



ENVIRONMENTAL ASSESSMENT

CONSTRUCT NEW AAFES SHOPPING CENTER at SHAW AIR FORCE BASE, SOUTH CAROLINA

Army and Air Force Exchange Service

October 2008

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14. ABSTRACT The Army, Air Force Exchange Service (AAFES) proposes to construct a new AAFES Shopping Center at Shaw AFB, South Carolina. The proposed action consists of the construction of a new shopping center, shoppette (including gas station) and Burger King at a single location at Shaw AFB. There would be no change in the number of personnel at any location as a result of the proposed action. The new Shopping Center would be approximately 85,000 square feet. Resources considered in the impact analysis were noise, land use, water resources, biological resources, cultural resources and air quality.					
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FINDING OF NO SIGNIFICANT IMPACT

CONSTRUCT NEW AAFES SHOPPING CENTER SHAW AIR FORCE BASE, SOUTH CAROLINA

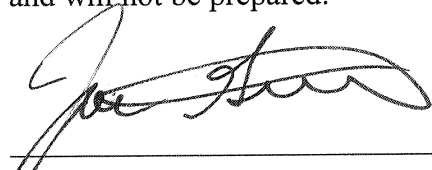
AGENCY: United States Air Force.

PROPOSED ACTION AND ALTERNATIVE: The proposed action includes the construction of a new Army and Air Force Exchange Service (AAFES) Shopping Center at Shaw Air Force Base (AFB), South Carolina. The proposed action consists of the construction of a new shopping center, shoppette (including gas station) and Burger King at a single location at Shaw AFB. There would be no change in the number of personnel at any location as a result of the proposed action. The new Shopping Center will be approximately 85,000 square feet. Under the no action alternative, the construction of the new Shopping Center would not occur.

SUMMARY OF FINDINGS: An Environmental Assessment (EA) was completed and is attached and incorporated by reference. Direct and indirect impacts regarding noise, land use, water resources, biological resources, cultural resources and air quality were all analyzed. There are no significant impacts anticipated as a result of implementation of the proposed action. Environmental impacts are discussed in detail in the attached EA.

SUMMARY OF PUBLIC, INTERAGENCY AND INTERGOVERNMENTAL REVIEW: The Draft EA and Draft Finding of No Significant Impact were made available to the public during a 30-day review period at the Sumter County Library. Copies of the Draft EA and Draft Finding of No Significant Impact (FONSI) with letters requesting review and comment were provided to governmental agencies as well as a Native American tribe. The review period afforded the public and appropriate federal, state and local agencies the opportunity to review and comment on the EA. Comments received on the Draft EA were used in the preparation of the Final EA.

FINDING OF NO SIGNIFICANT IMPACT: Based on my review of the facts and analysis in the EA, I conclude that the proposed action will not have a significant impact either by itself or considering cumulative impacts. Accordingly, the requirements of the *National Environmental Policy Act*, the Council on Environmental Quality Regulations and Title 32, *Code of Federal Regulations*, Part 989 have been fulfilled, and an environmental impact statement is not required and will not be prepared.



JOSEPH T. GUASTELLA, JR., Colonel, USAF
Commander

DEC 23 2000

Date

ACRONYMS AND ABBREVIATIONS

AAFES	Army and Air Force Exchange Service	NEPA	National Environmental Policy Act
ACC	Air Combat Command	NHPA	National Historic Preservation Act
ADP	Area Development Plan	NLR	noise level reduction
AFB	Air Force Base	NO ₂	nitrogen dioxide
AICUZ	Air Installation Compatible Use Zone	NO _x	nitrogen oxides
	Base Closure and Realignment Commission	NPS	non-point source
BRAC		NRHP	National Register of Historic Places
CAA	Clean Air Act	O ₃	ozone
CEQ	Council on Environmental Quality	ORW	Outstanding Resource Waters
CFR	Code of Federal Regulations		Occupational Safety and Health Administration
CO	carbon monoxide	OSHA	
dB	Decibel	Pb	lead
dBA	A-weighted decibel		particulate matter equal to or less than 10 microns in aerodynamic diameter
DNL	Day-night average sound level	PM ₁₀	
EIS	Environmental Impact Statement		particulate matter equal to or less than 2.5 microns in aerodynamic diameter
EO	Executive Order	PM _{2.5}	
ETSC	Endangered, Threatened, and Special Concern	ROI	Region of Influence
	Federal Interagency Committee on Urban Noise		South Carolina Department of Health & Environmental Control
FICON		SCDHEC	
ft ²	square foot	SHPO	State Historic Preservation Officer
FW	Fighter Wing	SIP	State Implementation Plan
HQ	Headquarters	SO ₂	sulfur dioxide
INRMP	Integrated Natural Resources Management Plan	SO _x	sulfur oxides
		USC	United States Code
L _{dn}	Day-Night Average Sound Level		United States Environmental Protection Agency
L _{eq}	equivalent sound level	USEPA	
NAAQS	national ambient air quality standards	VOC	volatile organic compounds

Environmental Assessment

Construct New AAFES Shopping Center Shaw Air Force Base, South Carolina

**Army and Air Force Exchange Service
3911 S. Walton Walker Boulevard
Dallas, Texas
Project Number: 0633-04-000003**

October 2008



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COVER SHEET

Responsible Agency: United States Air Force.

Proposed Action: The construction of a new Army and Air Force Exchange Service (AAFES) Shopping Center at Shaw Air Force Base (AFB), South Carolina.

Point of Contact: Mr. Samuel Johnson, 20 CES/CEAO, 345 Cullen Street, Shaw AFB, South Carolina, 29152, (803) 895-9999.

Report Designation: Final Environmental Assessment

Abstract: The Army, Air Force Exchange Service (AAFES) proposes to construct a new AAFES Shopping Center at Shaw AFB, South Carolina. The proposed action consists of the construction of a new shopping center, shoppette (including gas station) and Burger King at a single location at Shaw AFB. There would be no change in the number of personnel at any location as a result of the proposed action. The new Shopping Center would be approximately 85,000 square feet. Resources considered in the impact analysis were noise, land use, water resources, biological resources, cultural resources and air quality.

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CHAPTER 1

PURPOSE OF AND NEED FOR ACTION

The Army and Air Force Exchange Service (AAFES) proposes to construct a new shopping center at Shaw Air Force Base (AFB), South Carolina. The current shopping center (Building 1422) was constructed in 1969 and the shoppette in military family housing (Building 5227) was damaged by fire in September 2006 and is currently closed. In addition, Shaw AFB is a Base Closure and Realignment Commission (BRAC) realignment location and approximately 1,300 active duty US Army personnel will be added to the base.

This chapter presents the purpose of and need for the action, a description of the location, a description of the scope of the environmental review, an overview of environmental requirements, an introduction to the organization of this document, and a summary of public involvement.

1.1 PURPOSE OF AND NEED FOR ACTION

The proposed action would provide a new shopping center, shoppette (including gas station and car wash) and Burger King at a single location at Shaw AFB. AAFES has requested this shopping center to provide for an adequately sized shopping center to support both base growth and BRAC activities and replace facilities recently damaged by fire. Also, the new Burger King would be included with the new shopping center to consolidate services at Shaw AFB.

The USAF will prepare an EA in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) Regulations (Title 40, *Code of Federal Regulations* [CFR], Parts 1500-1508) and Title 32, CFR, Part 989 (Environmental Impact Analysis Process).

1.2 LOCATION

Shaw AFB is located in the east central part of South Carolina, approximately 30 miles east of the capital city of Columbia. The base is located within the city limits of Sumter and is 10 miles west of the city's center (Figure 1-1).

The City of Sumter is surrounded by Sumter County, which is naturally bounded by the Wateree River to the west and the Lynches River to the east. The county has a mixture of farmland, forested areas and wetlands, with the main population center in and around the city of Sumter.

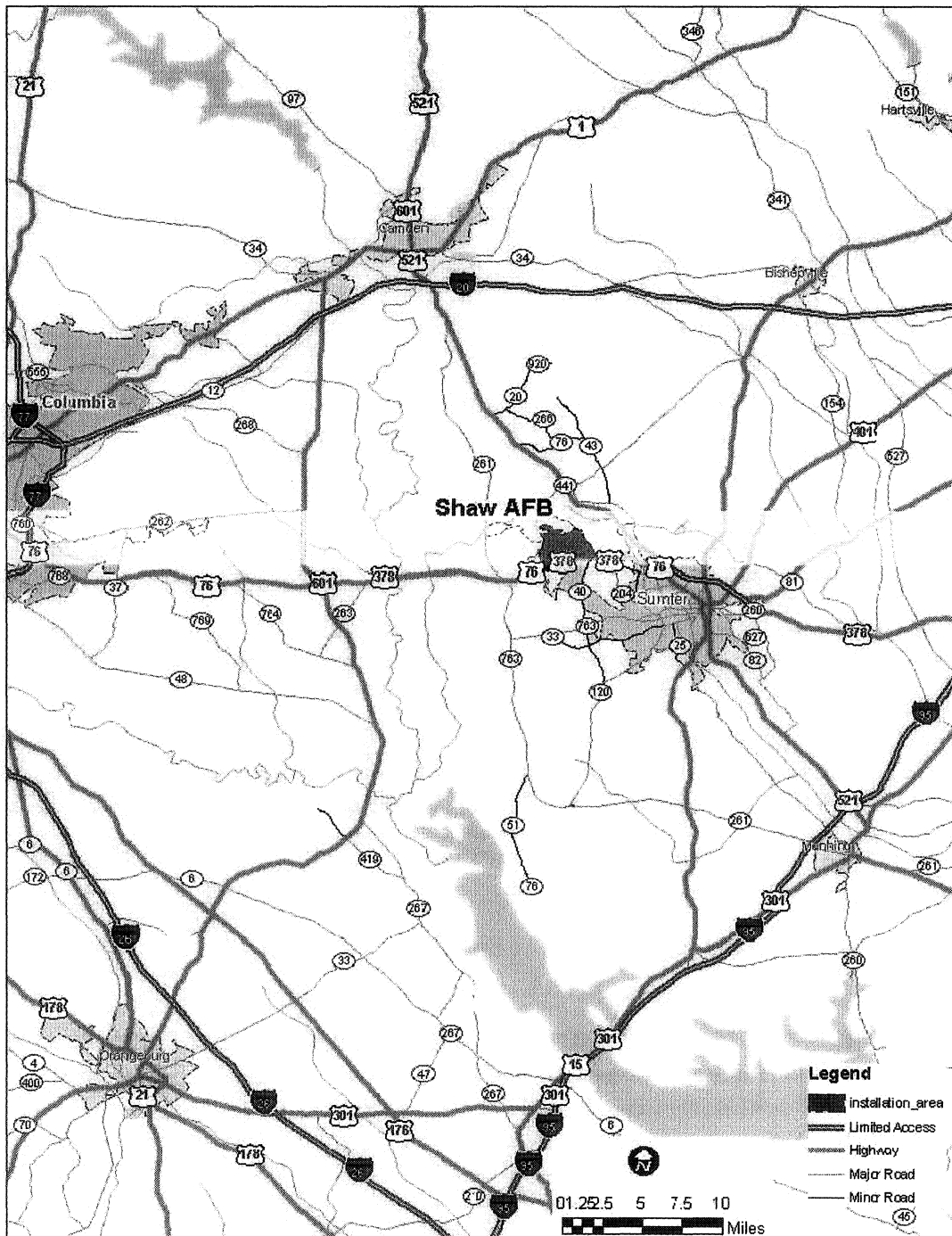


Figure 1-1 General Location Map, Shaw Air Force Base, South Carolina

The 20th Fighter Wing (FW), the base host wing, operates the 55th, 77th, and 79th Fighter Squadrons, and has the primary mission to provide, project and sustain combat-ready air forces. Headquarters (HQ) 9th Air Force is the major tenant at Shaw AFB. General goals of the base are to sustain the resources and relationships deemed appropriate to pursue national interests, and provide for the command, control and communications necessary to execute the missions of the Air Force, Air Combat Command (ACC), 9th Air Force and the 20th FW. The US Army Central mission is to serve as the Army component in a unified command—the United States Central Command—which has responsibility over a vast overseas area covering parts of Africa, Asia and the Persian Gulf. The US Army Central draws upon a reservoir of Army units and is responsible for planning, exercising and rapidly deploying these units in crisis situations.

