

DRAFT
FINDING OF NO SIGNIFICANT IMPACT

1 1.0 NAME OF ACTION

2 Camp Bullis, Texas, Reserve Center Environmental Assessment (EA). The conclusions in this finding
3 are based on the Camp Bullis Texas, Reserve Center Environmental Assessment which is hereby
4 incorporated by reference.

5 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

6 The Army proposes to construct an approximately 260,000 square-foot (sf) Armed Forces Reserve
7 Center (AFRC) on approximately 80 acres of existing Army property on Camp Bullis, Texas. The
8 AFRC would include multi-use classrooms, barracks, a vehicle maintenance shop, organization unit
9 storage buildings, and parking, to accommodate the increase in personnel resulting from the proposed
10 action. The Army also proposes to close the Boswell Street U.S. Army Reserve Center (USARC) and
11 the Callaghan Road USARC, both located in San Antonio, Texas, and the National Guard Armory
12 located in Hondo, Texas.

13 An EA was conducted in accordance with National Environmental Policy Act (NEPA) requirements,
14 the Council on Environmental Quality (CEQ) Regulations, and the Army NEPA regulation at 32 CFR
15 Part 651. Two alternatives were developed and evaluated based on selection criteria such as
16 feasibility and effectiveness to meet mission requirements and avoidance of known site constraints
17 such as flood plains. The preferred alternative (hereinafter, proposed action) would relocate
18 approximately 1,100 military and civilians. This relocation would require construction of new
19 facilities within the existing cantonment area to provide administrative, multi-use classrooms,
20 barracks, storage, and maintenance space for incoming units and organizations. The proposed area
21 for construction of the AFRC includes three parcels of land. The parcels are approximately 52, 22,
22 and 6 acres in size. An approximately 52-acre parcel northwest of the garrison command
23 headquarters would be used for the 35,000 sf organizational-level vehicle maintenance facility. The
24 approximately 22-acre parcel northeast of the garrison headquarters and fronting on Camp Bullis
25 Road would be used for the 200,000 sf training facility and the 15,000 sf multi-use
26 classroom/barracks. An approximately 6-acre parcel west of the garrison headquarters, west of Camp
27 Bullis Road would be used for the 10,000 sf unheated storage facility.

28 The no action alternative would not meet the purpose of and need for the project but is evaluated
29 throughout the EA in accordance with National Environmental Policy Act (NEPA) requirements as a
30 baseline for the assessment. Under the no action alternative, Camp Bullis would not implement the
31 proposed action. Organizations presently assigned to Camp Bullis would continue to train at and
32 operate from the post. Camp Bullis would use its current inventory of facilities, though routine
33 replacement or renovation actions could occur through normal military maintenance and construction
34 procedures as circumstances independently warrant. Implementation of the no action alternative is
35 not possible, however, because the BRAC closure and realignment recommendations have the force
36 of law.

37 3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

38 The EA indicates that no significant environmental impacts would result from the implementation of
39 the proposed action. This determination is summarized below. With the preferred alternative,
40 potential insignificant impacts to natural and visual resources might occur within the physical
41 boundaries of the proposed action location. The EA indicates that no significant impacts to earth

Finding of No Significant Impact for Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

42 resources (geology, topography, caves, karst features, soils), water resources (surface water or
43 groundwater), or land use are expected. Cultural resources would be insignificantly impacted with
44 the potential removal of Building 5046 (a small, 347 sf building), which would be coordinated with
45 the Texas State Historic Preservation Office (SHPO) in accordance with the Historic Properties
46 Component (HCP) Plan. Adverse but not significant impacts to biological resources (vegetation,
47 wildlife, and threatened and endangered species) and visual resources would be minimized by
48 following the installation's established best management practices. Insignificant air, noise, and
49 transportation impacts would occur during the short-term construction activities under the preferred
50 alternative. The implementation of the preferred alternative would not generate disproportionate
51 significant impacts to human or environmental health related to minority or low-income populations
52 near Camp Bullis. No significant socioeconomic impacts to military or regional populations,
53 economy, employment, income, housing, community services, or education would result from
54 implementation of the preferred alternative. Similarly, no significant impacts would occur to utilities
55 or infrastructure. Continued application of best management practices should reduce or eliminate the
56 potential short-term insignificant impacts to the environment caused by demolition and construction
57 activities. Based on the results of the EA there would be no significant impacts to the environment
58 resulting from implementing the preferred alternative at Camp Bullis, TX.

59 With the no action alternative, no demolition or construction would take place. No long- or short-
60 term changes to impacts on the environment would occur because there would be no change to
61 current training and maintenance activities at Camp Bullis, TX.

62 **4.0 CONCLUSION**

63 The preferred alternative implementation is not a major Federal action within the meaning of Section
64 102(2)(c) of NEPA. Based on the information presented in the EA that was prepared in accordance
65 with NEPA requirements, the CEQ Regulations, and Army NEPA regulation at 32 CFR Part 651, I
66 conclude that the potential environmental impacts resulting from the construction and utilization of an
67 Armed Forces Reserve Center at Camp Bullis, Texas, EA will not be significant within the mandates
68 of NEPA. Therefore, the preparation of an environmental impact statement is not warranted.

