS - Activity:
ENVIRONMENTAL ASSESSMENT TO EVALUATE THE POTENTIAL ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH THE PRIVATIZATION OF ALL MILITARY FAMILY HOUSING UNITS ON COLUMBUS AIR FORCE BASE, MS.

State Application Identifier Number MS040719-007

Location: HARRISON Contact: TOM WALLER

The State Clearinghouse, in cooperation with state agencies interested or possibly affected, has completed the review process for the activity described above.

INTERGOVERNMENTAL REVIEW PROCESS COMPLIANCE:

( ) We are enclosing the comments received from the state agencies for your consideration and appropriate actions. The remaining agencies involved in the review did not have comments or recommendations to offer at this time. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.

( ) Conditional clearance pending Archives and History's approval.

(✓) None of the state agencies involved in the review had comments or recommendations to offer at this time. This concludes the State Clearinghouse review, and we encourage appropriate action as soon as possible. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.

( ) The review of this activity is being extended for a period not to exceed 60 days from the receipt of notification to allow adequate time for review.

COASTAL PROGRAM COMPLIANCE (Coastal area activities only):

( ) The activity has been reviewed and complies with the Mississippi Coastal Program. A consistency certification is to issued by the Mississippi Department of Marine Resources in accordance with the Coastal Zone Management Act.

( ) The activity has been reviewed and does not comply with the Mississippi Coastal Program.

cc: Funding Agency (As requested by applicant)

1301 Woolfolk Building, Suite E • Jackson, Mississippi 39201 • (601) 359-6762 • Fax (601) 359-6758

STATE OF MISSISSIPPI
HALEY BARBOUR
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

July 29, 2004

Mr. E. E. Slancauskas, Chief, Housing Flight
US Air Force, Columbus Air Force Base
680 Seventh Street, Suite 234
Columbus AFB, MS 39710

Dear Mr. Slancauskas:

Re: US Air Force, Columbus Air Force Base
Lowndes County

We are in receipt of your request for comments regarding potential environmental issues related to proposed construction/demolition activities associated with housing units located at Columbus Air Force Base (CAFB). Once CAFB decides on the activities related to the housing units, then CAFB should contact the Mississippi Department of Environmental Quality (MDEQ) to confirm if a General Stormwater Construction Permit Coverage and/or Stormwater Pollution Prevention Plan (SWPPP) are required for the project. Since there are known endangered species in nearby waterbodies, endangered species should be addressed in the SWPPP. Also, depending on the project, wetlands, dam safety and sanitary waste issues may need to be addressed.

If any demolition activities should occur, the debris should be disposed in a manner consistent with the Mississippi Solid Waste Regulations if the debris is not recycled or reused. Also, MDEQ should be contacted prior to any demolition activities if any of the houses being disturbed contain asbestos material.

The Municipal Permitting Branch of MDEQ should be the point of contact. If you have any questions, please call me at (601) 961-5135.

Sincerely,

Milton Brumfield

Milton Brumfield, P.E., DEE
Environmental Permits Division

Enclosures
cc: Mr. Ricky Terry, P.E., Chief, Municipal Permitting Branch

1356 GNP20020001

OFFICE OF POLLUTION CONTROL
POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • www.deq.state.ms.us
AN EQUAL OPPORTUNITY EMPLOYER

United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services
P.O. Drawer FW
Mississippi State, MS 39762
(662) 325-3014 - office
(662) 325-3690- fax

5 August 2004

Mr. Edwards Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB, MS 39710

Dear Mr. Slancauskas:

As per the request of Columbus Air Force Base (CAFB), Natural Resources Program and United States Fish and Wildlife Service (USFWS), USDA-Wildlife Services (WS) conducted surveys to determine the existence of bald eagle (*Haliaeetus leucocephalus*) nesting sites in the vicinity of the recently proposed construction project.

Bald eagle nest surveys were conducted on CAFB in August with no nest structures or nesting eagles observed. The area surveyed for the proposed construction projects included State, Capital, and Magnolia villages and the surrounding on base habitat. The majority of habitat in and around these areas would be considered residential or urban and supplies no suitable nesting habitat. Habitat within 1,500 ft of the housing areas was also surveyed and showed no sign of eagle nesting or activity. CAFB and areas off base with in 1,500 ft lack many of the habitat requirements, which bald eagles require. Nesting and perch trees are limited since the majority of the CAFB forested habitats are comprised of managed pine or pine/hardwoods. Foraging sites are also limited due to the lack of large water bodies on the base, the species composition of the CAFB single lake, and the control of other potential prey for flight safety purposes.

Additionally, WS has been conducting a Wildlife Hazard Assessment (WHA) on Columbus Air Force Base (CAFB) beginning in June 2003. The WHA dictates that bird surveys are conducted to document species occurrence, density, and habitat use in relation to the airfield and to assess potential strike hazards on and around the base. Approximately 12 surveys per month are conducted with ancillary observation of species noted to aid in documenting occurrence. As of yet no bald eagles have been documented using areas on CAFB.

There have been no documented bald eagle sightings on CAFB during previous endangered species surveys. This historical information along with the habitat composition of CAFB and the lack of food resources indicate that it is unlikely that bald eagles would reside on base property.

WS will continue to conduct bird surveys and document species, if any observations of eagles occur or eagle-nesting activity is observed the USFWS and CAFB Natural Resources offices will be contacted. Please contact me if you have any questions regarding these findings.

APHIS-Protecting American Agriculture and Public Safety

Sincerely,

Kyle Van Why
Wildlife Biologist
USDA-Wildlife Services
14 OSS/OSAB
595 1st St. Suite 3
Columbus AFB, MS 39710
662-434-2027
kyle.vanwhy@columbus.af.mil

26 August 2004

Mr. Edward Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. William R. Bunkley
US Army Corps of Engineers
Permit Evaluation Section
CESAM-OP-SP
P.O. Box 2288
Mobile AL 36628-0001

Dear Mr. Bunkley,

On 14 Jul 04, we sent you a letter of information and area project maps to support a proposed Air Force Environmental Assessment (EA) to evaluate the potential environmental consequences of privatizing all military family housing units on Columbus Air Force Base, MS . To date we have not received a reply from you. If we have not received your written reply by 3 Sep 04, we will assume a negative response from the Corps of Engineers.

Your assistance in providing information related to the Military Family Housing Privatization project at Columbus Air Force Base, MS, is greatly appreciated. If you have any questions, please call or Email Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545 or at tom.waller@columbus.af.mil.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

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DRAFT EA IICEP AND RESPONSES

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

2 March 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. Milton Brumfield
Mississippi Department of Environmental Quality
P.O. Box 20305
Jackson MS 39289-1305

Dear Mr. Brumfield,

The United States Air Force has prepared a Draft Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the draft EA. This action is necessary to enable the base to fulfill its mission requirements.

The Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families would choose to live. The Air Force proposes to lease the underlying land and convey to a private developer all military family housing units on Columbus AFB, including associated utilities and other infrastructure improvements. This action will be through a combination of demolition of some existing units, renovation/repair of others, and construction of new units. In addition, after demolition activities, 60 acres of land in Capitol Village would be returned to Columbus AFB for future base development.

In addition to identifying resources within your agency's purview that may be potentially impacted, we also request any point-of-contact information or relevant documentation that is available that would assist in preparing the final EA.

The Description of Proposed Action and Alternatives (DOPAA) was previously reviewed by your office, and your review comments against the DOPAA have been addressed in the draft EA. For reference, comments to your previous DOPAA review are attached.

Please provide any comments or information on the draft EA by 5 April 2005. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
1. Draft Environmental Assessment
2. Previous comments to Draft Description of Proposed Actions and Alternatives (DOPAA)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

6 April 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. Milton Brumfield
Mississippi Department of Environmental Quality
P.O. Box 20305
Jackson MS 39289-1305

Dear Mr. Brumfield,

On 2 Mar 05, we sent you a Draft Environmental Assessment (DEA) to further evaluate the potential environmental consequences of privatizing all military family housing units on Columbus Air Force Base, MS. We requested you identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the DEA. To date we have not received a reply from you. If we have not received your written reply by 20 Apr 05, we will assume a negative response from the Mississippi Department of Environmental Quality.

Your assistance in providing information related to the Military Family Housing Privatization project at Columbus Air Force Base, MS, is greatly appreciated. If you have any questions, please call or Email Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545 or at tom.waller@columbus.af.mil.

Sincerely,

Signed (Original on file in CEH)

E. E. Slancauskas
Chief, Housing Flight

STATE OF MISSISSIPPI
HALEY BARBOUR
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

April 13, 2005

Mr. E. E. Slancauskas, Chief, Housing Flight
US Air Force, Columbus Air Force Base-
680 Seventh Street, Suite 234
Columbus AFB, MS 39710

Dear Mr. Slancauskas:

Re: US Air Force, Columbus Air Force Base
Lowndes

We are in receipt of the 2nd Draft Environmental Assessment. The requirements stated in our July 29, 2004, correspondence remain. Attached is a copy of the July 29, 2004, letter. If you have any questions, please contact Maya Rao at (601)961-5242.

Sincerely,

Milton Brumfield

Milton Brumfield, P.E.
Environmental Permits Division

Enclosures

1356 GNP20020001

OFFICE OF POLLUTION CONTROL
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FILE COPY

STATE OF MISSISSIPPI
HALEY BARBOUR
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

July 29, 2004

Mr. E. E. Slancauskas, Chief, Housing Flight
US Air Force, Columbus Air Force Base
680 Seventh Street, Suite 234
Columbus AFB, MS 39710

Dear Mr. Slancauskas:

Re: US Air Force, Columbus Air Force Base
Lowndes County

We are in receipt of your request for comments regarding potential environmental issues related to proposed construction/demolition activities associated with housing units located at Columbus Air Force Base (CAFB). Once CAFB decides on the activities related to the housing units, then CAFB should contact the Mississippi Department of Environmental Quality (MDEQ) to confirm if a General Stormwater Construction Permit Coverage and/or Stormwater Pollution Prevention Plan (SWPPP) are required for the project. Since there are known endangered species in nearby waterbodies, endangered species should be addressed in the SWPPP. Also, depending on the project, wetlands, dam safety and sanitary waste issues may need to be addressed.

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The Municipal Permitting Branch of MDEQ should be the point of contact. If you have any questions, please call me at (601) 961-5135.

Sincerely,

Milton Brumfield, P.E., DEE
Environmental Permits Division

Enclosures
cc: Mr. Ricky Terry, P.E., Chief, Municipal Permitting Branch

1356 GNP20020001

OFFICE OF POLLUTION CONTROL
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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

2 March 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. William R. Bunkley
US Army Corps of Engineers
Permit Evaluation Section
CESAM-OP-SP
P.O. Box 2288
Mobile AL 36628-0001

Dear Mr. Bunkley,

The United States Air Force has prepared a Draft Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the draft EA. This action is necessary to enable the base to fulfill its mission requirements.

The Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families would choose to live. The Air Force proposes to lease the underlying land and convey to a private developer all military family housing units on Columbus AFB, including associated utilities and other infrastructure improvements. This action will be through a combination of demolition of some existing units, renovation/repair of others, and construction of new units. In addition, after demolition activities, 60 acres of land in Capitol Village would be returned to Columbus AFB for future base development.

In addition to identifying resources within your agency's purview that may be potentially impacted, we also request any point-of-contact information or relevant documentation that is available that would assist in preparing the final EA.

The Description of Proposed Action and Alternatives (DOPAA) was previously reviewed by your office, and you had no review comments against the DOPAA.

Please provide any comments or information on the draft EA by 5 April 2005. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
Draft Environmental Assessment

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

6 April 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Mr. William R. Bunkley
US Army Corps of Engineers
Permit Evaluation Section
CESAM-OP-SP
P.O. Box 2288
Mobile AL 36628-0001

Dear Mr. Bunkley,

On 2 Mar 05, we sent you a Draft Environmental Assessment (DEA) to further evaluate the potential environmental consequences of privatizing all military family housing units on Columbus Air Force Base, MS. We requested you identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the DEA. To date we have not received a reply from you. If we have not received your written reply by 20 Apr 05, we will assume a negative response from the US Army Corps of Engineers, Mobile Area Office.

Your assistance in providing information related to the Military Family Housing Privatization project at Columbus Air Force Base, MS, is greatly appreciated. If you have any questions, please call or Email Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545 or at tom.waller@columbus.af.mil.

Sincerely,

Signed (Original on file in CEH)

E. E. Slancauskas
Chief, Housing Flight

STATE OF MISSISSIPPI
DEPARTMENT OF FINANCE AND ADMINISTRATION

MEMORANDUM

TO: COLUMBUS AIR FORCE BASE MS
HQ 14TH FLYING TRAINING WING
680 SEVENTH ST., SUITE 234
COLUMBUS AFB MS 39710 6010

DATE: MAR 2 4 2005

FROM: STATE CLEARINGHOUSE FOR FEDERAL PROGRAMS

SUBJECT: REVIEW COMMENTS - Activity:
DRAFT ENVIRONMENTAL ASSESSMENT TO EVALUATE THE POTENTIAL ENVIRONMENTAL CONSEQUENCES ASSOCIATED WITH THE PRIVATIZATION OF ALL MILITARY FAMILY HOUSING UNITS ON COLUMBUS AIR FORCE BASE, MS.

State Application Identifier Number MS050303-002

Location: LOWNDES Contact: TOM WALLER

The State Clearinghouse, in cooperation with state agencies interested or possibly affected, has completed the review process for the activity described above.

INTERGOVERNMENTAL REVIEW PROCESS COMPLIANCE:

( ) We are enclosing the comments received from the state agencies for your consideration and appropriate actions. The remaining agencies involved in the review did not have comments or recommendations to offer at this time. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.

( ) Conditional clearance pending Archives and History's approval.