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The *National Environmental Policy Act* of 1969 (NEPA, Title 42, United States Code [USC], Chapter 55), as amended, requires federal agencies to consider environmental consequences in the decision-making process. The CEQ issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental analysis.

The USAF Environmental Impact Analysis Process is accomplished through adherence to the procedures set forth in CEQ and Code of Federal Regulations (40 CFR 1500-1508 and 32 CFR 989). These federal regulations establish the administrative process and substantive scope of the environmental impact evaluation that are designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action. The USAF plans to prepare an EA for this proposal. The CEQ regulations require that an EA:

- Provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact.
- Facilitate the preparation of an EIS when required.

This EA identifies, describes and evaluates the potential environmental impacts that may result from construction of the AAFES Shopping Center (the proposed action) and 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 a regional overview. Finally, the EA identifies measures to reduce impacts or best management practices to prevent or minimize environmental impacts.

The resources that could be impacted and will therefore be analyzed in the EA include noise, aircraft operations, airspace, land use, earth resources, water resources, hazardous materials and waste, biological resources, utilities and infrastructure, socioeconomics and environmental justice, air quality and cultural resources. Assessment of safety and health impacts is not included in this document; all contractors would be responsible for compliance with applicable Occupational Safety and Health Administration (OSHA) regulations concerning occupational hazards and specifying appropriate protective measures for all employees.

Resources Considered in the Environmental Assessment

The following biophysical resources will be assessed in the EA: noise, land use, water resources, biological resources, cultural resources and air quality.

Resources not Considered in the Environmental Assessment

Earth Resources. Activities associated with implementation of the proposed action would occur within an area where soils have been disturbed and modified by prior housing construction. Other than minor grading activities, topography would not change. Only minor soil erosion from wind and storm water runoff would be expected during construction activities. Accepted containment procedures, including adequate watering, would be implemented during the construction phases to minimize sediment runoff from the disturbed area. Therefore, given the current conditions and the proposed plans and actions, no mitigation measures are required. Therefore, earth resources were eliminated from detailed analysis.

Hazardous Material/Waste Management. The proposed shopping center would require the use of minimal quantities of hazardous materials that would be used by contractors during construction activities. Upon completion of construction, neither hazardous wastes would be consumed nor would hazardous wastes be generated. For the reasons in this paragraph, no hazardous material, hazardous waste, asbestos, lead-based paint, or installation restoration program impacts would be anticipated and the resources will not be assessed in the EA.

Socioeconomic Resources. There would be no change in the number of personnel authorizations at Shaw AFB as a result of the proposed action. Thus, no long-term changes would be anticipated to area population, housing requirements, school enrollment, or economic factors (*i.e.*, sales volume, income, or employment). It is not anticipated that construction workers would relocate to the Sumter area as a result of proposed activities. Thus, there would be no short-term impacts to area population, housing requirements, or school enrollment. There could be a minor positive benefit to the economic factors from the proposed construction activities. However, these benefits would end when the project is completed. For these reasons, socioeconomic resources will not be considered in the EA.

Infrastructure and Utilities. There would be no change in the number of personnel authorizations at Shaw AFB as a result of the proposed action. Construction activities associated with the proposed action would be minimal and would be limited to construction of the new AAFES Shopping Center. Therefore, there would be no long-term change in water consumption or wastewater and solid waste generation from the current levels because the number of personnel at the base would not change. Solid waste generated from construction activities would be minimal. The new AAFES Shopping Center would replace existing AAFES facilities and the new facilities would not require increased supply of electricity or more electricity to operate than current facilities. For these reasons, no water, wastewater, solid waste, energy, impacts would be anticipated and the resources, which are typically included in infrastructure and utilities will not be assessed in the EA.

Airspace and Airfield Operations. The proposed action does not include flying activities. No additional aircraft flights will be required by the proposed action. In addition, no changes to

flight profiles would occur. Therefore, airspace and airfield operations will not be assessed in the EA.

Past, Present and Reasonably Foreseeable Actions in the Region of Influence

A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the “. . . impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” Other actions or potential actions in the region of influence (ROI) that may be concurrent with the proposed action could contribute to cumulative impacts. The environmental impacts of these other actions will be addressed in this EA only in the context of potential cumulative impacts, if any.

1.4 APPLICABLE REGULATORY REQUIREMENTS

Regulatory requirements potentially applicable to the proposed action and alternatives are presented in Table 1-1.

1.5 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by the President on February 11, 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.” Adverse is defined by the Federal Interagency Working Group on Environmental Justice as “. . . having a deleterious effect on human health or the environment that is significant, unacceptable, or above generally accepted norms.”

Any potential impacts to the human environment would be limited to the installation or evenly distributed across the region of influence. Therefore, the proposed action would not be expected to target any particular demographic area.

Table 1-1 Potentially Required Federal Permit, License, or Entitlement

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
Title V permit under the Clean Air Act (CAA)	<p>Sources subject to the Title V permit program include:</p> <p>Any major source:</p> <p>(1) A stationary source that emits or has the potential to emit 100 tons per year (tpy) of any pollutant (major source threshold can be lower in nonattainment areas),</p> <p>(2) A major source of air toxics regulated under Section 112 of Title III (sources that emit or have the potential to emit 10 tpy or more of a hazardous air pollutant or 25 tpy or more of any combination of hazardous air pollutants).</p> <p>Any "affected source" as defined in Title IV (acid rain) of the Clean Air Act (CAA).</p> <p>Any source subject to New Source Performance Standards under Section 111 of the CAA.</p> <p>Sources required to have new source or modification permits under Parts C [Prevention of Significant Deterioration (attainment areas)] or D [New Source Review (nonattainment areas)] of Title I of the CAA.</p> <p>Any source subject to standards, limitations, or other requirements under Section 112 of the CAA.</p> <p>Other sources designated by US Environmental Protection Agency (USEPA) in the regulations.</p>	Title V of CAA, as amended by the 1990 CAA Amendments	USEPA; South Carolina Department of Health & Environmental Control (SCDHEC)
Air Quality Construction Permit	Prior to construction, alteration of a process, installation of a control device, or the addition of a source of emissions, a permit must be obtained.	South Carolina Code of Laws, Title 44, Section 44-1-65.	SCDHEC
National Pollutant Discharge Elimination System permit	Discharge of pollutant from any point source into navigable waters of the United States.	§ 402 of Clean Water Act (CWA); 33 United States Code (USC), §1342	USEPA; SCDHEC

Table 1-1, Continued

Federal Permit, License, or Entitlement	Typical Activity, Facility, or Category of Persons Required to Obtain the Federal Permit, License, or Entitlement	Authority	Regulatory Agency
National Historic Preservation Act consultation	Excavation and/or removal of archaeological resources from public lands or Indian lands and carrying out activities associated with such excavation and/or removal.	National Historic Preservation Act, § 106	US Department of the Interior - National Park Service; South Carolina State Historic Preservation Office
Endangered Species Act § 7 consultation	Taking endangered or threatened wildlife species; engaging in certain commercial trade of endangered or threatened plants or removing such plants on property subject to federal jurisdiction.	§ 7 of Endangered Species Act, 16 USC § 1539; 50 CFR 17 Subparts C, D, F, and G	US Department of the Interior - Fish and Wildlife Service (USFWS)
Clean Water Act § 404 permit	Actions to reduce the risk of flood loss to minimize the impact of floods on human safety, health and welfare; to restore and preserve the natural and beneficial values served by floodplains; actions to minimize destruction, loss, or degradation of wetlands; and to preserve and enhance the natural and beneficial values of wetlands.	Executive Orders (EOs) 11988 and 11990, § 404 of CWA, 33 USC § 1251	US Army Corps of Engineers (USACE), USFWS

1.6 DECISION TO BE MADE

Supported by the information and environmental impact analysis presented in the EA, AAFES will decide whether to implement the proposed action, and based on the Finding of No Significant Impact, that an Environmental Impact Statement is not required, or to select the no action alternative.

1.7 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into seven chapters. Chapter 1 contains a statement of the purpose of and need for action, the location of the proposed action, a summary of the scope of the environmental review, identification of applicable regulatory requirements and a description of the organization of the EA. Chapter 2 contains a brief introduction, a description of the history of the formation of alternatives, describes the alternatives eliminated from further consideration, provides a detailed description of the proposed action, identifies other action alternatives, summarizes other known actions for the ROI, provides a comparison matrix of environmental effects for all alternatives, identifies the preferred alternative and identifies measures to further reduce impacts, if applicable. Chapter 3 contains a general description of the biophysical resources that potentially could be affected by the proposed action or alternatives. Chapter 4 is an analysis of the environmental consequences. Chapter 5 lists 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.

1.8 PUBLIC INVOLVEMENT SUMMARY

Public comments on this EA were requested pursuant to NEPA, 42 *United States Code* 4321, et seq. The Draft EA and Draft Finding of No Significant Impact were made available at the following location to provide public access to the document during the 30-day public comment period, which began on September 7, 2008 and ended on October 7, 2008: the Sumter County Library, 111 North Harvin Avenue, Sumter, South Carolina, 29150. Notification of this 30-day comment period detailing the availability of the document for public review was placed in *The Item* (serving the community surrounding Shaw AFB). No comments were received on from the public; therefore, no private address information has been compiled.

Copies of the Draft EA with letters requesting review and comment were provided to 9 governmental agencies (Appendix A). Two favorable responses were received from the governmental agencies in response to that request for comments (responses were not received from nine agencies). Specifically, the US Fish and Wildlife Service made the determination the project would have no effect on resources. The South Carolina State Clearinghouse indicated that the Air Force could proceed with submission of the project to the authorized federal funding agency. Also, the State Historic preservation office concurred with the Air Force assessment that no properties listed in or eligible for listing in the National Register of Historic Places would be affected.

All written comments received during the comment period are being made available to the public as part of this Final EA and were considered during Final EA preparation. All public involvement documentation (including Interagency and Intergovernmental Coordination for Environmental Planning correspondence and the published Notice of Availability) can be found in Appendix A.

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CHAPTER 2

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter is composed of eight sections: an introduction; a brief history of the formulation of alternatives; identification of alternatives eliminated from further consideration; a description of the no action alternative; a detailed description of the proposed action; discussion of cumulative impacts; a comparison matrix of environmental effects of all alternatives; and identification of measures to reduce impacts.

2.2 HISTORY OF THE FORMULATION OF ALTERNATIVES

The alternatives that have been developed for the proposed action at Shaw AFB are meant to capture the need for a new AAFES Shopping Center at Shaw AFB. Based on this analysis, two viable alternatives were identified:

- No Action Alternative: take no action associated with the construction of a new AAFES Shopping Center at Shaw AFB.
- Proposed Action: construct a new AAFES Shopping Center at Shaw AFB.