69

70

71 _____
72 Wendy L. Martinson
73 Colonel, USA
Commanding

74 **5.0 DOCUMENT AVAILABILITY**

75 This EA and draft Finding of No Significant Impact (FNSI) were available for public examination
76 and comment on the Fort Sam Houston Website at <http://www.samhouston.army.mil> and at the
77 following locations:

Public Affairs Office	Fort Sam Houston Library	San Antonio Public Library
MCCS-BPO (Mr. Phil Reidinger)	MCCS-BCA-FR	600 Soledad
Building 124	Building 1222	San Antonio, TX 78205
1212 Stanley Road	2601 Harney	
Fort Sam Houston, TX 78234	Fort Sam Houston, TX 78234	
210-221-1099		

78 The public comment period for this document began on 27 August 2006 and ended on 26 September
79 2006. A Notice of Availability was published in the *San Antonio Express News* on 27 August 2006
80 and sent to the general public, regulatory agencies, government officials, and organizations listed in
81 Section 7.0 of the EA. All interested agencies, groups, and individuals were invited to submit written
82 comments on the EA and draft FNSI to the Public Affairs Office within 30 days of the date of public
83 notification of availability.



Camp Bullis, Texas, Reserve Center

Environmental Assessment (EA)

23 August 2006

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Prepared for:

U.S. Army Reserve and Camp Bullis

by:

MACTEC Engineering and Consulting, Inc.

3200 Town Point Drive, NW, Suite 100
Kennesaw, GA 30144

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EXECUTIVE SUMMARY

This environmental assessment (EA) analyzes the potential environmental consequences resulting from the proposed Reserve Center consolidation action at Camp Bullis, Texas, which is mandated by the Base Realignment and Closure (BRAC) 2005. The proposed action consists of constructing a 260,000 square-foot (sf) Armed Forces Reserve Center (AFRC) and to close the Boswell Street United States Army Reserve Center (USARC) and the Callaghan Road USARC, both located in San Antonio, Texas and the National Guard Armory in Hondo, Texas. The proposed AFRC would include multi-use classroom/barracks, a vehicle maintenance shop, organization unit storage facilities and parking on approximately 80 acres of existing Army property to accommodate the increase in personnel resulting from the proposed action. The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives. This EA identifies, documents, and evaluates all relevant impacts, conditions, and issues associated with the proposed realignment actions at Camp Bullis.

Environmental Impact Analysis Process

This EA was prepared in accordance with 32 Code of Federal Regulations (CFR) §651, *Environmental Analysis of Army Actions, Final Rule (29 March 2002)*. The regulations are the specific instructions adopted by the Army to implement Section 102 (2) of the National Environmental Policy Act (NEPA). The Army was directed to develop its instructions by the President's Council on Environmental Quality (CEQ); those regulations are published at 40 CFR §§1500-1508.

Purpose and Need for the Proposed Action

On 8 September 2005, the Defense BRAC Commission recommended various realignment and closure actions within the Department of Defense (DoD). The President approved these recommendations and forwarded them to Congress. The Congress did not alter any of the BRAC Commission recommendations, and on 9 November 2005 the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

Accordingly, the Army must implement the realignment and closure actions relevant to Camp Bullis, Texas. This environmental assessment focuses on the proposed action to move and

consolidate the Boswell Street and the Callaghan Road USARCs by constructing a new AFRC on Camp Bullis.

Preferred Alternative and No Action Alternative

This EA analyzes two alternatives: the preferred alternative and the no action alternative.

The preferred alternative would relocate approximately 1,100 people, including 1,068 military and 33 civilians. This relocation would require construction of new facilities within the existing Camp Bullis cantonment area to provide administrative, classroom, barracks, storage, and maintenance space for incoming units and organizations. The proposed area includes three parcels for construction of the AFRC. The parcels are approximately 52, 22, and 6 acres. The 52-acre parcel located northwest of the garrison command headquarters would be used for a 35,000 sf organizational level vehicle maintenance facility. The 22-acre parcel located northeast of the garrison headquarters along Camp Bullis Road would be used for a 200,000 sf training facility and a 15,000 sf multi-use classroom/barracks. The 6-acre parcel located west of the garrison headquarters, west of Camp Bullis Road, would be used for a 10,000 sf unheated storage facility.

The no action alternative would not meet the purpose and need for the project, but was evaluated throughout the environmental assessment in accordance with NEPA requirements. Under the no action alternative, Camp Bullis would not implement the preferred alternative. Organizations presently assigned to Camp Bullis would continue to train at and operate from the installation. Camp Bullis would use its current inventory of facilities, though routine replacement or renovations actions could occur through normal military maintenance and construction procedures as circumstances independently warrant. Implementation of this alternative is not possible, however, in light of the BRAC closure and realignment recommendations having the force of law. Evaluation of the no action alternative is presented in detail in this EA as a baseline only.