(√) None of the state agencies involved in the review had comments or recommendations to offer at this time. This concludes the State Clearinghouse review, and we encourage appropriate action as soon as possible. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.

( ) The review of this activity is being extended for a period not to exceed 60 days from the receipt of notification to allow adequate time for review.

COASTAL PROGRAM COMPLIANCE (Coastal area activities only):

( ) The activity has been reviewed and complies with the Mississippi Coastal Program. A consistency certification is to issued by the Mississippi Department of Marine Resources in accordance with the Coastal Zone Management Act.

( ) The activity has been reviewed and does not comply with the Mississippi Coastal Program.

cc: Funding Agency (As requested by applicant)

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GOLDEN TRIANGLE
Planning and Development District, Inc.

Post Office Box 828 • Starkville, MS 39760-0828 • Telephone (662) 324-7860 • Fax (662) 324-7328

Cecil Hamilton	David Winfield	Larry Crowley	Rupert L. "Rudy" Johnson
President	*Vice President*	*Secretary / Treasurer*	*Executive Director*

TO: Columbus Air Force Base
HQ 14th flying training Wing
680 Seventh Street, Suite 234
Columbus AFB, Mississippi 39710-6010

DATE: March 17, 2005
CLEARINGHOUSE NUMBER: MS050303-002

The Golden Triangle Planning & Development District, as Regional Clearinghouse for Federal Programs, has been notified of the intent to apply for Federal assistance as described below:

Draft environmental assessment to evaluate the potential environmental consequences associated with the privatization of all military family housing units on Columbus Air Force Base, Mississippi.

Total Project Cost: Federal Agency/Funds:

( ) The Regional Clearinghouse has received and reviewed the application for Federal assistance as described above.

( ) The Regional Clearinghouse has notified appropriate local and regional agencies of this proposed project, and
- ( ) Interest has been expressed in conferring with the applicant(s).
- ( ) The attached comments were submitted and are to become a part of this Review.
- ( ) No response was received from these agencies.

(x) The proposed project appears to be consistent with the following plan(s) for economic/community development in the District
- (x) GTPDD DISTRICT DEVELOPMENT PROGRAM
- ( ) Comprehensive Economic Development Strategy

( ) The proposed project is not consistent with applicable economic/community development plan(s) for this District.

(x) This notice constitutes final Regional Clearinghouse Review and Comment on the proposed project, and requirements of E.O. 12372 have been met at the Regional level.

Comments:

Rupert L. "Rudy" Johnson
Executive Director

c: State Clearinghouse

CHOCTAW CLAY LOWNDES NOXUBEE OKTIBBEHA WEBSTER WINSTON

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

2 March 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Ms. Kathy Lunceford
Vicksburg Ecological Service
Fish and Wildlife Service
6578 Dogwood View Parkway, Suite A
Jackson MS 39213

Dear Ms. Lunceford,

The United States Air Force has prepared a Draft Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the draft EA. This action is necessary to enable the base to fulfill its mission requirements.

The Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families would choose to live. The Air Force proposes to lease the underlying land and convey to a private developer all military family housing units on Columbus AFB, including associated utilities and other infrastructure improvements. This action will be through a combination of demolition of some existing units, renovation/repair of others, and construction of new units. In addition, after demolition activities, 60 acres of land in Capitol Village would be returned to Columbus AFB for future base development.

In addition to identifying resources within your agency's purview that may be potentially impacted, we also request any point-of-contact information or relevant documentation that is available that would assist in preparing the final EA.

The Description of Proposed Action and Alternatives (DOPAA) was previously reviewed by your office, and your review comments against the DOPAA have been addressed in the draft EA. For reference, comments to your previous DOPAA review are attached.

Please provide any comments or information on the draft EA by 5 April 2005. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
1. Draft Environmental Assessment
2. Previous comments to Draft Description of Proposed Actions and Alternatives (DOPAA)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

2 March 2005

Mr. E. E. Slancauskas
Chief, Housing Flight
680 Seventh Street, Suite 234
Columbus AFB MS 39710-6010

Ms. Mildred Tharpe
State Clearinghouse for Federal Programs
1301 Woolfolk Building, Suite E
501 North West Street
Jackson , MS 39213

Dear Ms. Tharpe,

The United States Air Force has prepared a Draft Environmental Assessment (EA) to evaluate the potential environmental consequences associated with the privatization of all the military family housing units on Columbus Air Force Base, MS (AFB). In accordance with Executive Order 12372, *Intergovernmental Review of Federal Program*, please identify specific issues or topics of environmental concern (to include potential permits or other requirements) in your review comments on the draft EA. This action is necessary to enable the base to fulfill its mission requirements.

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In addition to identifying resources within your agency's purview that may be potentially impacted, we also request any point-of-contact information or relevant documentation that is available that would assist in preparing the final EA.

The Description of Proposed Action and Alternatives (DOPAA) was previously reviewed by your office, and your review comments against the DOPAA have been addressed in the draft EA. For reference, comments to your previous DOPAA review are attached.

Please provide any comments or information on the draft EA by 5 April 2005. Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Tom Waller, 14 CES/CEHP, at 662-434-3545.

Sincerely,

E. E. Slancauskas
Chief, Housing Flight

Attachments:
1. Draft Environmental Assessment
2. Previous comments to Draft Description of Proposed Actions and Alternatives (DOPAA)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mississippi Field Office
6578 Dogwood View Parkway, Suite A
Jackson, Mississippi 39213

March 7, 2005

Mr. E.E. Slancauskas
Chief, Housing Flight
Columbus Air Force Base
680 Seventh Street, Suite 234
Columbus AFB, MS 39710-6010

Dear Mr. Slancauskas:

The U.S. Fish and Wildlife Service (Service) has received your letter dated March 2, 2005, regarding the construction of a military family housing on the Columbus Air Force Base (CAFB), Lowndes County, Mississippi. Our comments are submitted in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Your agency proposes to raze and reconstruct numerous existing family dwellings within the CAFB. Construction would include new buildings, access areas, and a lake.

There are no federally listed species or their habitats on the subject site. Therefore, the Service has no objection to the proposed project.

If you have any questions, please feel free to contact this office, telephone: (601) 321-1132.

Sincerely,

Kathy W Lunceford
Mississippi Environmental Coordinator

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PUBLIC INVOLVEMENT

NEPA and the Air Force implementing regulations require the action agency (in this case, the Air Force) to seek public participation throughout the conduct of the environmental impact analysis process. The Air Force published a public notice in the Columbus, Mississippi Commercial-Dispatch on 23 January 2005 (Sunday) informing the public that the Draft EA was available for public review and comment. The Draft EA was made available for public review at the Columbus-Lowndes County Public Library and the Columbus AFB Library from 24 January 2005 through 22 February 2005. The following privacy advisory was included at the bottom of the cover sheet on the first page of the EA:

Privacy Advisory

Your comments on this Draft EA are requested. Letters or other written or oral comments provided may be published in the Final EA. As required by law, comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and telephone numbers will not be published in the Final EA.