2.3 IDENTIFICATION OF ALTERNATIVES ELIMINATED FROM CONSIDERATION

Alteration and repair of existing facilities would not be a cost-effective solution. Existing AAFES facilities at Shaw AFB are beyond useful life and extensive renovation would be needed. Furthermore, retaining these facilities for other uses was eliminated from further consideration. In addition, Shaw AFB base civil engineering personnel reviewed the installation General Plan to determine if any alternative siting locations could be considered in this analysis. Viable alternative facility locations were not identified.

2.4 NO ACTION ALTERNATIVE

Under the no action alternative, the construction of a new shopping center at Shaw AFB would not occur. This alternative would not allow for the replacement of undersized facilities, or those damaged by fire. There would be no change from existing conditions at Shaw AFB.

2.5 DETAILED DESCRIPTION OF THE PROPOSED ACTION

Under the proposed action, AAFES proposes to construct a new shopping center, shoppette (including gas station) and Burger King at a single location at Shaw AFB. The details of the proposed action are described in the following paragraphs.

The shopping center will consist of an approximately 85,000 square foot (ft²) building with concrete footings and steel framing. The building will be furnished with all interior walls,

finishes, lighting and mechanical (including life safety systems). The facility will be equipped with pavement, walks, curbs, gutters, storm drainage, retention walls and site improvements for a complete and useable facility. The shopping center will include retail gasoline sales with 6 multi-product dispensers, a canopy roof system, a drive thru for the Burger King and 346 parking spaces (Figure 2-1). The existing Shopping Center (Building 1422), Shoppette (Building 5227) and Burger King (Building 823) will be returned to the base for disposition.

Personnel changes are not anticipated under the proposed action.

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

A cumulative impact, as defined by the CEQ (40 Part 1508.7), is the “. . . impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” Other actions or potential actions in the region of influence (ROI) that may be concurrent with the proposed action could contribute to cumulative impacts. The environmental impacts of these other actions are addressed in this EA only in the context of potential cumulative impacts, if any. The following paragraphs describe specific projects planned for Shaw AFB or within the ROI that have the potential to add to cumulative impacts.

Several projects are planned in the ROI in the near future for the area surrounding Shaw AFB. A majority of the projects are associated with the BRAC recommendations and documented in the *Final Environmental Assessment to Implement the Defense Base Closure and Realignment Commission Recommendations for Shaw Air Force Base, South Carolina, July 2007*, which would occur during the construction of the Shopping Center.

2.7 COMPARISON MATRIX OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2-1 summarizes the impacts of the no action alternative and the proposed action.

2.8 MEASURES TO REDUCE IMPACTS

Mitigation would be required to reduce the impacts to less than significant. However, measures to further reduce impacts are identified, where applicable.

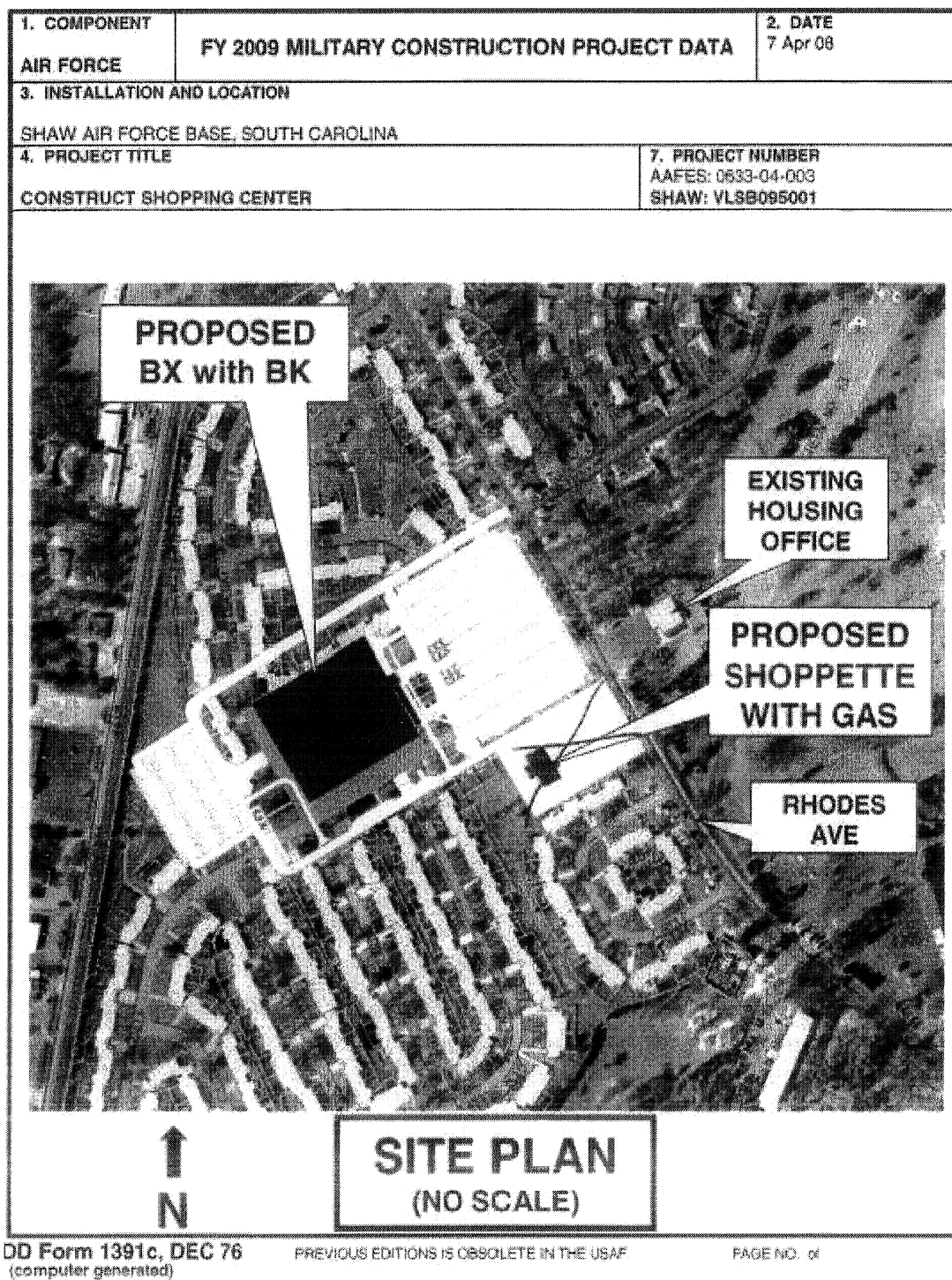


Figure 2-1 Site Plan, New Shopping Center

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Table 2-1 Summary of Environmental Effects

Resource	No Action Alternative	Proposed Action
Noise	The noise environment around Shaw AFB would remain the same as baseline conditions presented in Section 3.2.1.	Construction noise, which would end when construction is completed, would not exceed maximum permissible noise levels beyond the Shaw AFB boundary.
Land Use	There would be no change from the baseline conditions described in Section 3.2.2.	Land use would not change from baseline conditions under the proposed action.
Water Resources	There would be no change from the baseline conditions described in Section 3.2.3.	Under the proposed action, water resources would not change. All proposed activities would occur within the existing facility in previously disturbed areas and impacts to soil would not occur.
Biological Resources	No impacts to vegetation and wildlife would be expected and conditions would remain as described in Section 3.2.4.	The site for the AAFES Shopping Center does not contain suitable habitat for endangered, threatened, or special status species.
Cultural Resources	There would be no change from baseline conditions as described in Section 3.2.5.	The planned location of the AAFES Shopping Center contains no known archaeological sites or resources.
Air Quality	Emissions would be identical to current baseline emissions presented in Section 3.2.6.	Emissions of all pollutants under the proposed action would be less than 250 tpy; therefore, the proposed action would not be considered regionally significant. All projects under the proposed action are considered temporary activities and would not be expected to cause long-term impacts to local or regional baseline air quality. It should be noted that activities at Shaw AFB associated with the proposed action would not have an impact on current permits or permit status.

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CHAPTER 3

AFFECTED ENVIRONMENT

The affected environment is the baseline against which potential impacts caused by the proposed action and no action alternative are assessed. This chapter focuses on the human environment that has the potential to be affected by the proposed construction activities. As stated in Title 40, CFR, Section 1508.14, the potentially affected human environment is interpreted comprehensively to include the natural and physical resources and the relationship of people with those resources. The environmental baseline was defined by first identifying potential issues and concerns related to the proposed action, as discussed in Section 1.3. From this information, the relevant natural and physical resources were selected for description in this chapter.

3.1 INTRODUCTION

This chapter provides baseline data describing the man-made and natural environmental conditions likely to be affected by the implementation of the proposed action. Information is presented in this section to the level of detail necessary to support the analysis of potential impacts in Chapter 4, Environmental Consequences.

3.2 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.2.1 Noise

3.2.1.1 Definition of the Resource

The characteristics of sound include parameters such as amplitude (loudness), frequency (pitch) and duration. Sound varies over an extremely large range of amplitudes. The decibel (dB), a logarithmic unit that accounts for the large variations in amplitude, is the accepted standard unit for describing levels of sound.

Different sounds have different frequency contents. Because the human ear is not equally sensitive to sound at all frequencies, a frequency-dependent adjustment, called A-weighting and expressed in A-weighted decibels (dBA), has been devised to measure sound similar to the way the human hearing system responds. The adjustments in amplitude, established by the American National Standards Institute (ANSI 1983), are applied to the frequency content of the sound. Figure 3-1 depicts typical A-weighted sound pressure levels for various sources. For example, 65 dBA is equivalent to normal speech at a distance of 3 feet.

Noise is defined as sound that is undesirable because it interferes with speech and hearing, is intense enough to damage hearing, or is otherwise annoying. Noise levels often