Summary of Environmental Consequences

Implementation of the preferred alternative will have no long-term adverse effects on the environment of Camp Bullis or the surrounding area. Potential minor impacts to natural and visual resources from implementation of the preferred action would generally occur within the physical boundaries of the Camp Bullis cantonment area. No long-term adverse impacts to earth (geology, topography, caves, karst features, or soils), water (surface water, groundwater,

floodplains, or wetlands), or land use are expected. Similarly, no adverse impacts would occur to utilities or the associated infrastructure. Anticipated effects of the alternatives (preferred and no action) and best management practices (BMPs) to reduce the environmental effects are summarized in Table ES-1.

Cultural resources would be impacted with the removal of Facility 5046, which would be coordinated with the Texas State Historic Preservation Office (SHPO) in accordance with the Historic Properties Component (HCP) Plan. Removal of any buildings would minimally impact hazardous wastes. Minor air, noise, and transportation impacts would also occur during construction activities under the preferred alternative.

Adverse but not significant impacts to biological (threatened and endangered species) and visual resources would be minimized by the BMPs. BMPs would also reduce or eliminate the potential short-term effects to the environment caused by deconstruction/demolition and construction activities. Similarly, disposal regulations are in place to guide proper disposal of generated hazardous waste and construction debris contaminated with lead-based paint or asbestos-containing material. A Historical American Building Survey/ Historical American Engineering Record (HABS/HAER) documentation survey would be conducted before deconstruction/demolition of historic property. In addition, unexploded ordnance (UXO) surveys would be conducted before land disturbance and before and during deconstruction/demolition of the six facilities within the cantonment area.

The no action alternative provides the baseline conditions for comparison.