Comments received by the public during the review process must be given consideration in the Final EA. At the conclusion of the public review process for this EA, no public comments were received. The public notice and government recognition of no public response are provided in the next few pages.

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STATE OF MISSISSIP

County of Lowndes

PERSONALLY CAME before
public in and for Lowndes Coun
Commercial Dispatch, a news
Columbus, who, being duly sw
COMMERCIAL DISPATCH
prescribed in Section 13-3-31 of
amended effective July 1, 197
notice, of which the annexed is a

Draft

has been made in said paper

to-wit:

On the 23rd **day of**

On the _____ **day of**

On the _____ **day of**

On the _____ **day of**

On the _____ **day of**

On the _____ **day of**

SWORN TO and subscribed bef

23 **day of**

Notary Public

MY COMMISSION EXPIRES MAY 17, 2005

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF NO SIGNIFICANT IMPACT MILITARY FAMILY HOUSING INITIATIVE COLUMBUS AFB, MISSISSIPPI

An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) have been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and Air Force regulations implementing NEPA to analyze the potential environmental consequences associated with the Military Family Housing Privatization Initiative at Columbus Air Force Base (AFB), MS. The Proposed Action is for the Air Force to convey 539 existing housing units and associated infrastructure and utilities to a private real estate development and property management company. The Air Force proposes that the developer would then demolish 337 units and construct 251 new units. Alternative 1, a maximum development scenario, is similar to the Proposed Action, except the developer would demolished all 539 units and construct 600 new units. Also included in the Proposed Action and Alternative 1 is the potential construction of a 0.5-acre manmade lake approximately 5-6 feet in depth. Finally, the Proposed Action and Alternative 1 would involve the Air Force leasing the land supporting the final housing units to the developer for a period of 50 years. The developer would own all housing units and associated infrastructure. Under the No Action Alternative, the Air Force would not implement the MFH privatization program at Columbus AFB and would continue to manage and maintain military family housing in accordance with existing Air Force policy. The Air Force would eventually demolish 86 surplus units (most likely the oldest and least adequate units) to reach a minimum requirement of 453 units. All demolition and construction activities would occur on Columbus AFB property. Resources and issues addressed in the EA include earth resources, water resources, biological resources, air quality, land use, socioeconomics and environmental justice, safety infrastructure, solid waste, hazardous materials and waste, and noise.

Your comments on this Draft EA are requested. Letters or other written or oral comments provided may be published in the Final EA. As required by law, comments will be addressed in the Final 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 request for copies of the Final EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names and respective comments of respondent individuals will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

Copies of the Draft EA and Draft FONSI may be received at the following locations:

Columbus-Lowndes County Public Library
314 North 7th Street, Columbus, MS 39701

U.S. Air Force Base Library, 555 D Street, Columbus, AFB 39710
Copies will be available for review from 24 Jan 05 through 22 Feb 05.
Written comments and inquires on the EA and FONSI should be directed to:

14th Flying Training Wing, Public Affairs Office
555 Seventh Street, Suite 203, Columbus AFB, MS
39710-1009, Phone 662-434-7067

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 14TH FLYING TRAINING WING
COLUMBUS AIR FORCE BASE MISSISSIPPI

MAR 0 3 2005

MEMORANDUM FOR 14 CES/CEH

FROM: 14 FTW/PA

SUBJECT: Public Review of the Housing Privatization Environmental Documents

No comments regarding the Housing Privatization DEA and FONSI were received by this office during the designated reviewing period. These documents were on public display at the Base Library and at the Columbus-Lowndes Public Library from 23 Jan 05 to 23 Feb 05.

RICHARD T. JOHNSON
Chief of Public Affairs

APPENDIX B

SUPPORTING INFORMATION FOR CHAPTERS 3 AND 4

SUPPORTING INFORMATION FOR BIOLOGICAL RESOURCES – SECTION 3.3

Table B-1. Wildlife Species Potentially Occurring on CAFB

Taxonomic Group	Scientific Name	Common Name
Birds		
Kites, eagles, hawks, and allies	*Accipiter cooperii*	Cooper's hawk
	Buteo jamaicensis	Red-tailed hawk
Turkeys	*Meleagris gallopavo*	Wild turkey
Quail	*Colinus virginianus*	Northern bobwhite
Pigeons and doves	*Columba livia*	Rock dove
	Zenaida macroura	Mourning dove
Shrikes	*Lanius ludovicianus**	Loggerhead shrike
Ducks	*Aix sponsa*	Wood duck
New World cuckoos	*Coccyzus americanus*	Yellow-billed cuckoo
Woodpeckers and allies	*Colaptes auratus*	Northern flicker
	Enturus carolinus	Red-bellied woodpecker
	Melanerpes erythrocephalus	Red-headed woodpecker
	Picoides pubescens	Downy woodpecker
Flycatchers	*Contopus virens*	Wood peewee
	Empidonox virescens	Acadian flycatcher
	Tyrannus tyrannus	Eastern kingbird
Jays, magpies, and crows	*Corvus brachyrhynchos*	American crow
	Cyanocitta cristata	Blue jay
Titmice	*Parus bicolor*	Tufted titmouse
	Parus carolinensis	Carolina chickadee
Wrens	*Thryothorus ludovicianus*	Carolina wren
Old World warblers, kinglets, and gnatcatchers	*Polioptila caerulea*	Blue-gray gnatcatcher
	Regulus calendula	Ruby-crowned kinglet
Solitaires, thrushes, and allies	*Hylocichia mustelina*	Wood thrush
	Sialia sialia	Eastern bluebird
Mockingbirds, thrashers, and allies	*Dumetella carolinensis*	Gray catbird
	Mimus polyglottos	Mockingbird
	Turdus migratorius	American robin
	Toxostoma rufum	Brown thrasher
Waxwings	*Bombcilla cedrorum*	Cedar waxwing
Starlings and allies	*Sturnus vulgaris*	European starling
Vireos	*Vireo griseus*	White-eyed vireo
Wood-warblers	*Dendroica coronata*	Yellow-rumped warbler
Tanagers	*Piranga rubra*	Summer tanager
Cardinals, grosbeaks, and allies	*Cardinalis cardinalis*	Cardinal
	Guiraca caerulea	Blue grosbeak
	Passerina cyanea	Indigo bunting
Emberizines	*Melospiza melodia*	Song sparrow
	Passerculus sandwichensis	Savanna sparrow
	Pipilo erythrophthalmus	Rufus-sided towhee
	Spizella pusilla	Field sparrow
	Zonotrichia albicollis	White-throated sparrow
Blackbirds and allies	*Quiscula quiscala*	Common grackle
	Sturnella magna	Eastern meadowlark
Cardueline finches	*Carduelis tristis*	American goldfinch