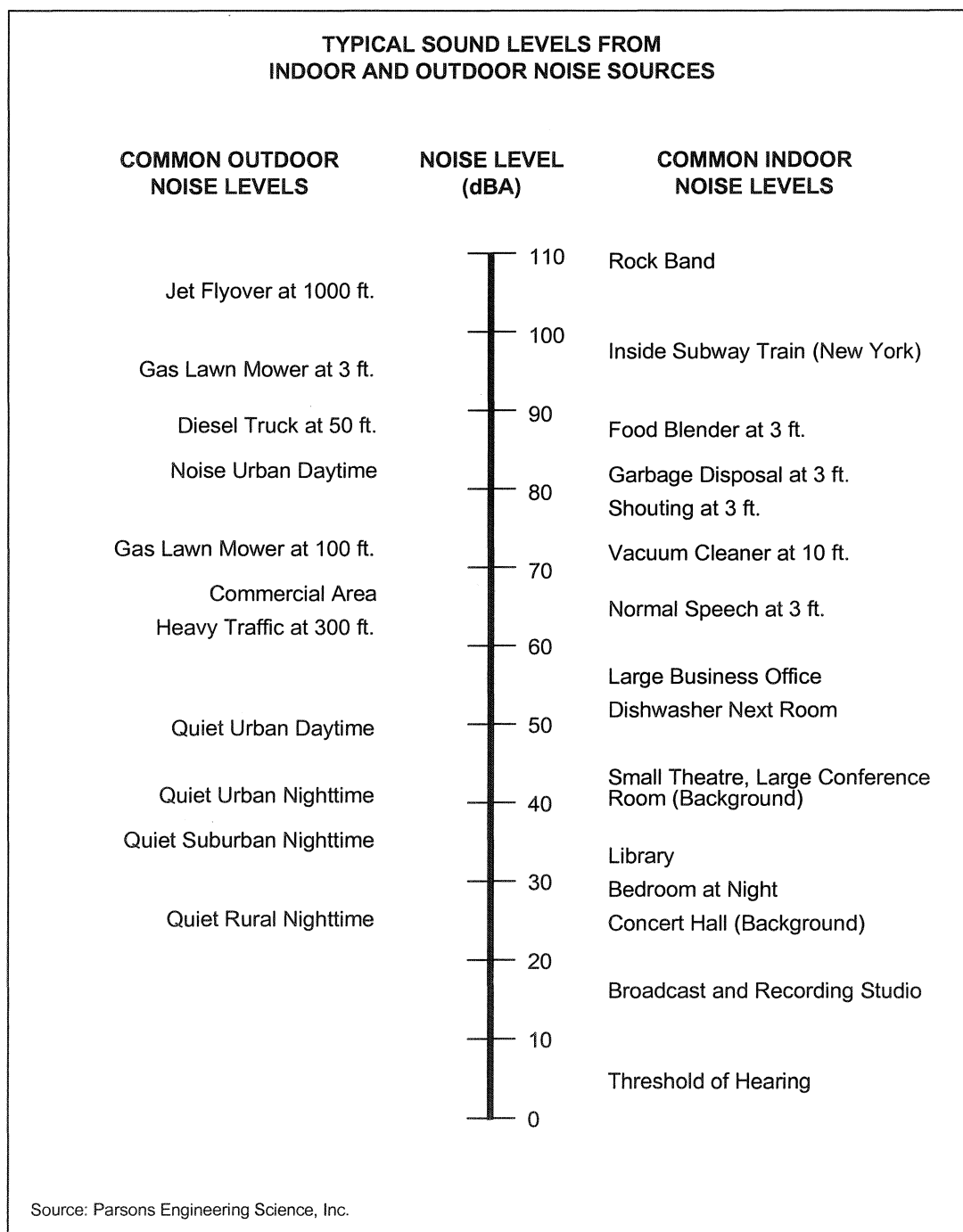


Figure 3-1 Typical A-weighted Sound Levels

change with time. To compare sound levels over different time periods, several descriptors have been developed that take into account this time-varying nature. These descriptors are used to assess and correlate the various effects of noise on humans.

The Day-Night Average Sound Level (DNL) metric is a measure of the total community noise environment. DNL is the average A-weighted sound level over a 24-hour period, with a 10-dBA adjustment added to the nighttime levels (between 10:00 p.m. and 7:00 a.m.). This adjustment is an effort to account for increased human sensitivity to nighttime noise events. DNL was endorsed by the United States Environmental Protection Agency (USEPA) for use by federal agencies and has been adopted by the Department of Housing and Urban Development, Federal Aviation Administration and the Department of Defense (DoD). DNL is an accepted unit for quantifying annoyance to humans by general environmental noise, including aircraft noise. The Federal Interagency Committee on Urban Noise (FICON) developed land use compatibility guidelines for noise (USDOT 1980). Compatible or incompatible land use is determined by comparing the predicted DNL level at a site with the recommended land uses.

Methods used to quantify the effects of noise, such as annoyance, speech interference and health and hearing loss, have undergone extensive scientific development during the past several decades. The most reliable measures are noise-induced annoyance and hearing loss. The effects of noise exposure are summarized in the following paragraphs.

Annoyance. Noise annoyance is defined by the USEPA as any negative subjective reaction to noise by an individual or group. Table 3-1 presents the results of over a dozen studies of the relationship between noise and annoyance levels. This relationship has been suggested by the National Academy of Sciences (NAS 1977) and was reevaluated (Fidell *et al.* 1988) for use in describing people's reaction to semi-continuous (transportation) noise. These data are shown to provide a perspective on the level of annoyance that might be anticipated. For example, 15 to 25 percent of persons exposed on a long-term basis to DNL of 65 to 70 dBA would be expected to be highly annoyed by noise events.

Speech Interference. One of the ways noise affects daily life is by prevention or impairment of speech communication. In a noisy environment, understanding speech is diminished when speech signals are masked by intruding noises. Reduced speech intelligibility also may have other effects. For example, if speech understanding is interrupted, performance may be reduced, annoyance may increase and learning may be impaired. Elevated noise levels can interfere with speech, causing annoyance or communication difficulties. Based on a variety of studies, DNL 75 dBA indicates a good probability for frequent speech disruption.

Community noise levels usually change continuously during the day. However, community noise exhibits a daily, weekly and yearly pattern. Several descriptors have been developed to compare noise levels over different time periods. One descriptor is the

Table 3-1 Percentage of Population Highly Annoyed by Elevated Noise Levels

Noise Exposure (L_{dn} in dBA)	Percent Highly Annoyed
< 65	< 15
65 – 70	15 – 25
70 – 75	25 – 37
75 – 80	37 – 52
> 85	61

L_{dn} Day-Night Average Sound Level dBA A-weighted decibel

Source: Fidell *et al.* 1988

equivalent sound level (L_{eq}). The L_{eq} is the equivalent steady-state A-weighted sound level that would contain the same acoustical energy as the time-varying A-weighted sound level during the same time interval.

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

This level produces ratings of “barely acceptable” for intelligibility of spoken material. Increasing the level of noise to 80 dB reduces the intelligibility to zero, even if people speak in loud voices.

Hearing Loss. Hearing loss is measured in decibels and refers to a permanent auditory threshold shift of an individual’s hearing. The USEPA (USEPA 1974) recommended a limiting daily equivalent energy value or equivalent sound level of 70 dBA to protect against hearing impairment over a period of 40 years. This daily energy average would translate into a DNL value of approximately 75 dBA or greater. Based on a USEPA study, hearing loss is not expected in people exposed to a DNL of 75 dBA or less (USEPA 1974). The potential for hearing loss involves direct exposure to DNL levels above 75 dBA on a regular, continuing, long-term basis. FICON states that hearing loss due to noise: (1) may begin to occur in people exposed to long-term noise at or above a DNL of 75 dBA, (2) will not likely occur in people exposed to noise between a DNL of 70 and 75 dBA, and (3) will not occur in people exposed to noise less than a DNL of 70 dBA (USDOT 1980).

An outdoor DNL of 75 dBA is considered the threshold above which the risk of hearing loss is evaluated. Following guidelines recommended by the Committee on Hearing, Bioacoustics and Biomechanics, the average change in the threshold of hearing for people exposed to DNL equal to or greater than 75 dBA was evaluated. Results

indicated that an average of 1 dBA hearing loss could be expected for people exposed to DNL equal to or greater than 75 dBA. For the most sensitive 10 percent of the exposed population, the maximum anticipated hearing loss would be 4 dBA. These hearing loss projections must be considered conservative as calculations are based on an average daily outdoor exposure of 16 hours (7:00 a.m. to 10:00 p.m.) over a 40-year period. It is doubtful any individual would spend this amount of time outdoors within the DNL equal to or greater than 75 dBA noise exposure area.

FICON developed land use compatibility guidelines for noise in terms of DNL (USDOT 1980). DNL is the metric used by the Air Force in determining noise impacts of military airfield operations for land use planning. Air Force land use compatibility guidelines (relative to DNL values) are documented in the Air Installation Compatible Use Zone (AICUZ) *Program Manager's Handbook* (USAF 1999). Four noise zones are used in AICUZ studies to identify noise impacts from aircraft operations. These noise zones range from DNL of 65 dBA to DNL of 80 dBA. For example, it is recommended that no residential uses, such as homes, multifamily dwellings, dormitories, hotels and mobile home parks be located where the noise is expected to exceed a DNL of 65 dBA. If noise sensitive structures are located in areas within a DNL range of 65 to 75 dBA, the structures should be designed to achieve a 25 to 30 dBA interior noise reduction. For outdoor activities, the USEPA recommends DNL of 55 dBA as the sound level below which there is no reason to suspect that the general population will be at risk from any noise effects (USEPA 1974).

Air Force policy for many years has been to implement, where feasible, noise level reduction (NLR) measures in on-base residential and public use buildings. NLR measures are intended to reduce indoor noise levels to DNL 45 dBA or less. Recommended NLR is 25 dBA for units in the DNL 65 to 70 dBA noise zone and 30 dBA for those in the DNL 70 to 75 dBA zone. Buildings constructed prior to implementation of the Noise Reduction Policy were not necessarily built to NLR standards. Since implementation of the NLR standards, all new buildings are designed and constructed to comply with the AICUZ land use compatibility guidelines (USAF 1999).

3.2.1.2 Existing Noise Levels

Noise associated with activities at Shaw AFB is characteristic of that associated with most Air Force installations with a flying mission. During periods of no aircraft activity, noise associated with base operations results primarily from maintenance and shop activities, ground traffic movement, occasional construction and similar sources. The resultant noise is almost entirely restricted to the base itself and is comparable to that which might occur in adjacent community areas. It is only during periods of aircraft ground or flight activity that the situation changes. Most airfield operations are conducted during daylight hours and on weekdays. Due to airfield operations, existing noise levels are typical of an urban residential area near a major airport. The L_{eq} measured in such an area during the daytime average around 59 dBA, whereas nighttime A-weighted sound

levels average around 50 dBA (Harris 1991). Existing L_{dn} noise levels at Shaw AFB would therefore be expected to be less than 70 dBA.

3.2.2 Land Use

3.2.2.1 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. The attributes of land use considered in this analysis include general land use patterns, land ownership, land management plans and special use areas.

General land use patterns characterize the types of uses within a particular area including agricultural, residential, military and recreational. Land ownership is a categorization of land according to type of owner. The major land ownership categories include private, federal and state. 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.

Noise is another factor in determining appropriate land uses since elevated sound levels are incompatible with residential areas. As described in Section 3.2.1.1, sound levels are typically measured in decibels using L_{dn} as the standard of measurement. Numerous studies have shown a relationship between L_{dn} and the percentage of the population likely to be highly annoyed. Residential areas are typically inconsistent with noise levels above L_{dn} 65 dB.

Visual resources are the natural and man-made features that give a particular environment its aesthetic qualities. In undeveloped areas, landforms, water surfaces and vegetation are the primary components that characterize the landscape. Man-made elements such as buildings, fences and streets may also be visible. These may dominate the landscape or be relatively unnoticeable. In developed areas, the natural landscape is more likely to provide a background for more obvious man-made features. The size, forms, materials, and functions of buildings, structures, roadways and infrastructure will generally define the visual character of the built environment. These features form the overall impression that an observer receives of an area or its landscape character. Attributes used to describe the visual resource value of an area include landscape character, perceived aesthetic value and uniqueness.

The ROI for land use and visual resources includes Shaw AFB.

3.2.2.2 Land Use

Shaw AFB's main cantonment area encompasses 3,354 acres. Shaw AFB groups land uses by function in geographic areas. Most of the developed land uses occur north and west of the airfield. Support services and the runway are centrally located and the

residential areas on base are located in the northwest portions of the base. Open space and light development, including a munitions storage area and outdoor recreational facilities, are located in the eastern portion of the base (USAF 2007).

Several adopted plans and programs guide land use planning on Shaw AFB. Base plans and studies present factors affecting both on- and off-base land use and include recommendations to assist on-base officials and local community leaders in ensuring compatible development. The *Shaw AFB General Plan* provides an overall perspective concerning development opportunities and constraints as well as a framework for making effective programming, design, construction and resource management decisions. An Area Development Plan (ADP) that guides and identifies development opportunities and constraints for the east side of Shaw AFB is currently being prepared (USAF 2007). The base's *Integrated Natural Resources Management Plan, November 2007*, is used to coordinate natural resources management on the base.