Table ES-1 Summary of Potential Impacts and BMPs

Resource Area	No Action Alternative	Preferred Alternative	Best Management Practices	Mitigation Measures
Land Use	<ul style="list-style-type: none"> ▪ No change to existing conditions. ▪ Continued presence of six aged facilities in the cantonment area. 	<ul style="list-style-type: none"> ▪ No effect on airspace short-term land use disturbances consistent with present land use per Section 4.2.2 management or use. ▪ Improved quality of facilities in the cantonment area. 	<ul style="list-style-type: none"> ▪ Not applicable. 	<ul style="list-style-type: none"> ▪ None needed.
Aesthetics and Visual Resources	<ul style="list-style-type: none"> ▪ No change to existing conditions. ▪ Continued presence of six aged facilities in the cantonment area without benefit of modernization. ▪ No change in existing view from elevations bordering Camp Bullis on the west. 	<ul style="list-style-type: none"> ▪ Improved aesthetics with new facilities ▪ Deconstruction/demolition of six aged facilities. ▪ Potential visual changes in view from elevations bordering on the west but should not post adverse impact. 	<ul style="list-style-type: none"> ▪ Architectural and landscaping design must be in compliance with the Installation Design guidelines. ▪ Siting, layout, landscaping and architectural details needed to mitigate any adverse impacts 	<ul style="list-style-type: none"> ▪ None needed.
Air Quality	<ul style="list-style-type: none"> ▪ No change to existing conditions. 	<ul style="list-style-type: none"> ▪ Potential increase in criteria pollutants during construction, and deconstruction/demolition activities. ▪ No significant impacts to local or regional air quality. 	<ul style="list-style-type: none"> ▪ Dust suppression BMPs implemented during the construction. 	<ul style="list-style-type: none"> ▪ None needed.
Noise	<ul style="list-style-type: none"> ▪ No change to existing noise environment 	<ul style="list-style-type: none"> ▪ No significant effect to Camp Bullis noise environment. ▪ Slight increase in vehicle traffic, and construction equipment. ▪ Peak noise level from small arms range night firing may disturb Soldiers in AFRC barracks. 	<ul style="list-style-type: none"> ▪ Existing noise level from aircraft and training activities must be considered in design of new facilities. ▪ A noise level reduction of 25-30 dB would be required for sleeping areas. 	<ul style="list-style-type: none"> ▪ None needed.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Resource Area	No Action Alternative	Preferred Alternative	Best Management Practices	Mitigation Measures
	Geology and Soils	<ul style="list-style-type: none"> ▪ No change to existing conditions. ▪ Existing erosion in unvegetated or unpaved areas along the north site in the cantonment area would continue. 	<ul style="list-style-type: none"> ▪ No significant effects to geologic resources or karst features would occur. ▪ Improved control of erosion from north site after facility construction and paving. ▪ Increased potential for erosion during construction at three sites. 	<ul style="list-style-type: none"> ▪ Prior to construction, an SWPPP must be developed and implemented to control erosion and runoff on all three parcels. ▪ Onsite stormwater detention facilities may be provided on each developed parcel to control stormwater runoff increases due to an increase in impervious areas (from the paved parking areas).
Water Resources	<ul style="list-style-type: none"> ▪ No change to existing usage of water resources. ▪ The existing SWPPP, SPCC, and the P2 Plan would remain in force. 	<ul style="list-style-type: none"> ▪ No significant effect to existing surface or underground water resources. ▪ No significant adverse impacts to floodplains. 	<ul style="list-style-type: none"> ▪ Control of erosion and silt in accordance with the updated SWPPP and SPCC plan during construction. ▪ An SWPPP that complies with TCEQ Construction General Permit requirements would be developed and implemented prior to construction. The existing SWPPP for industrial sources would be updated to include the AFRC Vehicle Maintenance Facility. ▪ Onsite stormwater detention facilities may be provided on each developed parcel to control stormwater runoff increases due to an increase in impervious areas (from the paved parking areas). ▪ Edwards Aquifer Protection and Contributing Zone Plans per TCEQ Subchapters 213A and 213B regulations. 	<ul style="list-style-type: none"> ▪ None needed.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Resource Area	No Action Alternative	Preferred Alternative	Best Management Practices	Mitigation Measures
	Biological Resources	<ul style="list-style-type: none"> ▪ No changes to existing biological resources. 	<ul style="list-style-type: none"> ▪ No significant effects on biological resources. ▪ Construction would remove less than 1% of disturbed grassland/oak savanna acreage. ▪ Potential disturbance of 1 acre of habitat for the federally endangered Golden-cheeked Warbler (GCW) is unlikely due to existing training restrictions for this habitat. ▪ Noise during construction not expected to impact endangered species. ▪ Karst protected species not found in construction areas. ▪ No impact on wetlands. 	<ul style="list-style-type: none"> ▪ Avoid disturbing habitat of GCW in the cantonment area during construction. ▪ Follow existing training restrictions to limit noise exposure of GCW and black capped vireo (BVC) during sensitive periods (breeding season).
Cultural Resources	<ul style="list-style-type: none"> ▪ No change to existing conditions. ▪ No deconstruction/demolition of potentially eligible historic facilities. 	<ul style="list-style-type: none"> ▪ Deconstruction/demolition of one small, 347 sf facility (facility 5046) potentially eligible for listing on the National Register of historic places (NRHP), within the proposed Camp Bullis Cantonment Historic District. ▪ Four “less sensitive” archaeological sites lie within the parcels. 	<ul style="list-style-type: none"> ▪ Follow the Historic Properties Component (HPC) procedure prior to any deconstruction/demolition of facility 5046. ▪ Architectural compatibility of facilities and landscaping in accordance with the Installation Design Guide will be required to mitigate adverse impacts on historical and cultural properties. 	<ul style="list-style-type: none"> ▪ None needed.
Socioeconomics	<ul style="list-style-type: none"> ▪ No change to baseline socioeconomic conditions 	<ul style="list-style-type: none"> ▪ No significant effects on demographics, employment, or income potential anticipated. ▪ Expected beneficial economic “flow down” effects would be temporary and minor and would subside after the completion of construction activities. ▪ No environmental justice concerns. 	<ul style="list-style-type: none"> ▪ Not applicable. 	<ul style="list-style-type: none"> ▪ None needed.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Resource Area	No Action Alternative	Preferred Alternative	Best Management Practices	Mitigation Measures
	Transportation	<ul style="list-style-type: none"> ▪ No change in current traffic conditions. 	<ul style="list-style-type: none"> ▪ A 25% increase in vehicular traffic on drill weekends is anticipated. ▪ Traffic patterns would be affected during construction. 	<ul style="list-style-type: none"> ▪ Traffic detour during construction
Utilities	<ul style="list-style-type: none"> ▪ No change in current consumption or wastewater and solid waste generation. 	<ul style="list-style-type: none"> ▪ Increase in water and energy consumption. ▪ Additional use and storage of propane fuel. ▪ Increase in wastewater generation and solid wastes. ▪ Utility systems are adequate to meet the increased demands. 	<ul style="list-style-type: none"> ▪ Not applicable. 	<ul style="list-style-type: none"> ▪ None needed.
Hazardous Materials and Waste Management	<ul style="list-style-type: none"> ▪ No change to existing conditions 	<ul style="list-style-type: none"> ▪ Increased quantities of hazardous wastes would be generated, primarily petroleum products, and construction debris. ▪ No long-term impact expected since activities would continue to be conducted in accordance with Federal, State, and Army regulations. ▪ Although unlikely, UXO at the area within the preferred alternative area may present a potential hazardous. 	<ul style="list-style-type: none"> ▪ Survey and proper handling and disposal of asbestos materials and lead-based paint prior and/or during deconstruction/demolition. ▪ Conduct a UXO survey prior to construction 	<ul style="list-style-type: none"> ▪ None needed.

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Appendix

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- B Economic Impact Forecast System Report

ACRONYMS AND ABBREVIATIONS

AACOG	Alamo Area Council of Governments
AAP	Army Alternative Procedures
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Materials
AD	Active Duty
AEI	Air Emissions Inventory
AFB	Air Force Base
AFRC	Armed Forces Reserve Center
AGL	Above ground level
AHPA	Archaeological and Historic Preservation Act
AIRFA	American Indian Religious Freedom Act
AMEDD	Army Medical Department
AMEDDC&S	Army Medical Department Center and School
amsl	Above mean sea level
ARID	Army Range Inventory Database
ARNG	Army National Guard
ARPA	Archaeological Resources Protection Act
AST	Aboveground Storage Tank
AVN TNG	Aviation Training
BC3	Basic Combat Convoy Course
BCV	Black-capped Vireo
BDE	Brigade
BEA	Bureau of Economic Analysis
BMP	Best Management Practices
BN	Battalion
BO	Biological Opinion
BRAC	Base Realignment and Closure
C4	Combat Casualty Care Course
CAA	Clean Air Act
CALS	Combat Assault Landing Strip
CAMS	Continuous Air Monitoring Station
CEQ	Council on Environmental Quality