Table B-1. Wildlife Species Potentially Occurring on CAFB Cont'd

Taxonomic Group	Scientific Name	Common Name
Mammals		
Opossums	*Didelphis virginiana*	Virginia opossum
Moles	*Scalopus aquaticus*	Eastern mole
Hares and rabbits	*Sylvilagus aquaticus*	Swamp rabbit
	Sylvilagus floridanus	Cottontail rabbit
Squirrels	*Glaucomys volans*	Southern flying squirrel
	Marmot monax	Woodchuck
	Sciurus carolinensis	Gray squirrel
	Sciurus niger	Fox squirrel
	Tamias striatus	Eastern chipmunk
Beavers	*Castor canadensis*	Beaver
Rats, mice, and voles	*Mus musculus*	House mouse
	Neotoma floridana	Eastern woodrat
	Ondatra zibethicus	Muskrat
	Peromyscus gossypinus	Cotton mouse
	Peromycus polionotus	Old field mouse
	Sigmodon hispidus	Cotton rat
Canids	*Urocyon cinereoargenteus*	Gray fox
Procyonids	*Procyon lotor*	Raccoon
Mustelids	*Mephitis mephitis*	Striped skunk
Cervids	*Odocoileus virginianus*	White-tailed deer
Reptiles		
Snapping turtles	*Chelydra serpentina*	Common snapping turtle
Emydids	*Graptemys nigrinoda*	Black-nobbled may turtle
	Terrapene carolina	Eastern box turtle
Mud and musk turtles	*Stenotherus minor*	Stripneck musk turtle
Iguanids	*Anolis carolinensis*	Green anole
Skinks	*Sceloporus undulatus*	Eastern fence lizard
	Scincella lateralis	Ground skink
Colubrids	*Coluber constrictor*	Racer
	Elaphe obsoleta	Rat snake
	Farancia abacura	Mud snake
	Farancia crythrogammas	Rainbow snake
	Heterodon platyrhinos	Eastern hog-nosed snake
	Lampropeltis getulus	Common kingsnake
	Masticophis flagellum	Coachwhip
	Thamnophis sirtalis	Common garter snake
Pit vipers	*Agkistrodon contortrix*	Copperhead
	Agkistrodon piscivorus	Cottonmouth moccasin
	Crotalus horridus	Timber rattlesnake
Amphibians		
Bufonids and toads	*Bufo americanus*	American toad
	Bufo woodhousii	Woodhouse's toad
Hylids and treefrogs	*Acris gryllus*	Southern cricket frog
	Hyla crucifer	Spring peeper
	Hyla cinerea	Green treefrog
Mole salamanders	*Ambystoma maculatum*	Spotted salamander
Ranids	*Rana catesbeiana*	Bullfrog

Source: U.S. Air Force, 2001

SUPPORTING INFORMATION FOR AIR QUALITY – SECTION 3.4

National Ambient Air Quality Standards:

In order to protect public health and welfare, the USEPA has developed numerical concentration-based standards or NAAQS for six "criteria" pollutants (based on health-related criteria) under the provisions of the Clean Air Act Amendments of 1970. There are two kinds of NAAQS: Primary and Secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (40 CFR 50).

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the Federal program. The Air Division within the MDEQ administers the state's air pollution control program under authority of the Mississippi Air and Water Pollution Control Law. Mississippi has adopted the NAAQS as written in the federal regulations (40 CFR 51). The Federal ambient air quality standards are presented in Table B-2.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than (attainment), worse than (nonattainment) the NAAQS, and unclassifiable. Those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant are "unclassifiable" and are treated as attainment until proven otherwise. Attainment areas can be further classified as "maintenance" areas. Maintenance areas are those areas previously classified as nonattainment and have successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of the state are in compliance with the NAAQS.

Each state is required to develop a state implementation plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and

maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

Table B-2. National and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Federal Primary NAAQS[1,2,3]	Federal Secondary NAAQS[1,2,4]
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm[5] (10 mg/m^3)[6] 35 ppm (40 mg/m^3)	No standard No standard
Lead (Pb)	Quarterly	(1.5 $\mu g/m^3$)[7]	1.5 $\mu g/m^3$
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)
Ozone (O_3)	1-hour[8] 8-hour[9]	0.12 ppm (235 $\mu g/m^3$) 0.08 ppm (157 $\mu g/m^3$)	0.12 ppm (235 $\mu g/m^3$) 0.08 ppm (157 $\mu g/m^3$)
Particulate Matter ≤10 Micrometers (PM_{10})	Annual 24-hour[10]	50 $\mu g/m^3$ 150 $\mu g/m^3$	50 $\mu g/m^3$ 150 $\mu g/m^3$
Sulfur Dioxide (SO_2)	Annual 24-hour 3-hour	0.03 ppm (80 $\mu g/m^3$) 0.14 ppm (365 $\mu g/m^3$) No standard	No standard No standard 0.50 ppm (1300 $\mu g/m^3$)

1. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year.

2. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury; ppm refers to parts per million by volume.

3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5. ppm = parts per million

6. mg/m^3 = milligrams per cubic meter

7. $\mu g/m^3$ = micrograms per cubic meter

8. The ozone one-hour standard still applies to areas that were designated nonattainment when the ozone eight-hour standard was adopted in July 1997. The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1 averaged over a three-year period.

9. The 8-hour ozone standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour average is not greater than 0.08 ppm.

10. The PM_{10} 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

Mississippi has statewide air quality-monitoring networks that are operated by both state and local environmental programs (MDEQ 2003, MCEQ, 2001). Ambient air quality data from these monitors are used to assess the region's air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur

dioxide. The monitors tend to be concentrated in areas with the largest population densities. Not all pollutants are monitored in all areas. The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards. Also included are areas where the ambient standards are being met but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The end-result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality exceedances of the NAAQS as well as pollutant trends.

The MDEQ operates monitors in several counties, including Lee, Grenada, Jackson, Hinds, and Harrison Counties. Over the years of record there have been exceedances (pollutant concentration greater than the numerical standard) of a NAAQS. However, there has not been a violation (occurrence of more exceedances of the standard than is allowed within a specified time period) of an ambient standard (MDEQ, 2003). Currently, the state of Mississippi is in attainment for all criteria pollutants.

Project Calculations:

Demolition Emissions:

Demolition calculations for this EA were completed using guidance from GAP Filling PM_{10} Emission Factors for Selected Open Dust Sources (USEPA, 1988). Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris loading, and on-site truck traffic to remove debris have been individually developed.