The *Air Installation Compatible Use Zone (AICUZ) Study* for Shaw AFB recommends compatible land development patterns in the off-base areas subject to aircraft noise and accident potential. Sumter County, in conjunction with Shaw AFB, has prepared a *Joint Compatible Land Use Study* that incorporates AICUZ recommendations. The study also describes existing land uses; identifies encroachment areas around the base; recommends modifications to the county zoning ordinance; addresses long-range infrastructure improvements; and describes twenty-year growth trends for the area (USAF,2007).

Zoning around the base includes heavy industrial and limited commercial. Varying degrees of residential densities are permitted around the base and general commercial businesses are permitted along the major roads. On the major roads, including U.S. Highways 76/378 and 521 and State Route 441, commercial development occurs. Land uses within Sumter County include agriculture and forestry, with over 50 percent of the county classified as prime farmland or farmlands of statewide importance. Special-use areas in the vicinity of the base include Poinsett State Park, a portion of Woods Bay State Park, the Manchester State Forest (including a Wildlife Management Area), and a portion of a 44,000-hectare Lake Marion impoundment which are all located within Sumter County.

3.2.3 Water Resources

Water resources include surface waters and groundwater features, stormwater runoff and floodplains. Surface waters on Shaw AFB include ponds, streams, and other wetlands. The ROI for earth resources includes Shaw AFB.

3.2.3.1 Surface Water

Shaw AFB is located within the Southern Coastal Plain physiographic region of South Carolina. Spann Branch and Long Branch Creeks are the major naturally occurring surface water features on Shaw AFB. Spann Branch flows along the northern boundary of the base into Long Branch. Long Branch runs along the northeast edge of the base, into Booth's Pond, Sawmill Pond and then into Mush Swamp. From there, the creeks become

part of the headwaters of the Pocotaligo Swamp, which flows into the Black River, which make its way to the Atlantic Ocean near Georgetown, South Carolina (USAF 2007).

Surface water features within the base consist primarily of canals and ditches associated with runways and taxiways. These ditches were created for the purpose of removing storm water runoff from airfield areas. The base also maintains four artificial impoundments: Chapel Pond, Memorial Lake, No. 1 Hole Golf Course Pond and No. 8 Hole Golf Course Pond. These ponds are maintained for fishing, picnicking and aesthetic value.

Storm water runoff from the base is regulated by the South Carolina Department of Health & Environmental Control (SCDHEC) NPDES permit program. Under the base NPDES permit, storm water is discharged through three permitted storm water outfalls. The majority of the area east of the runway discharges through outfall 004 to Long Branch Creek. The drainage area to outfall 004 consists of approximately 1,230 acres. Approximately 200 acres consisting of runways, roads, and areas of industrial activity are impervious, while the remaining 1,030 acres are undeveloped (USAF 2007).

3.2.3.2 Surface Water Quality

Surface water resources water quality may be impacted by point and non-point sources of pollutants. Water bodies are classified by the state based on their water quality, and discharges that can affect water quality are regulated through permits.

The Pocotaligo River and its tributaries, including Long Branch, have been designated by South Carolina as Freshwaters, indicating that they are suitable for secondary contact recreation, drinking water supply after conventional treatment, fishing and the survival and propagation of a balanced indigenous aquatic community of flora and fauna. No waters are classified as Outstanding Resources Waters (ORW) within one mile of Shaw AFB. Also, Shaw AFB does not have water bodies on or in the immediate vicinity listed on South Carolina's Section 303(d) List of impaired water bodies (USAF 2007).

Unlike pollution from industrial and sewage treatment sources, non-point source (NPS) pollution comes from many non-discrete sources. As rainfall runs off the land and manmade structures, natural and man-made pollutants are picked up, transported and ultimately deposited into lakes, rivers, wetlands, coastal waters and groundwater. These pollutants may have harmful effects on water quality, adversely affecting drinking water supplies, recreation, wildlife and fisheries. Potential NPS pollution at Shaw AFB originates from fertilizers, herbicides and insecticides used in landscaped and developed areas; hydrocarbon and chemical runoff from parking lots, roadways and the flight line; and sediment runoff from construction sites and land clearing.

3.2.3.3 Groundwater

Three aquifer systems are located under Shaw AFB. They consist of the Middendorf Aquifer, Black Creek Aquifer and the shallow aquifer system, which includes the Lang Syne Formation and the Duplin Formation.

3.2.4 Biological Resources

The existing biological resources at Shaw AFB include terrestrial and aquatic communities, including wetlands, as well as individual flora and fauna species, of which some are locally, regionally and/or nationally rare. The ROI includes Shaw AFB, but not Poinsett Electronic Combat Range, with a focus on the proposed project areas. The following sections describe these biological resources as a baseline to understanding the potential impacts to each by the proposed action. Detailed information on the installation's biological resources is available in the Integrated Natural Resources Management Plan (INRMP) (USAF 2007).

3.2.4.1 Terrestrial Communities

Shaw AFB is located within the Southeastern Mixed Forest Province, also known as the Middle Atlantic Coastal Forest. The original forested areas were cleared in the 1940s when the base was commissioned. Because of subsequent extensive disturbance, few natural communities remain on the installation. Consequently, the base is now dominated by a disturbed/urbanized community (84 percent), while pine plantation (13 percent) and oak/hickory forest (less than one percent) account for the remaining terrestrial communities (USAF 2007). Further discussion of these terrestrial communities follow:

Disturbed/Urbanized. Aside from structures and pavement, improved and semi-improved landscaped areas include mowed lawn and field areas, as well as horticultural trees and shrubs. Wildlife adapted to such modified lands is rather limited, and typically includes species such as mockingbird, northern cardinal and American robin (USAF 2007).

Pine Plantation. This terrestrial community covers approximately 300 acres within the southeastern corner of the installation. Understory vegetation includes wild plum, hawthorn, blackberry, primrose and broomsedge. Wildlife expected to occur within pine forest habitat includes species such as fence lizard, black racer, striped skunk, opossum, white-tailed deer, red-eyed vireo and Carolina wren (USAF 2007).

Oak/Hickory Forest. The oak/hickory forest community is locally restricted to the northern portion of Shaw AFB adjacent to housing. In addition to a dominance of white oak, pignut hickory and mockernut hickory, other associated woody species include flowering dogwood, sparkleberry, loblolly pine and winged elm (USAF 2007).

3.2.4.2 Wetland and Freshwater Aquatic Communities

Wetlands are subject to regulatory authority under Section 404 of the Clean Water Act, EO 11990, *Protection of Wetlands*, and EO 11988, *Floodplain Management*. Jurisdictional wetlands must meet the three wetland criteria as defined in United States Army Corps of Engineer's Wetlands Delineation Manual. Shaw AFB contains approximately 100 acres (slightly more than one percent) of its area as wetland and freshwater aquatic communities (USAF 2007). The biological habitats that occur in these communities are small stream forest and ponds, which are described in greater detail in this section.

Small Stream Forest. Small stream forest wetland occurs along Long Branch where it crosses the northeast corner of the base within the runway approach, and in Mush Swamp in the southwest corner of the base south of U.S. 76/378. At the former location, hydrophytic (water-loving) species of trees within the wetland includes river birch, sweetgum, water oak and red maple. At the latter location, dominant canopy trees include laurel-leaf oak, hackberry, red maple and ash. Understory species in both areas include native species such as wax myrtle, common elderberry, willows, greenbriar and non-native invasive species such as Japanese privet and Chinese privet. Wildlife typical of these wetlands include species such as two-toed amphiuma, muskrat, beaver, raccoon, white-tailed deer, wood duck, various frogs, toads, snakes and turtles (USAF 2007).

Ponds. Pond wetlands occur only as artificial-constructed features within the installation. Each of the four constructed ponds is located within the developed western portion of the base. Two of the ponds occur on the golf course, one is adjacent to the golf course and the other is behind the chapel. These ponds are managed for recreation (fishing and picnicking) and aesthetics, and their margins are regularly mowed and trimmed of tall vegetation. Shallow areas fringing the ponds often support emergent wetland vegetation that includes species such as meadow beauty, smartweeds, seedbox, bugleweed, nama and water-spider orchid. Wildlife expected in these open water habitats includes stocked fish such as various sunfish, bullhead catfish, largemouth bass and birds such as resident Canada geese, mallards and kingfishers (USAF 2007).

3.2.4.3 Threatened, Endangered, and Special Concern Species

Section 7 of the federal Endangered Species Act, as amended, requires each federal agency to ensure that “any action authorized, funded, or carried out by such agency... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species... unless such agency has been granted an exemption for such action...” Additionally, animals designated by South Carolina as endangered or threatened are granted legal protection by the state. The South Carolina Heritage Trust Database was accessed to produce a list of rare flora and fauna known to occur within Sumter County, and which have the potential to occur on Shaw AFB. Table 3-2 provides information on 27 Endangered, Threatened, and Special Concern (ETSC) species, including their legal status (if any) and habitat typical for each species. Federal listed candidate species are not known to occur on Shaw AFB. The only known ETSC species on the installation is the Least Tern, which nests on the flat roof of the Base Exchange building. The Least Tern is listed as threatened in the state, and this breeding colony is the farthest inland breeding colony recorded for South Carolina. This bird preys exclusively on live fish captured by plunging into water bodies. The species prefers to nest along coastal beaches, but has adapted to nesting on flat, graveled rooftops where ideal habitat is overly disturbed (USAF, 2007). Demolition of these rooftops should not occur during nesting season (April-August).

**Table 3-2 Endangered, Threatened, and Special Concern Species
Occurring in Sumter County**

Common Name	Scientific Name	Status	Habitat
Plants			
Awnead meadow-beauty	<i>Rhexia aristosa</i>	SC	Pond margins and wet savannas
Baldwin's nutrush	<i>Scleria baldwinii</i>	SC	Wetlands
Boykin's lobelia	<i>Lobelia boykinii</i>	SC	Cypress ponds; swamp margins
Canby's dropwort	<i>Oxypolis canbyi</i>	FE/SE, SC	Cypress ponds and sloughs; wet savannas
Chaffseed	<i>Schwalbea Americana</i>	FE/SE	Pond margins and wet savannas; land ridge forest
Coastal-plain thorough-wort	<i>Eupatorium recurvans</i>	SC	Depressions
Cypress-knee sedge	<i>Carex decomposita</i>	SC	Swamps and lake margins on floating logs
Dwarf burhead	<i>Echinodorus parvulus</i>	SC	Shallow pools and ponds
Dwarf burhead	<i>Echinodorus tenellus</i>	SC	Shallow pools and ponds
Leatherleaf	<i>Chamaedaphne calyculata</i>	SC	Wetlands and bogs
Leconte's flatsedge	<i>Cyperus lecontei</i>	SC	Sand dune swales; pond margins
Long-beaked baldrush	<i>Rhynchospora scirpoides</i>	SC	Floating mats in ponds; pond margins
Nestronia	<i>Nestronia umbellata</i>	SC	Oak-hickory-pine woods; often in transition areas between flatwoods and uplands
Nutmeg hickory	<i>Carya myristiciformis</i>	RC	Wet floodplain forests
Piedmont three-awned grass	<i>Aristida condensate</i>	SC	Sandridges
Robbin's spikerush	<i>Eleocharis robbinsii</i>	SC	Pine savanna ponds
Slender arrow-head	<i>Sagittaria isoetiformis</i>	SC	Sandy ponds and bogs
West Indian meadow-beauty	<i>Rhexia cubensis</i>	SC	Wet savannas including cutthroat seeps, flatwoods, and bogs
Wild petunia	<i>Ruellia caroliniensis</i>	SC	Woods and wood margins
Amphibians			
Northern cricket frog	<i>Acris crepitans crepitans</i>	SC	Margins of shallow ponds or marshy areas
Reptiles			
Eastern coral snake	<i>Micrurus fulvius</i>	SC	Hardwood forest; pine flatwoods; marshes
Mammals			
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	SE	Pine and hardwood forest; caves; abandoned buildings
Black bear	<i>Ursus americanus</i>	SC	Large undeveloped wooded tracts
Birds			
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT/SE	Edges of lakes and large rivers; seacoasts
Mississippi kite	<i>Ictinia mississippiensis</i>	SC	Woodlands and brushy areas; near water
Red-cockaded woodpecker	<i>Picoides borealis</i>	FE/SE	Open pine woods; pine savannas
Least tern	<i>Sterna antillarum</i>	ST	sandy beaches; sandbars

Status codes: FE = federally endangered, FT = federally threatened, SE = state endangered, ST = state threatened, SC = species of special concern

Source: USAF 2007

3.2.5 Cultural Resources

Cultural resources may include prehistoric and historic archaeological sites, buildings, structures, districts, artifacts, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, or religious purposes. Under 36 CFR 800, federal agencies must take into consideration the potential effect of an undertaking on “historic properties,” which refers to cultural resources listed in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Properties not yet evaluated may be considered potentially eligible for the NRHP and, as such, afforded the same regulatory consideration as nominated properties.