**ACRONYMS AND ABBREVIATIONS
(continued)**

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPS	City Public Service
CTT	Closed, Transferring, and Transferred
CWA	Clean Water Act
DA PAM	Department of the Army Pamphlet
dB	Decibel
dBA	A weighting parallels the sensitivity of the human ear when it is exposed to normal levels
dB(C)	C weighting; suitable for use when the ear is exposed to higher sound levels
DMRTI	Defense Medical Readiness Training Institute
DMSET	Deployable Medical Systems Equipment for Training
DNL	Day-night Level
DoD	Department of Defense
DOIM	Directorate of Information Management
DOT	Department of Transportation
DRMO	Defense Reutilization Marketing Office
DSERTS	Defense Site Environmental Restoration Tracking System
EA	Environmental Assessment
EAA	Edwards Aquifer Authority
EAC	Early Action Compact
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
ETZ	Extraterritorial zone
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact

**ACRONYMS AND ABBREVIATIONS
(continued)**

FORSCOM	Forces Command
FY	Fiscal Year
GCW	Golden-cheeked Warbler
GWOT	Global War on Terrorism
HABS/HAER	Historical American Building Survey/Historical American Engineering Record
HM	Hazardous Material
HPC	Historic Properties Component
HSMS	Hazardous Substance Management System
HWMP	Hazardous Materials Management Plan
IAAFA	Inter-American Air Force Academy
ICRMP	<i>Integrated Cultural Resources Management Plan: Camp Bullis Training Site</i>
IDG	Installation Design Guide
IMA SWRO	Installation Management Agency – Southwest Region Office
INRMP	Integrated Natural Resources Management Plan
IP	Individual Permit
IPM	Integrated Pest Management Plan
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ITAAS	Intelligence Training Army Area School
KHz	Kilohertz
KMP	Karst Management Plan
LEP	Limited English Proficiency
LUS	Lacustrine Unconsolidated Shores
MACOM	Major Command
MGD	Million gallons per day
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	Noise Control Act
NEPA	National Environmental Policy Act

**ACRONYMS AND ABBREVIATIONS
(continued)**

NHPA	National Historic Preservation Act
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permits
OSHA	Occupational Health and Safety Administration
PEW	Percent Emergent Wetlands
PFW	Percent Forested Wetlands
PM ₁₀	Particulate matter measuring less than 10 microns in diameter
PPP	Pollution Prevention Plan
PSS	Palustrine Scrub/Shrub
PUB	Palustrine Unconsolidated Bottoms
PUS	Palustrine Unconsolidated Shores
RCRA	Resource Conservation and Recovery Act
RIMS II	Regional Input-Output Modeling Systems
RLBC	Readiness Logistics Business Center
ROI	Region of Influence
ROTC	Reserve Officers Training Corps
SARA	San Antonio River Authority
SAER	San Antonio EAC Region
sf	Square feet
SHPO	State historic Preservation Office
SIP	State Implementation Plan
SOP	Standard Operating Procedures
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SVOC	Semivolatile Organic Compound
SWARISC	Southwest Army Reserve Intelligence Support Center
SWPPP	Stormwater Pollution Prevention Plan
TAC	Texas Administrative Code
TCA	Tactical Concealment Area
TCEQ	Texas Commission on Environmental Quality
TCP	Traditional Cultural Properties
TDSHS	Texas Department of State Health Services

**ACRONYMS AND ABBREVIATIONS
(continued)**

TDWR	Texas Department of Water Resources
TPWD	Texas Parks and Wildlife Department
TRS	Training Squadron
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USARC	United States Army Reserve Center
USC	U.S. Code
USCB	U.S. Census Bureau
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UTES	Unit Training and Equipment Site
UXO	Unexploded Ordnance
UXO-DMM-MC	Unexploded Ordnances, Discarded Military Munitions and/or Munitions Constituents
VOC	Volatile Organic Compound

1.0 PURPOSE, NEED, AND SCOPE

1.1 PURPOSE AND NEED

The National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] §§4321-4370[d]) requires that federal agencies carefully and fully consider the environmental impacts of proposed actions and make environmental information available to decision makers and the public. NEPA further established the President's Council on Environmental Quality (CEQ) to implement and oversee federal policy in the NEPA process.

On 8 September 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended various realignment and closure actions within the Department of Defense (DoD). The President approved these recommendations on 23 September 2005 and forwarded them to Congress. The Congress did not alter any of the BRAC Commission recommendations, and on 9 November 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

Accordingly, the Army must implement the closure of the United States Army Reserve Center (USARC), Boswell Street, and the USARC, Callaghan Road, both located in San Antonio, Texas, and the National Guard Armory, in Hondo, Texas, and relocate units to a new Armed Forces Reserve Center (AFRC) on existing Federal Property at Camp Bullis, Texas.