Dismemberment of a structure can be estimated using the AP-42 equation for batch drop operations:

$E_D = k\ (.0032) * ((U/5)^{1.3} / (M/2)^{1.4})$ lb/ton

Where:

k = .35 for PM_{10}
U = mean wind speed (default = 5 mph)
M = material moisture content (Default = 2 percent)
E_D = .0011 lbs/ton (with default parameters)

This factor can be modified for waste tonnage related to structural floor space. The following relationships were determined from an analysis by Murphy and Chatterjee (1976) of the demolition of 12 commercial brick, concrete, and steel buildings:

Where:

1 ft^2 floor space	= 10 ft^3 original building volume
1 ft^3 building volume	= .25 ft^3 waste volume
1 yd^3 building waste	= .5 ton weight
Mean truck capacity	= 30 yd^3 haulage volume

From these data, 1 ft^2 of floor space represents .046 tons of waste material, and a revised emission factor related to structural floor space can be obtained:

E_D = .0011 lbs/ton * .046 ton/ft^2 = .000051 lbs/ft^2

The proposed emission factor for debris loading is based on two tests of the filling of trucks with crushed limestone using a front end loader, part of the test basis for the batch drop equation in AP-42, 11.2.3. Crushed limestone was considered closest in composition to the broken brick and plaster found in demolished commercial buildings. The measured emission factors for crushed limestone were .053 and .063 lbs/Total Suspended Particulates. To convert the average Total Suspended Particulates factor, .058 lbs/ton, to a PM_{10} factor based on the structural floor space, the previously determined estimate of .046 ton/ft^2 and particle size multiplier must be used. The result is the emission factor for debris loading:

E_L = k(.058) lb/ton * .046 ton/ft^2 = .00093 lbs/ft^2

where k is .35 and is derived from the recommended particle size multipliers developed by Muleski (1987).

The emissions factor used for on-site truck traffic is based on the unpaved road equation:

$E = k\ (5.9) * (s/12)(S/30)(W/30)^{.7} * (w/4)^{.5} * (365\text{-}P/365)$ lb/Vehicle Mile Traveled (VMT)

Where:

k	= .36 for PM_{10}
s	= silt content (default = 12 percent)
S	= truck speed (default = 10 mph)
W	= truck weight (default = 22 tons)
w	= truck wheels (default = 10 wheels)
p	= number of days with precipitation (default = 0 days)

For a demolition site, 10-wheel trucks of mean 22-ton gross weight are estimated to travel a quarter-mile on-site for each round trip to remove dry debris. With this information and default values for the unpaved road equation, the emission factor for on-site truck traffic becomes:

$E_T = (.36)\ (5.9)\ *\ (12/12)(10/30)(22/30)^{.7} * (10/4)^{.5} * (365\text{-}0/365)$ lb/VMT = 4.5 lb/VMT

To convert this emissions factor from lb/VMT to lb/ft^2 of structural floor space, it is necessary to use the previously described relationships obtained from Murphy and Chatterjee (1976).

.25mi/30 yd^3 waste * yd^3/4 yd^3 volume * 10 yd^3 volume/yd^2 floor space * yd^2/9 ft^2 = .0023 mi/ft^2
and E_T = 4.5 lb/VMT * .0023 mi/ft^2 = .01 lb/ft^2

Combining each of the aforementioned factors for building demolition, debris loading, and truck traffic provides a recommend factor of:

$E_{10} = E_D + E_L + E_T$:
= .000051 + .00093 + .01 lb/ft^2
= .011 lb/ft^2

This value was then multiplied by the gross square footage to be demolished to ascertain the PM_{10} emissions for the demolition activities.

Construction Emissions:

Construction emissions calculations were completed using the calculation methodologies described in the U.S. Air Force Air Conformity Applicability Model. As previously indicated, a conformity determination is not required since Lowndes County is designated "attainment." The ACAM was used to provide a level of consistency with respect to emissions factors and calculations.

The ACAM evaluates the individual emissions from different sources associated with the construction phases. These sources include grading activities, asphalt paving, construction worker trips, stationary equipment (e.g., saws and generators), architectural coatings, and mobile equipment emissions (U.S. Air Force, 2003).

Grading Activities:

Grading activities are divided into grading equipment emissions and grading operation emissions. Grading equipment calculations are combustive emissions from equipment engines and are ascertained in the following manner:

$VOC = .22$ (lbs/acre/day) * Acres * DPY_1 / 2000
$NO_x = 2.07$ (lbs/acre/day) * Acres * DPY_1 / 2000
$PM_{10} = .17$ (lbs/acre/day) * Acres * DPY_1 / 2000
$CO = .55$ (lbs/acre/day) * Acres * DPY_1 / 2000
$SO_2 = .21$ (lbs/acre/day) * Acres * DPY_1 / 2000

Where:

Acres = number of gross acres to be graded during Phase I construction.
DPY_1 = number of days per year during Phase I construction which are used for grading
2000 = conversion factor from pounds to tons

All emissions are represented as tons per year.

Grading operations are calculated using a similar equation from the Sacramento Air Quality Management District's *Air Quality Thresholds of Significance* (1994) and the South Coast Air Quality Management District's *Council on Environmental Quality (CEQA) Air Quality Handbook* (1993). These calculations include grading and truck hauling emissions.

PM_{10} (tons/yr) = 60.7 (lbs/acre/day) * Acres * DPY_1 / 2000

Where:

Acres = number of gross acres to be graded during Phase1 construction.
DPY_1 = number of days per year during Phase I construction which are used for grading
2000 = conversion factor from pounds to tons

Calculations used in the EA assumed that there were no controls used to reduce fugitive emissions. Also, it was assumed that construction activities would occur within 182 days and grading activities would represent 10 percent of that total. Therefore, 18 days was the duration established for grading operations. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District.

Architectural Coatings:

Architectural coating emissions are released through the evaporation of solvents that are contained in paints, varnishes, primers, and other surface coatings.

VOC_{SF} (lbs/yr) = 65.6 (lbs/unit) * Number of Single Family Units

Where:

Number of Single Family Units = total number of single-family units to be constructed in the given year of construction
2000 = conversion factor from pounds to tons

It was assumed that construction activities would occur within 182 days. After subtracting the grading activities from the estimated overall construction time, the actual construction period was reduced to 164 days. Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District.

Asphalt Paving:

VOC emissions are released during asphalt paving and are calculated using the following methodology:

VOC_{PT} (tons/yr) = (2.62 lbs/acre) * Acres Paved / 2000

Where:

Acres Paved = total number of acres to be paved at the site
2000 = conversion factor from pounds to tons

The area of asphalt paving was developed by averaging the miles of roads per acre in military family housing areas affected on Columbus AFB. Geographic Information Systems (GIS) coverage of the current Magnolia, Capitol, and State Villages area was selected, and road mileage and acreage for the area were determined (SAIC, 2004). The miles of road within the Magnolia, Capitol and State Villages area (6.98 miles) was divided by the acres in the area (145.5 acres) to ascertain an average miles of road per acre (0.047 miles of road/acre).

To calculate the area of impervious road surface, this average (0.047 miles of road/acre) was multiplied by the minimum required width of roads in the alternative developments (24 feet) by the acreage of each expansion area, which varied. Since some areas (i.e., wetlands) will not be developed within certain areas, this method of estimation will inherently overestimate road coverage, but it should only be a minimal amount. Using this method, .047 mile equals 253 feet and multiplying by the required width of roads, a value of 6,079 ft^2 can be established.