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies to take into account the effects of their actions on historic properties, and requires archaeological surveys prior to surface disturbing activities in areas not previously surveyed. The agencies must allow the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on any Federal undertakings affecting cultural resources. The Section 106 process is part of the Air Force’s EIAP, a program that implements NEPA.

Shaw AFB does not have a Memorandum of Agreement with the State Historic Preservation Officer (SHPO); it is done on a case-by-case basis. In the event that a project results in an adverse impact to cultural resources, during the Section 106 process a Memorandum of Agreement is drafted to resolve the adverse effects and the agreement document contains a mitigation plan. The plan addresses how the adverse effects caused by the undertaking will be lessened (USAF 2007).

Section 110 of the NHPA requires that federal agencies assume responsibility for identifying, evaluating, nominating and protecting historic properties under their control. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have significance for Native American groups.

3.2.5.1 Architectural Resources

Two studies have been completed on Shaw AFB’s Cold War era resources (1946-1989). One study performed a reconnaissance survey of 127 resource types built between 1945 and 1989. One resource, a documentary collection, was selected for documentation and evaluation. A second study, part of the Department of Defense’s (DoD’s) Legacy Demonstration Project, sought to establish historic contexts for Cold War era resources on DoD facilities throughout South Carolina. Neither study fulfills Section 110 requirements, but they do lay the groundwork for future evaluations of Cold War era resources at Shaw AFB. The last evaluation of architectural resources was conducted in 1996. Resources that have attained 50-year-old status since that time require evaluation in order for Shaw AFB to satisfy its Section 110 of the NHPA requirement. ACC is presently assisting Shaw AFB with completing a Cold War architecture inventory to comply with Section 110 of the

NHPA. The Air Force considers buildings constructed between 1946– 1989 as Cold War era structures (USAF 2007).

There is one architectural site (Hangar B611) that is eligible for listing on the NRHP. This structure is located along the southwestern edge of the flightline. Hangar B611 was built in 1942 and is historically significant as an important example of a form of industrial construction that occurred during World War II. Additionally, at the end of FY07, an additional 45 buildings and structures became at least 50 years old (USAF 2007).

3.2.5.2 Archaeological Resources

The first large-scale archaeological investigation within the project area occurred in the early 1980s and intensified in the 1990s. To date, 147 sites have been identified on Shaw AFB. A total of 18 cultural resource management studies and reports have been produced as a result of the work that has been done at Shaw AFB. The reports are stored in the office of the Cultural Resource Manager at Shaw AFB in the Asset Management Flight, Natural Resource Element. Additional copies are on file with the South Carolina Institute of Archaeology and Anthropology (USAF 2007). Currently, there is one site on Shaw AFB, 38SU299 (FS-1), which is potentially eligible for listing on the NRHP. This site is not located within the project area.

3.2.5.3 Traditional Resources

Traditional resources are identified by Native American tribes or other groups and include properties of religious or cultural importance to an Indian tribe or native Hawaiian organization. No formal surveys for Traditional Cultural Resources or sacred sites have been conducted, nor have any tribes come forward and notified Shaw AFB of the presence of such sites. The federally recognized tribe nearest to Shaw AFB is the Catawba Indian Nation, near Rock Hill, South Carolina (USAF 2007).

3.2.6 Air Quality

This section discusses air quality considerations and conditions in the areas encompassing Shaw AFB. It addresses air quality standards and describes current air quality conditions in the region of concern, specifically the counties surrounding Shaw AFB. These are the only counties that would be impacted by activities associated with the proposed AAFES Shopping Center.

3.2.6.1 Definition of the Resource

3.2.6.1.1 Federal Air Quality Standards

Air quality in a given location is described by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million or micrograms per cubic meter. 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 significance of a pollutant concentration is determined by comparing it to federal and state ambient air quality standards. These standards represent the maximum

allowable atmospheric concentration that may occur and still protect public health and welfare, with a reasonable margin of safety. The national ambient air quality standards (NAAQS) are established by the USEPA.

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* (CAA). 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, damage to animals, crops, vegetation and buildings.

National ambient air quality standards have been established for: (1) ozone (O_3), (2) nitrogen dioxide (NO_2), (3) carbon monoxide (CO), (4) sulfur oxides (SO_x : measured in terms of sulfur dioxide [SO_2]), (5) lead (Pb) and (6) particulate matter. Particulate matter standards incorporate two particulate size classes: (1) particulate matter with an aerodynamic diameter (diameter of a spherical particle having a density of 1 grams per cubic centimeter that has the same inertial properties (terminal settling velocity) in the gas as the particle of interest) less than or equal to 10 microns (PM_{10}) and (2) particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). The NAAQS are the cornerstone of the CAA. Although not directly enforceable, they are the benchmark for the establishment of emission limitations by the states for the pollutants that USEPA determines may endanger public health or welfare. The federal ambient air quality standards are presented in Table 3-3.

O_3 (ground-level O_3), a major component of “smog,” is not directly emitted into the atmosphere but is formed in the atmosphere through the reactions of previously emitted pollutants or precursors (volatile organic compounds [VOC] and nitrogen oxides [NO_x]) in the presence of sunlight. Large spatial and temporal separation can exist between the emission sources of VOCs and NO_x and the formation of O_3 . Since VOCs and NO_x participate in atmospheric photochemical reactions that produce O_3 , the attempt is made to control O_3 through the control of VOCs and NO_x . For this reason, VOCs and NO_x emissions are calculated and reported in emissions inventories.

The fundamental method by which the USEPA tracks compliance with the NAAQS is the designation of a particular region as “attainment,” “nonattainment,” or “unclassifiable.” Areas meeting or having better air quality than the NAAQS are said to be in attainment. Areas that exceed the NAAQS are said to be in nonattainment. Areas that cannot be classified on the basis of available information as attainment or nonattainment are defined as unclassifiable and are treated as attainment areas. Attainment areas can be further classified as maintenance areas. Maintenance areas are areas that were previously nonattainment but have reduced pollutant concentrations below the standard and must maintain some of the nonattainment area plans (maintenance plans) to stay in compliance.

Table 3-3 National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon Monoxide (CO)	9 ppm (10 mg/m ³) 35 ppm (40 mg/m ³)	8-hour ¹ 1-hr ¹	None None
Lead (Pb)	1.5 µg/m ³	Quarterly Average	Same as Primary
Nitrogen Dioxide (NO ₂)	0.053 ppm (100 µg/m ³)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM ₁₀)	Revoked ² 150 µg/m ³	Annual (Arithmetic Mean) 24-hr ³	Revoked ² Same as Primary
Particulate Matter (PM _{2.5})	15.0 µg/m ³ 35 µg/m ³ 0.075 ppm (2008 standard)	Annual ⁴ (Arithmetic Mean) 24-hr ⁵ 8-hr ⁶	Same as Primary Same as Primary Same as Primary
Ozone (O ₃)	0.08 ppm 0.12 ppm	8-hr ⁷ 1-hr ⁸ (Applies only in limited areas)	Same as Primary Same as Primary
Sulfur Oxides (SO _x)	0.03 ppm 0.14 ppm -	Annual (Arithmetic Mean) 24-hr ¹ 3-hr ¹	- - 0.5 ppm (1300 µg/m ³)

Note:

¹Not to be exceeded more than once per year.²Due to lack of evidence linking health problems to long-term exposure to coarse particulate pollution, USEPA revoked the annual PM₁₀ standard in 2006. Effective on 18 December 2006.³Not to be exceeded more than once per year on average over 3 years⁴To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.⁵To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (the previous standard was 65 µg/m³). Effective on 18 December 2006.⁶To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. Effective on 27 May 2008.⁷(a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard and the implementation rules for that standard will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

⁸(a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. (b) As of June 15, 2005, USEPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact Areas. The one-hour standard applies to one area in Colorado, the Denver Area (Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, and a portion of Larimer and Weld Counties).mg/m³ milligrams per cubic meter

hr

Hour

µg/m³ micrograms per cubic meter

ppm

Parts per million

CFR Code of Federal Regulations

USEPA

United States Environmental Protection Agency

PM_{2.5} particulate matter with an aerodynamic diameter less than or equal to 2.5 micronsPM₁₀ particulate matter with an aerodynamic diameter less than or equal to 10 microns

Source: Title 40, CFR, Part 50

3.2.6.1.2 State Air Quality Standards

The USEPA recently implemented the new eight-hour O₃ and 24-hour and annual PM_{2.5} national standards. An area will attain this standard if its three-year running average of the annual fourth-highest daily maximum eight-hour O₃ concentration remains below 0.085 parts per million. The USEPA will not revoke implementation of the one-hour O₃ standard in a given area until that area achieves this standard. Otherwise, as is the case for South Carolina, implementation of the eight-hour standard will replace the existing one-hour standard. In South Carolina, 18 of 23 O₃ monitors, particularly those in the more populated urban areas, regularly exceed the 8-hour O₃ standard. Upon final designation of these nonattainment areas, the South Carolina Department of Health and Environmental Control (SCDHEC) will have to submit a plan to the USEPA that demonstrates how they

will bring the areas into attainment of the 8-hour O₃ standard. Sumter County and Shaw AFB are located in an air quality attainment district.

3.2.6.1.3 State Implementation Plan

The states have primary responsibility to implement the CAA; the primary vehicle for this implementation is the State Implementation Plan (SIP) – a plan for ambient air quality standards required under 42 USC, Section 7410. The CAA requires that each state produce and regularly update a SIP. A SIP is an enforceable plan developed by the state under section 110 of the CAA that explains how the state will comply with air quality standards and other guidelines according to the federal CAA. The CAA also requires that SIPs include a description of control strategies, or measures to deal with pollution, for areas that fail to achieve the NAAQS. The SIP is essentially a collection of regulations that explain how a state will clean up polluted areas under the CAA.

Each state is required to develop a 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.

The CAA and its subsequent amendments establish air quality regulations and the NAAQS and delegate the enforcement of these standards to the states. The SCDHEC enforces air pollution regulations and sets guidelines to attain and maintain the national and state ambient air quality standards within the state of South Carolina. For nonattainment regions, states are required to establish a SIP that is designed to reduce emissions to a level that will bring the regions into compliance with the NAAQS by specific deadlines. Control measures proposed in the SIP and adopted by the SCDHEC are incorporated into the SCDHEC Regulation 61-62, *Air Pollution Control Regulations and Standards*.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes potential impacts that could occur if the proposed action is implemented at Shaw AFB. Additionally, potential impacts are addressed for the no action alternative and cumulative impacts are analyzed for the additional actions proposed on or around Shaw AFB. Criteria used to evaluate potential impacts are discussed at the beginning of each resource area.