1.1.1 History

Camp Bullis was first established in 1917. During World War II, the camp was an important venue for training infantry troops stationed at nearby Fort Sam Houston, Texas. Subsequently, the focus at Fort Sam Houston and Camp Bullis began to change toward training of the Army's medical personnel; Fort Sam Houston became the "schoolhouse" for doctrinal training of combat medics, and medical students used Camp Bullis as their field-training site. In 1917, Camp Bullis received recognition as a separate sub-installation to Fort Sam Houston with its own Headquarters Detachment that reports to the Garrison Commander of Fort Sam Houston. In 1995, the Army transferred these companion installations to the Army Medical Department's (AMEDD) Major Command (MACOM) from the Army Forces Command (FORSCOM) in recognition of the changed focus. Fort Sam Houston and Camp Bullis were transferred to the Installation Management Agency – Southwest Region Office (IMA SWRO) on 1 October 2003.

1.1.2 Location

Camp Bullis is located in Bexar and Comal Counties, Texas, and is a sub-installation to Fort Sam Houston. It encompasses 27,987 acres approximately 18 miles northwest of Fort Sam Houston, an Army post located in San Antonio, Texas. The installation extends approximately 10 miles from north to south and 4 miles from east to west. The surrounding area is primarily rural but has become increasingly urbanized as the suburbs of San Antonio have radiated outward to extend closer to Camp Bullis. Figure 1-1 shows a regional view detailing the relationship between Camp Bullis, Fort Sam Houston, the City of San Antonio, and the surrounding community.

1.1.3 Mission

The mission of Camp Bullis is to provide target ranges, training areas, airspace, facilities, outdoor recreation programs, and necessary installation support to the U.S. Army, the U.S. Air Force, the U.S. Marine Corps, and the armed forces reserve units in the San Antonio area. Camp Bullis serves primarily as the field training environment for the Academy of Health Sciences and Defense Medical Readiness Training Institute (DMRTI), a part of the Army Medical Department Center and School (AMEDDC&S) headquartered at Fort Sam Houston, and is also home to the regional Security Police Ground Defense School and Southwest Army Reserve Intelligence Support Center (SW ARISC) activities. Figure 1-2 shows a detailed training map of Camp Bullis.

1.2 SCOPE

This environmental assessment (EA) has been prepared pursuant to the AFRC BRAC action for Camp Bullis, in accordance with 32 *Code of Federal Regulations* (CFR) Part 651, *Environmental Analysis of Army Actions*, Final Rule; the regulations for implementing the procedural provisions at 40 CFR Parts 1500-1508 (CEQ, 1986); and Army policy guidance in the *Base Realignment and Closure Manual for Compliance with NEPA* (Army, 2006a). Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives. This EA identifies, documents, and evaluates all relevant impacts, conditions and issues associated with the proposed realignment actions at Camp Bullis.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