Multiplying 6,079 ft^2 by the number of houses per acre being developed provides a square footage of road area that can be converted to acres of asphalt. Developing an acreage component using this value would only account for the area where the residential structures are constructed. Therefore, acreage of asphalt was doubled to ensure a conservative emissions calculation

estimate was provided. The specific emissions factors used in the calculations were available through Sacramento Air Quality Management and the South Coast Air Quality Management Districts.

Construction Worker Trips:

Construction worker trips during the construction phases of the project are calculated and represent a function of the number of residential units to be constructed and/or square feet of non-residential construction.

Trips (trips/day) = .72 (trip/unit/day) * Number of Single Family Units

Total daily trips are applied to the following factors depending on the corresponding years.

Year 2005 through 2009:

VOC_E = .016 * Trips
NO_{xE} = .015 * Trips
PM_{10E} = .0022 * Trips
CO_E = .262 * Trips

Year 2010 and beyond:

VOC_E = .012 * Trips
NO_{xE} = .013 * Trips
PM_{10E} = .0022 * Trips
CO_E = .262 * Trips

To convert from pounds per day to tons per year:

VOC (tons/yr) = VOC_E * DPY_{II}/2000
NO_x (tons/yr) = NO_{xE} * DPY_{II}/2000
PM_{10} (tons/yr) = PM_{10E} * DPY_{II}/2000
CO (tons/yr) = CO_E * DPY_{II}/2000

Where:

Number of Single Family Units = total number of single-family units to be constructed in the given year of construction.
2000 = conversion factor from pounds to tons
DPY_{II} = number of days per year during Phase II construction activities.

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District.

Stationary Equipment:

Emissions from stationary equipment occur when gasoline powered equipment (e.g., saws, generators, etc.) is used at the construction site.

$VOC = .198 * (RES+GRSQFT) * DPY_{II}/ 2000$
$NO_x = .137 * (RES+GRSQFT) * DPY_{II}/ 2000$
$PM_{10} = .004 * (RES+GRSQFT) * DPY_{II}/ 2000$
$CO = 5.29 * (RES+GRSQFT) * DPY_{II}/ 2000$
$SO_2 = .007 * (RES+GRSQFT) * DPY_{II}/ 2000$

Where:

RES = number of residential units to be constructed during Phase II construction
GRSQF = gross square feet of non-residential units to be constructed during phase II
DPY_{II} = number of days per year during Phase II construction
2000 = conversion factor from pounds to tons

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District.

Mobile Equipment:

Mobile equipment emissions include pollutant releases associated with forklifts, dump trucks, etc. used during Phase II construction.

$VOC = .17 * (RES+GRSQFT) * DPY_{II}/ 2000$
$NO_x = 1.86 * (RES+GRSQFT) * DPY_{II}/ 2000$
$PM_{10} = .15 * (RES+GRSQFT) * DPY_{II}/ 2000$
$CO = .78 * (RES+GRSQFT) * DPY_{II}/ 2000$
$SO_2 = .23 * (RES+GRSQFT) * DPY_{II}/ 2000$

Where:

RES = number of residential units to be constructed during Phase II construction
GRSQF = gross square feet of non-residential units to be constructed during Phase II
DPY_{II} = number of days per year during Phase II construction
2000 = conversion factor from pounds to tons

Emissions factors were derived from the Sacramento Air Quality Management District and the South Coast Air Quality Management District.

National Emissions Inventory

The National Emissions Inventory is operated under USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, from tribes, and from industry (USEPA, 1999). The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants. The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual point or major sources (facilities), as well as county level estimates for area, mobile and other sources, are available currently for years 1996 and 1999 for criteria pollutants, and hazardous air pollutants.

Criteria air pollutants are those for which USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database:

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_x)
- Sulfur Dioxide (SO_2)
- Particulate Matter (PM_{10} and $PM_{2.5}$)

The NEI also includes emissions of Volatile Organic Compounds (VOCs), which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources:

- Point sources - stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A "major" source emits a threshold amount (or more) of at least one criteria pollutant, and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- Area sources - small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example, i.e., a single dry cleaner within an inventory area typically will not qualify

as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.

- Mobile sources - any kind of vehicle or equipment with a gasoline or diesel engine; airplane; or ship.

The main sources of criteria pollutant emissions data for the NEI are:

- For electric generating units - USEPA's Emission Tracking System/Continuous Emissions Monitoring Data (ETS/CEM) and Department of Energy fuel use data.
- For other large stationary sources - state data and older inventories where state data was not submitted.
- For on-road mobile sources - the Federal Highway Administration's (FHWA's) estimate of vehicle miles traveled and emission factors from USEPA's MOBILE Model.
- For non-road mobile sources - USEPA's NONROAD Model.
- For stationary area sources - state data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data was not submitted.

State and local environmental agencies supply most of the point source data. USEPA's Clean Air Market program supplies emissions data for electric power plants.

SUPPORTING INFORMATION FOR SOLID WASTE – SECTION 3.9

The following are the calculations used to estimate debris generated during proposed demolition and construction of military family housing.

Estimated pounds of waste generated each year from demolition:

For house on concrete slab: 77.6 lbs/ft^2 * 69,057 ft^2 = 5,358,823 lbs
5,358,823 lbs * 1 ton/2000 lbs = 2,679 tons

An estimate of 77.6-lbs/ft^2 of debris generated during residential demolition based on sampling studies is documented in "Characterization of Building-Related Construction and Demolition Debris In The United States" (Franklin Associates, 1998).

The 77.6 lbs is derived from 39.6 tons of debris from a basic house (1600 ft^2 average size house used as a basis for calculation), plus 22.5 tons of concrete debris from the slab. The total, 62.1 tons, is divided by 1600 ft^2 and multiplied by 2000 lbs/ton to equal 77.6-lbs/ft^2.

69,057 ft^2 is the estimated total square footage proposed for demolition in 2006 under the Proposed Action. This was derived from the number and size of homes scheduled for demolition and construction per year (projected timeline). An average square footage was calculated for each size home.

Estimated pounds of waste generated each year from new construction:

Total square footage of new construction per year * 4.38 lbs/ft^2 = x lbs of debris.

124,010 ft^2 * 4.38 lbs/ft^2 = 543,164 lbs * 1 ton/2000 lbs = 272 tons of debris.

4.38 lbs per ft^2 is an estimate of debris generated during residential construction based on sampling studies documented in "Characterization of Building-Related Construction and Demolition Debris In The United States" (Franklin Associates, 1998).

124,010 ft^2 is the amount of square footage based on the size and number of homes proposed for new construction in Year 2006 under the Proposed Action. The maximum gross square footage for each size home was used in the analysis.

SUPPORTING INFORMATION FOR NOISE – SECTION 3.11

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

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

Sound intensity varies widely (from a soft whisper to a jet plane or a gunshot) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers.

The frequency of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches.