4.2 DESCRIPTION OF THE EFFECTS OF ALL ALTERNATIVES ON THE AFFECTED ENVIRONMENT

4.2.1 Noise

An environmental impact analysis related to noise includes the potential impacts on the area surrounding the project. In considering the basis for evaluating significance of noise impacts, several items were examined, including: (1) the degree to which noise levels generated by construction would be higher than the ambient noise levels, (2) the degree to which there would be annoyance and/or activity interference, and (3) the exposure of noise-sensitive receptors to noise levels above 65 dBA.

4.2.1.1 No Action Alternative

The noise environment at Shaw AFB would not change from the baseline conditions.

4.2.1.2 Proposed Action

Noise generated from the construction of the AAFES Shopping Center would occur at the installation. Equipment and vehicles involved in site preparation, foundation preparation, construction and finishing work would generate the primary source of noise from these activities. Construction noise would be intermittent and short-term in duration. Typical noise levels generated by these activities range from 75 to 89 dB at 50 feet from the source.

Assuming that noise from the construction equipment operation radiates equally in all directions, the sound intensity would diminish inversely as the square of the distance from the source increases. Table 4-1 shows the anticipated sound pressure levels at a distance of 50 feet for miscellaneous heavy equipment.

Table 4-1 Heavy Equipment Noise Levels at 50 Feet

Equipment Type ^a	Number Used ^a	Generated Noise Levels, L _p (dBA) ^b
Bulldozer	1	88
Backhoe (rubber tire)	1	80
Front Loader (rubber tire)	1	80
Dump Truck	1	75
Concrete Truck	1	75
Concrete Finisher	1	80
Crane	1	75
Flat-bed Truck (18 Wheel)	1	75
Scraper	1	89
Trenching Machine	1	85

^aEstimated^bSource: CERL 1978

For the purposes of this assessment, it is estimated the shortest distance between a noise source (*i.e.*, construction fence) and a receptor such as a nearby base building during construction would be about 50 feet. There are no residences or dormitories within 1,000 feet of the project sites.

Noise related to the construction projects may have a short-term impact on the functions in nearby buildings. Outdoor noise from construction activity at an occupied building 50 feet from the noise source could be as high as 75 to 89 dBA (see Table 4-1). However, interior noise levels during construction activity would be reduced from the 75 to 89 dBA level by approximately 18 to 27 dB due to the noise reducing properties of the building's construction materials (USDOT 1992). Noise would be temporary and would cease when the construction activities are completed.

4.2.1.3 Measures to Reduce Impacts

Mitigation measures would not be required for the proposed action or no action alternative at Shaw AFB.

4.2.2 Land Use

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 for an affected area. The methodology to assess impacts on individual land uses requires identifying those uses, as well as affected land use planning and control policies and regulations and determining the degree to which they would be affected by the proposal.

To assess impacts to visual resources, areas that have high visual value or low tolerance for visible modification or have prescribed guidelines are identified. Visual

impacts are assessed by determining how, and to what extent, the proposed action would alter the overall visual character of the area.

4.2.2.1 No Action Alternative

Land use at Shaw AFB would not change from the baseline condition.

4.2.2.2 Proposed Action

No change in land use would be needed to accommodate the activities associated with the construction of the AAFES Shopping Center at Shaw AFB. In addition, there would be no change in the land use category associated with the proposed action.

4.2.2.3 Measures to Reduce Impacts

Land use impacts would not be anticipated at Shaw AFB for the proposed action or no action alternative. Therefore, no formal mitigation measures would be required as a result of the implementation of the proposed action or no action alternative.

4.2.3 Earth Resources

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

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

4.2.3.1 No Action Alternative

Under the no action alternative, the existing facilities on Shaw AFB would remain as is. No impacts to earth resources would occur as a result of the no action alternative.

4.2.3.2 Proposed Action

Under the proposed action, the construction of a new AAFES Shopping Center would occur at Shaw AFB. The physiography, underlying geology and topography of the area near the shopping center would not change. In addition, these proposed activities occur in previously disturbed areas associated with the military family housing area. Therefore, impacts to earth resources would not be expected.

4.2.3.3 Measures to Reduce Impacts

Impacts to earth resources are not anticipated at Shaw AFB for the proposed action. Therefore, no mitigation measures would be required as a result of the implementation of the proposed action or no action alternative. However, best management practices would be implemented to minimize potential erosion during construction activities for construction of the concrete pad. Additionally, appropriate vegetation would be reestablished on the sites to ensure rapid soil stabilization.

4.2.4 Biological Resources

In considering the basis for evaluating impacts on biological resources from implementation of the federal action the following items were considered: if the federal action would impact a threatened or endangered species, substantially diminish habitat for a plant or animal species, substantially diminish a regionally or locally important plant or animal species, interfere substantially with wildlife movement or reproductive behavior and/or result in a substantial infusion of exotic plant or animal species.

4.2.4.1 No Action Alternative

Implementation of the no action alternative would have no effect on vegetation and wildlife compared to the baseline condition.

4.2.4.2 Proposed Action

Construction of new AAFES Shopping Center occurs within an previously disturbed area on Shaw AFB. There would be no biological impacts for the surrounding environment.

4.2.4.3 Measures to Reduce Impacts

Mitigation measures would not be required for the proposed action or no action alternative at Shaw AFB.

4.2.5 Cultural Resources

In considering the basis for evaluating impacts to cultural resources from implementation of the federal action the following items were considered: (1) if the federal action resulted in disturbance or loss of value or data that qualify a site for listing in the NRHP; (2) substantial disturbance or loss of data from newly discovered properties or features prior to their recordation, evaluation, and possible treatment; or (3) substantial changes to the natural environment or access to it so that the practice of traditional cultural or religious activities would be restricted.

4.2.5.1 No Action Alternative

Under the no action alternative, no disturbance of archaeological resources would occur.

4.2.5.2 Proposed Action

There would be no archaeological or historical impacts from the construction of the new AAFES Shopping Center at Shaw AFB. Furthermore, no facilities identified as a Cold War resource would be impacted under the proposed action. No subsurface areas would be disturbed.

The planned location of the new AAFES Shopping Center contains no known archaeological sites or resources. Should previously unidentified archaeological sites be discovered during construction, the contractor would cease construction and notify Shaw AFB immediately. Shaw AFB would then contact SHPO and consult as required under Section 106 of the NHPA.

4.2.5.3 Measures to Reduce Impacts

Mitigation measures would not be required for the proposed action or no action alternative at Shaw AFB.

4.2.6 Air Quality

As defined in 40 CFR 52.21, the proposed action or alternative action would be considered a major source of emissions if total emissions of any pollutant subject to regulation under the CAA are greater than the major source threshold of 250 tpy for attainment and unclassified areas. Sources emitting less than the major source threshold for attainment and unclassified areas would not be considered major and would generally be considered regionally insignificant.

4.2.6.1 No Action Alternative

Emissions at Shaw AFB would not change from the baseline condition.

4.2.6.2 Proposed Action

The projects under the proposed action would generate primarily heavy equipment emissions and fugitive dust emissions from construction activities. The following paragraphs detail the assumptions used in calculating emissions and describe the impacts of the emissions.

Exhaust emissions would be generated by equipment during construction of proposed projects. Specific information describing the length of operation, daily mileage, or specific usage of heavy construction equipment varies from project to project. Based on the type of equipment and duration of use, the USEPA has established factors for the emission of criteria air pollutants by heavy equipment used for construction activities (USEPA 1985). The type of equipment and hours of operation for the proposed construction activities were estimated based on anticipated project requirements and established usage factors for construction equipment (Means 1997a and Means 1997b).

Table 4-2 summarizes the estimated pollutant emissions associated with the proposed action. Each project under the proposed action would generate one-time emissions which

may or may not occur simultaneously with emissions from other proposed action projects depending on the scheduling of the projects. Totals presented in Table 4-2 represent the total one-time emissions over the entire course of the proposed projects. Recurring (long-term) emissions are not anticipated as a result of the implementation of the proposed action.

Table 4-2 Estimated Increase in Pollutant Emissions within AQCR 198, Proposed Action

Emissions Source	Pollutant Emissions (tons)					
	CO	VOCs	NO _x	SO _x	PM ₁₀	Pb
Heavy Equipment Emissions	3.22	0.69	8.02	0.86	0.54	--
Fugitive Dust Emissions (Construction)	--	--	--	--	0.17	--
Total Estimated Emissions^a	3.22	0.69	8.02	0.86	0.71	0.00
AQCR 198 Baseline Emissions ^b	33,885.88	7,219.21	4,275.45	883.64	30,029.74	NR
Increase from Baseline (%)^c	0.01	0.01	0.19	0.10	0.002	0.00

a Emissions from each proposed project would be one-time emissions which may or may not occur simultaneously with emissions from other proposed projects depending on the scheduling of the projects. Totals represent the total one-time emissions from all construction projects.

b Source: USAF 2007

c Percent increase assumes emissions from all projects would occur simultaneously.

Note: NR = not reported

To assess maximum potential impact from the projects, the estimated percent increases from baseline emissions assume that emissions from the projects would occur simultaneously. As shown, the maximum increase in emissions for any pollutant as compared to the AQCR 198 baseline emissions would be an increase of less than 0.2 percent for NO_x. Emissions of all pollutants under the proposed action would be less than 250 tpy; therefore, the proposed action would not be considered regionally significant. All projects under the proposed action are considered temporary activities and would not be expected to cause long-term impacts to local or regional baseline air quality. The primary short-term air quality impacts resulting from these projects at Shaw AFB would be a temporary increase of air pollutants within Sumter County and AQCR 198, which would cease as soon as the projects were completed. Fugitive dust emissions from ground disturbing activities would be minimized and kept under proper control. Control measures are further discussed in Section 4.2.6.3. The use of dust control measures, the most common being wet suppression with potable water, as part of best management practices at the construction sites would be expected to reduce PM₁₀ emissions from the levels presented in Table 4-2 and control visible particulate emissions at the sites. Actual reduction quantities would vary depending on a variety of factors including frequency of water application, site traffic levels, wind speed and direction and soil type, among others.

All counties within AQCR 198, including Sumter County, are classified by the USEPA as attainment or unclassified for all criteria pollutants. Therefore, the proposed action is not subject to the de minimis and conformity determination requirements of the

USEPA Final Conformity Rule as defined in 40 CFR 93.153. Additionally, the proposed construction projects as described above would be in compliance with the South Carolina State Implementation Plan.

Installation of the aboveground storage tank would require an Air Quality Construction Permit with the SCDHEC. AAFES would comply with this regulation prior to installation of the tank.

4.2.6.3 Measures to Reduce Impacts

The cumulative emissions of all pollutants would be significantly less than the 10 percent significance threshold for AQCR 198 as well as Sumter County; therefore, the proposed action would not impact air quality and no mitigation measures would be required.