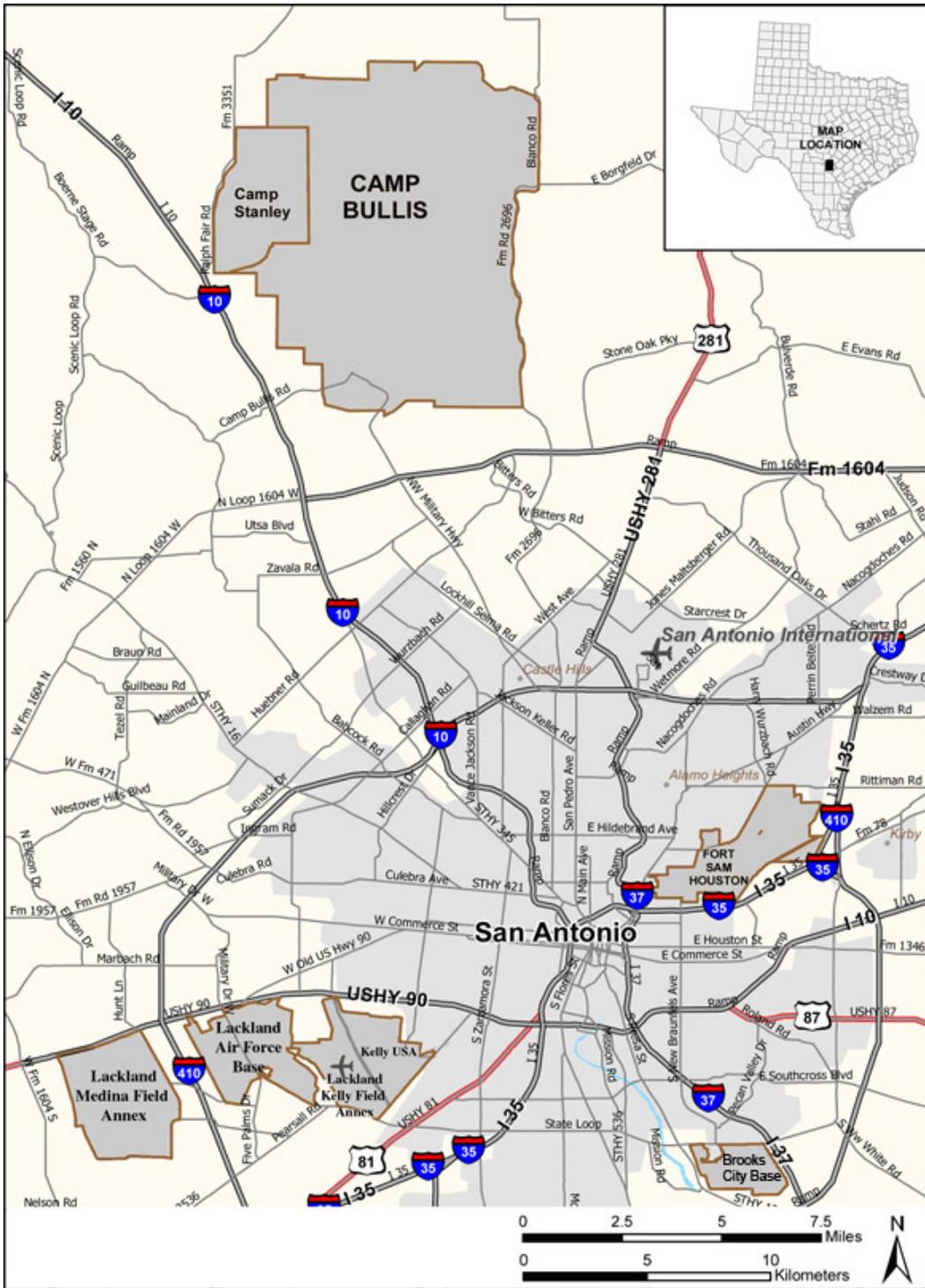


Figure 1-1 San Antonio Regional Map
Source: Mission EA 02/2006

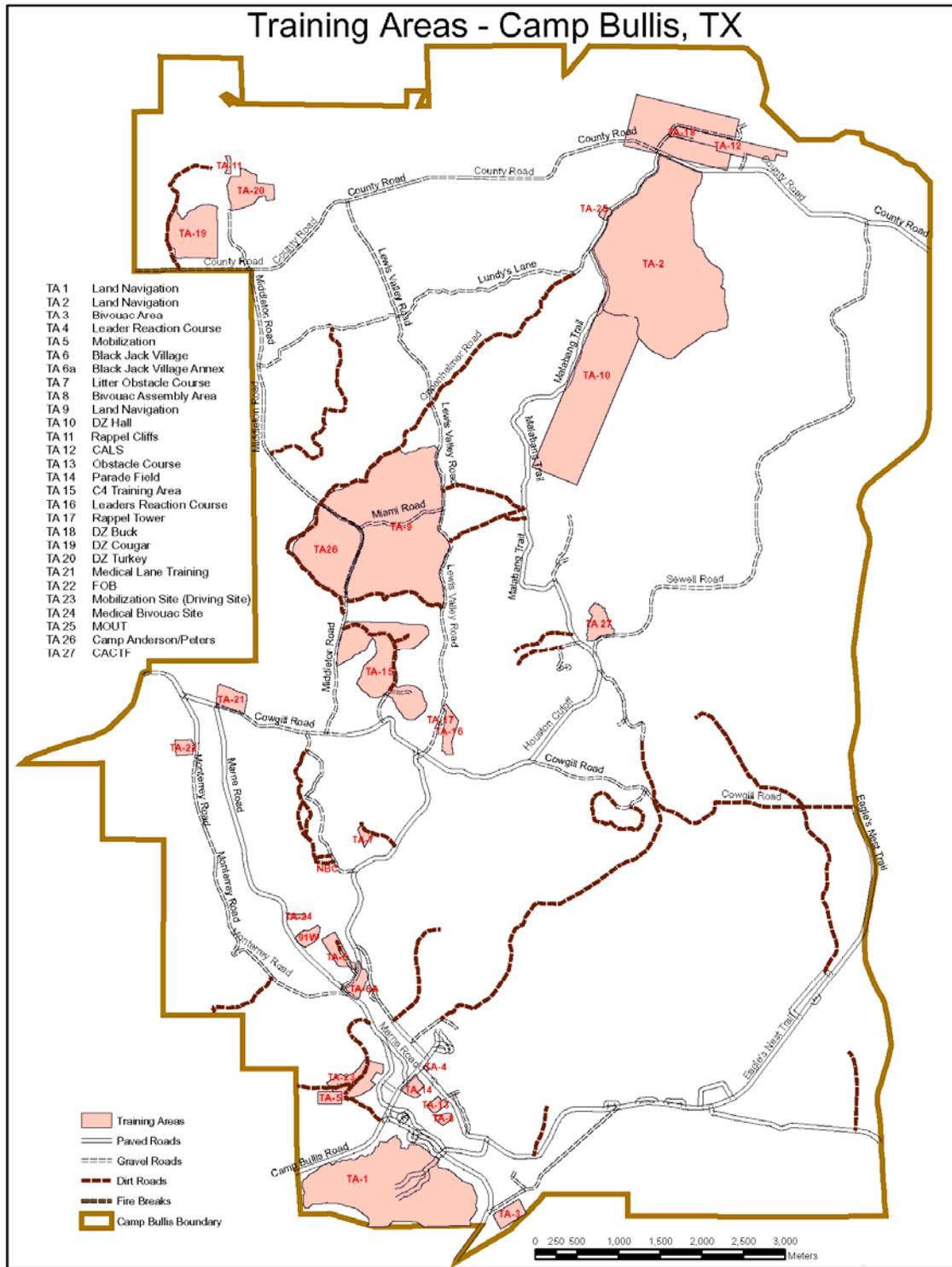


Figure 1-2 Camp Bullis Training Map
 Source: Mission EA 02/2006)

The Base Closure Act specifies that NEPA does not apply to actions of the President, the Commission, or DoD except “(i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the functions are relocated.”

The Commission’s deliberations and decision as well as the need for closing or realigning a military installation are also exempt from NEPA. The proposed action and alternatives, including the no action alternative, are described in Sections 2.0 and 3.0. These scenarios, and the rationale for their selection, are further described in Section 3.0.

NEPA and CEQ regulations require that federal agencies consider the environmental effects of actions and alternatives at a facility during the decision making process. This EA will provide the decision makers all information available to understand the potential future environmental consequences or impacts because of implementation of the proposed actions or alternatives specified in this EA. After review of the analysis presented in this EA, a decision to issue a Finding of No Significant Impact (FNSI) or to proceed with the preparation of an Environmental Impact Statement (EIS) to further quantify and detail the impacts from the proposed action or alternatives will be made by the Army.

1.3 PUBLIC INVOLVEMENT

The Army invites full public participation in the NEPA process to promote open communication and better decision making. All persons that have a potential interest in the proposed action or alternatives, including minority, low-income, disadvantaged, and Native American groups are encouraged to participate in the NEPA environmental analysis process.

The final EA and a draft FNSI will be available for a 30-day comment period. During this time, the Army will consider any comments submitted by agencies, organizations, or members of the public on the preferred alternative, the EA, or the draft FNSI. At the conclusion of the comment period, the Army may, if appropriate, execute the FNSI and proceed with the preferred alternative. If it is determined that implementation of the preferred alternative would result in significant impacts, the Army will publish in the *Federal Register* a Notice of Intent to prepare an EIS.

1.4 IMPACT ANALYSIS PERFORMED

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, and military technicians performed the impact analysis. The team identified the affected resources and topical areas, analyzed the preferred alternative against the existing conditions, and determined the relevant beneficial and adverse affects associated with the action.

1.5 FRAMEWORK FOR ANALYSIS