Sound measurement is further refined through the use of "weighting." The normal human ear can detect sounds that range in frequency from about 20 Hz to 15,000 Hz. However, all sounds throughout this range are not heard equally well. Therefore, through internal electronic circuitry, some sound meters are calibrated to emphasize frequencies in the 1,000 to 4,000 Hz range. The human ear is most sensitive to frequencies in this range. When measuring these sounds that continue over some time period (such as an aircraft overflight) with these instruments, the levels are termed "A-weighted" and are shown in terms of A-weighted decibels. Conversely, when describing large amplitude impulsive sounds of extremely short duration such as a gunshot, the

total amount of acoustic energy created is an important consideration. Sounds of this nature are normally measured on the "C-weighted" scale, which gives nearly equal emphasis to sounds of most frequencies. Mid-range frequencies approximate the actual (unweighted) sound level, while the very low and very high frequency bands are significantly affected by C-weighting. When measured, these sounds are shown in terms of C-weighted decibels (dBC).

The duration of noise events and the number of times noise events occur are also important considerations in assessing noise impacts.

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

The metrics supporting the assessment of noise that would result from the conduct of the proposed training activities on and around Columbus AFB include both A- and C-weighted single event and time-averaged cumulative metrics. Each metric represents a "tier" for quantifying the noise environment and is briefly discussed below.

Sound Exposure Level

The Sound Exposure Level (SEL) metric combines the intensity and duration of a noise event into a single measure. It is important to note, however, that SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the total exposure of the entire event. Its value represents all of the acoustic energy associated with the event, as though it was present for one second. For sound events that last longer than one second, the SEL value will be greater than the maximum noise level created by the event. For sound events that last less than one second, the SEL value will be less than the maximum acoustic pressure. The duration of many impulsive sounds, such as gunfire, is significantly less than one second. This, when coupled with the extremely low frequencies associated with such sounds that are repressed on the C-weighted scale means that the "sensed" or "perceived" sound may be 20 dB or more below the actual sound pressure level. Nevertheless, the SEL value is important because it is the value used to calculate other time-averaged noise metrics.

Time-Averaged Cumulative Day-Night Average Noise Metrics

The equivalent sound level (L_{eq}) is a metric reflecting average continuous sound. The metric considers variations in sound magnitude over periods of time, sums them, and reflects, in a single value, the acoustic energy present during the time period considered. Common time periods for averaging are 1, 8, and 24-hour periods.

The Day-Night Average Sound Level (L_{dn}) also sums the individual noise events and averages the resulting level over a specified length of time. Normally, this is a 24-hour period. Thus, like L_{eq}, it is a composite metric representing the maximum noise levels, the duration of the events, and the number of events that occur. However, this metric also considers the time of day during which noise events occur. This metric adds 10 dB to those events that occur between 10:00 P.M. and 7:00 A.M. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the daytime. It should be noted that if no noise events occur between 10:00 P.M. and 7:00 A.M., the value calculated for L_{dn} would be identical to that calculated for a 24-hour equivalent noise level [$L_{eq(24)}$]. This cumulative metric does not represent the variations in the sound level heard. Nevertheless, it does provide an excellent measure for comparing environmental noise exposures when there are multiple noise events to be considered.

In this document, sound levels are considered as 1- and 24-hour equivalent sound levels [$L_{eq(1)}$ and $L_{eq(24)}$]. If applicable, the L_{dn} metric would be used in lieu of the $L_{eq(24)}$ metric. Average Sound Level metrics are the preferred noise metrics of the Department of Housing and Urban Development (HUD), the Department of Transportation (DOT), the FAA, the USEPA, and the Veterans Administration (VA). Scientific studies and social surveys have found that Average Sound Level metrics are the best measure to assess levels of community annoyance associated with all types of environmental noise. Therefore, their use is endorsed by the scientific community and governmental agencies (ANSI, 1980 and 1988; USEPA, 1974; FICUN, 1980; FICON, 1992; U.S. Army, 1994). In general, there are no recommended restrictions on any land uses at day-night average sound levels of 65 dBA or less (A-weighted).

Noise levels are directly related to traffic volumes, speed of traffic, proportion of heavy vehicles (one truck emits the equivalent noise of 28 to 60 cars), population density near roads, existence and effectiveness of noise barriers, and effectiveness of devices such as mufflers and quiet vehicles. The issue of noise is generally discussed in terms of the number or proportion of people affected. The findings of numerous research projects on the effects of noise and its wider repercussions indicate that an outdoor sound level of 65 dBA is "unacceptable," and an outdoor level of less than 55 dBA is desirable.

Analysis Methods

Calculating Construction Noise

Noise from construction activities was estimated following the methodologies set forth in the April 1995 Federal Transit Administration guidance manual. The detailed noise assessment procedures were followed. The procedure uses the following equation to calculate noise levels from operation of a single piece of construction equipment:

L_{eq} = E.L. + 10 log (U.F.) – 20 log (D/50) – 10 G log (D/50)

Where:

L_{eq} = the noise level at a receiver of the equipment over a specified time period
E.L. = the noise emission level of the equipment at a reference distance of 50 feet
G = a constant that accounts for topography and ground effects (which would be 0 for hard ground)
D = the distance from the receiver to the piece of equipment
U.F. = a usage factor that accounts for the fraction of time that the equipment is in use over the specified time period

The combination of noise from all pieces of equipment operating during the same time period is obtained from adding the L_{eq} values for each piece of equipment.

Calculating Population Noise

The equation used to estimate residential population noise is:

L_{dn} = 10 log (Population Density) + 22, where 22 is a constant (National Research Council, 1977).

The application of this equation to the Proposed Action and Alternatives is provided below.

PROPOSED ACTION

Bedrooms	Total End State Units	Occupancy/per unit	# of persons	%Distribution
2	0	3	0	0.0%
3	402	4	1608	88.7%
4	51	5	255	11.3%
5	0	6	0	0.0%
Total Units:	453	Total persons:	**1863**	**100%**
		Area, In Acres:	217	
		Area, In Square Miles	0.3390625	
Population Density per Square Mile			5494.562212	
Estimated Sound Level:				
10 log (PD) + 22 =	L_{dn}	**59.39933**		

ALTERNATIVE 1

Bedrooms	Total End State Units	Occupancy/per unit	# of persons	%Distribution
2	0	3	0	0.0%
3	535	4	2140	89.2%
4	65	5	325	10.8%
5	0	6	0	0.0%
Total Units:	600	Total persons:	**2465**	**100%**
		Area, In Acres:	217	
		Area, In Square Miles	0.3390625	
Population Density per Square Mile			7270.0461	
Estimated Sound Level:				
10 log (PD) + 22 =	L_{dn}	**60.61537**		

NO ACTION ALTERNATIVE

Bedrooms	Total End State Units	Occupancy/per unit	# of persons	%Distribution
2	0	3	0	0.0%
3	477	4	1908	88.5%
4	62	5	310	11.5%
5	0	6	0	0.0%
Total Units:	539	Total persons:	**2218**	**100%**
		Area, In Acres:	217	
		Area, In Square Miles	0.3390625	
Population Density per Square Mile			6541.5668	
Estimated Sound Level:				
10 log (PD) + 22 =	L_{dn}	**60.15682**		

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