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CHAPTER 5**LIST OF PREPARERS**

Name/Organization	Degree	Professional Discipline	Years of Experience
Kent R. Wells, P.G. Science Applications International Corporation (SAIC)	B.S., Geology M.S., Industrial Hygiene	Environmental Scientist	22
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James A. Garrison, P.E., SAIC	M.E., Environmental Engineering, B.S. Agricultural Engineering	Environmental Engineer	30
Joshua B. Heiss, SAIC	B.S., Natural Resources and Environmental Science	Environmental Scientist	8
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CHAPTER 6

PERSONS AND AGENCIES CONSULTED

The following individuals and or agencies were consulted during the preparation of this EA:

6.1 FEDERAL AGENCIES

AAFES

Mims, Howard
Smith, Gregory

Shaw AFB

Coan, Robert (20 CES/CEPM)
Hallmark, Gary (20 CES/CEAO)
Johnson, Samuel (20 CES/CEAO)
Lewis, Judy (20 FW/PA)
Payne, Thomas (20 FW/JA)
Woodham, John (20 CES/CEPD)

US Fish and Wildlife Service

Degarmo, Phil

6.2 STATE AGENCIES

South Carolina Department of Health and Environmental Control

Wilson, Shelly

South Carolina Department of Natural Resources

Holling, Julie

South Carolina State Clearinghouse

Manheimer, Jean

South Carolina State Historic Preservation Office

Marcil, Valerie

6.3 LOCAL AND REGIONAL GOVERNMENTAL AGENCIES

Catawba Indian Tribe

Rodgers, Chief Donald Wayne

City of Sumter

McElveen, Joseph

Sumter County Council

Fleming-McGhaney, Vivian

Sumter County Library

Harden, Robert

CHAPTER 7

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DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Mr. Phil Degarmo
U.S. Fish and Wildlife Service Field Office
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Mr. Degarmo:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

The draft EA addresses the proposed action and the no action alternative. The components of the proposed action include construction of an 80,000 square foot shopping center, shopette, and Burger King. Under the no-action alternative, construction of the new shopping center would not occur.

A list of federal, state, and local agencies asked to comment on this draft EA is also attached. The public and agency comment period closes on October 7, 2008. If you have any questions, please contact Mr. Samuel Johnson, 20 CES/CEAO, at (803) 895-9999.

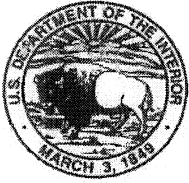
Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

Attachments:

1. Draft EA
2. Distribution List

Global Power For America



United States Department of the Interior

FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407



September 20, 2008

Mr. Sam Johnson
EA Project Manager
20th Civil Engineer Squadron
345 Cullen Street
Shaw AFB, SC 29152

Re: Shaw Air Force Base Environmental Assessment
Construction of New AAFES Shopping Center
FWS Log No. 2008-I-0638

Dear Mr. Johnson:

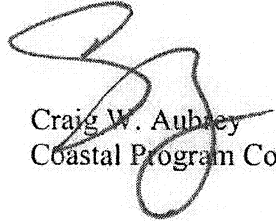
The U.S. Fish and Wildlife Service (Service) has reviewed the plans for this proposed project. Based on our review and the information received:

- ☒ It is our opinion that the proposed action will have no effect on resources under the jurisdiction of the Service that are currently protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). Therefore, no further action is required under Section 7(a)(2) of the Act.
- ☐ We concur with your determination that the proposed action is not likely to adversely affect resources under the jurisdiction of the Service that are currently protected by the Act. Therefore, no further action is required under Section 7(a)(2) of the Act.
- ☐ It is our opinion that the proposed action is not likely to have reasonably foreseeable adverse effects on resources under the jurisdiction of the Service that are currently protected by the Act. Therefore, no further action is required under Section 7(a)(2) of the Act.
- ☐ The proposed project may impact wetlands. Please contact the U.S. Army Corps of Engineers, Charleston District for more information.



If you should have any questions, please contact Tera Baird at (843)727-4707, ext. 302 and reference FWS Log No. 2008-I-0638.

Sincerely,

A handwritten signature in black ink, appearing to be 'Craig W. Aubrey', written over the printed name.

Craig W. Aubrey
Coastal Program Coordinator

CWA/TKB



DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Ms. Julie Holling, Data Manager
South Carolina Dept. of Natural Resources
Rembert C. Dennis Building
P.O. Box 167
Columbia, SC 29202

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Ms. Holling:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

The draft EA addresses the proposed action and the no action alternative. The components of the proposed action include construction of an 80,000 square foot shopping center, shopette, and Burger King. Under the no-action alternative, construction of the new shopping center would not occur.

A list of federal, state, and local agencies asked to comment on this draft EA is also attached. The public and agency comment period closes on October 7, 2008. If you have any questions, please contact Mr. Samuel Johnson, 20 CES/CEAO, at (803) 895-9999.

Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

Attachments:

1. Draft EA
2. Distribution List

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DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Ms. Jean Manheimer
South Carolina State Clearinghouse
Office of State Budget
1201 Main Street, Suite 950
Columbia, SC 29201

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Ms. Manheimer:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

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STATE OF SOUTH CAROLINA
State Budget and Control Board
OFFICE OF STATE BUDGET

MARK SANFORD, CHAIRMAN
GOVERNOR

CONVERSE A. CHELLIS III, CPA
STATE TREASURER

RICHARD ECKSTROM, CPA
COMPTROLLER GENERAL



HUGH K. LEATHERMAN, SR.
CHAIRMAN, SENATE FINANCE COMMITTEE

DANIEL T. COOPER
CHAIRMAN, WAYS AND MEANS COMMITTEE

FRANK W. FUSCO
EXECUTIVE DIRECTOR

1201 Main Street, Suite 870
COLUMBIA, SOUTH CAROLINA 29201
(803) 734-2280

LES BOLES
DIRECTOR

September 3, 2008

Heyward Singleton
Department of the Air Force
20th Fighter Wing (ACC)
Heyward Singleton
345 Cullen Street
Shaw AFB, SC 29152

Project Name: **Environmental Assessment for New Army & Air Force Exchange Service
Shopping Center**

CFDA #: 66.606

State Application Identifier: SC080901-708

Dear Mr. Singleton:

The South Carolina State Clearinghouse does not require an intergovernmental review on all CFDA numbers. The CFDA number submitted does not require intergovernmental review from this office. A listing of the State Clearinghouse CFDA numbers requiring review are available on our website www.budget.sc.gov. You may proceed with the submission of this project to the authorized federal funding agency.

South Carolina state agencies are reminded that if additional budget authorization is needed for this project, one copy of the completed GCR-1 form and one copy of the award documentation must be submitted to this office. This action should be initiated immediately, if required. Please include the State Application Identifier in any correspondence with our office regarding this project. If you have any questions please contact Bonny Anderson at 734-0435.

Sincerely,

A handwritten signature in cursive script that reads "Jean Ricard".

Jean Ricard
Fiscal Manager, Grant Services



DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Ms. Shelly Wilson
South Carolina Department of Health
And Environmental Control
2600 Bull Street
Columbia, SC 29201

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Ms. Wilson:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

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DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Ms. Valerie Marcil
S.C. State Historic Preservation Office
8301 Parkland Road
Columbia, SC 29223

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Ms. Marcil:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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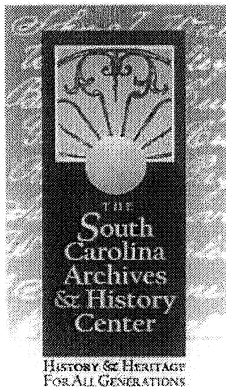
Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

Attachments:

1. Draft EA
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September 27, 2008

Mr. Heyward Singleton
Chief, Asset Optimization
Department of the Air Force
20th Fighter Wing
234 Cullen St.
Shaw AFB, SC 29152

Re: Army and Air Force Exchange Service Shopping Center
Shaw Air Force Base, Sumter County, South Carolina
SHPO Project No. 08-RD0564

Dear Mr. Singleton:

Thank you for your letter of September 4, which we received on September 4, regarding the above-referenced project. We also received a draft Environmental Assessment as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Department of the Air Force pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800.

Based on the description of the Area of Potential Effect (APE) and the identification of historic properties within the APE, our office concurs with the assessment that no properties listed in or eligible for listing in the National Register of Historic Places will be affected by this project.

If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials. The federal agency or the applicant receiving federal assistance should contact our office immediately.

If you have any questions, please contact me at (803) 896-6169 or dobrasko@scdah.state.sc.us.

Sincerely,

Rebekah Dobrasko

Rebekah Dobrasko
Review and Compliance Coordinator
State Historic Preservation Office



DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

The Honorable Joseph T. McElveen, Mayor
City of Sumter
P.O. Box 1449
Sumter, SC 29251

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Mayor McElveen:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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A list of federal, state, and local agencies asked to comment on this draft EA is also attached. The public and agency comment period closes on October 7, 2008. If you have any questions, please contact Mr. Samuel Johnson, 20 CES/CEAO, at (803) 895-9999.

Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

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DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Ms. Vivian Fleming-McGhaney
Sumter County Council
13 East Canal Street
Sumter, SC 29150

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Ms. Fleming-McGhaney:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

Attachments:

1. Draft EA
2. Distribution List

Global Power For America

Office of Sumter County Council
436-2106 or 436-2107



13 E. Canal Street
Fax: 436-2108

Sumter County
Sumter, South Carolina
29150

October 1, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, 29152

Subject: Comments on Draft Environmental Assessment for New AAFES Shopping Center

Dear Mr. Singleton:

I am answering this letter on behalf of Chairwoman, Vivian Fleming McGhaney. The following are comments on the draft environmental assessment (EA) for the proposed AAFES shopping center at Shaw Air Force Base, South Carolina. We concur with the scope of the EA that restricts consideration to noise, land use, water resources, biological resources, cultural resources, and air quality, and based on our review criteria believe all but water resources have been adequately addressed.

In **Table 2-1 Summary of Environmental Effects**, page 2-5, states the impact on water resources as follows:

"Under the proposed action, water resources would not change. All proposed activities would occur within the existing facility in previously disturbed areas and impacts to soil would not occur."

Consequently, water resources were not addressed in Chapter 4, **Environmental Consequences**, and no **Measures to Reduce Impacts** were assigned.

The USEPA has identified construction activities as a potential source of pollutants to Waters of the State, and therefore, these activities are regulated through the National Pollution Discharge Elimination System (NPDES) permit program. In the process of applying for coverage under the NPDES general construction permit through the Department of Health and Environmental Control (DHEC), you will submit storm

Mr. Heyward Singleton

Page 2

October 1, 2008

water pollution prevention plans to your local MS4 (municipal separate storm water sewer system) for approval and provide site inspections up to final stabilization of the site by a licensed inspector.

We hope you have found these comments useful in your proposed action. If you have any questions, please contact me at (803) 436-2114.

Sincerely,



Peter N. Wilson

Sumter County Engineer

pnw

cc: Members, Sumter County Council

Mr. William T. Noonan

Mr. Gary Mixon



DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Mr. Robert Harding
Sumter County Library
111 North Harvin Street
Sumter, SC 29150

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Mr. Harding:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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A list of federal, state, and local agencies asked to comment on this draft EA is also attached. The public and agency comment period closes on October 7, 2008. If you have any questions, please contact Mr. Samuel Johnson, 20 CES/CEAO, at (803) 895-9999.

Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

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DEPARTMENT OF THE AIR FORCE
20th FIGHTER WING (ACC)
SHAW AIR FORCE BASE, SOUTH CAROLINA

September 4, 2008

Mr. Heyward Singleton
20th Fighter Wing
345 Cullen Street
Shaw AFB, SC 29152

Chief Donald Wayne Rodgers
Catawba Indian Tribe
996 Avenue of the Nations
Rock Hill, SC 29730

Subject: Environmental Assessment for New Army and Air Force Exchange Service Shopping Center

Dear Chief Rodgers:

The draft environmental assessment (EA) for a proposal to a new Army and Air Force Exchange Service Shopping Center at Shaw Air Force Base (AFB), South Carolina, is attached for your review and comment. The draft EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended. Your comments are requested in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs.

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Sincerely

HEYWARD SINGLETON
Chief, Asset Optimization

Attachments:

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