This EA has been prepared in compliance with all federal, state, and local laws, regulations, and policies applicable to the proposed and alternative actions described in Sections 2.0 and 3.0. The following is a brief list of federal, state, and local regulations considered:

- NEPA of 1969, as amended (42 USC §§4321-4370D)
- Endangered Species Act (ESA) of 1973, as amended (16 USC §§1531-1544)
- Sikes Act of 1960, as amended (16 USC §§670a-670o)
- Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (42 USC §§11001-11050)
- Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC §§6901-69911)
- National Historic Preservation Act (NHPA) of 1966 (16 USC §470)
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC §§3001-3013; 43 CFR 10)
- Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality
- EO 12898, Environmental Justice
- Clean Air Act (CAA) of 1963, as amended (PL 101-549)
- Clean Water Act (CWA; 33 USC §7401 et seq.)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA; 42 USC §9601 et seq.)

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

Under the provision of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), the 2005 BRAC Commission made the following recommendation concerning Camp Bullis, Texas:

“Close the United States Army Reserve Center, Boswell, Texas [Boswell Street, San Antonio, Texas] and the United States Army Reserve Center, Callaghan, Texas [Callaghan Road, San Antonio, Texas] and relocate units to a new AFRC on existing Federal Property on Camp Bullis, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the Texas Army National Guard (ARNG) Readiness Center in Hondo, Texas, A Company and Headquarters Company, 1st of the 141st Infantry, the Fifth Army Intelligence Training Army Area School, the Regional Training Site-Intelligence, and the Texas Army National Guard Area Support Medical Battalion if the state decides to relocate those National Guard units.”

The updated unit/organization names that will be part of the new AFRC are as follows: Fifth Army Intelligence Training Army Area School (ITAAS) is now the Sixth Battalion Military Intelligence; Regional Training Site Intelligence is now the Southwest Army Reserve Intelligence Support Center (SWARISC); the Texas Army National Guard Area Support Medical Battalion is the 111th Area Support Medical Battalion.

2.2 IMPLEMENTATION PROPOSED

The Army proposes to construct AFRC facilities that will not exceed 260,000 square feet (sf). These facilities will include multi-use classroom/barracks, a vehicle maintenance shop, organization unit storage facilities and parking on approximately 80 acres of existing Army property on Camp Bullis, Texas, to accommodate the increase resulting from the proposed action and the closure of the Boswell Street USARC and the Callaghan Road USARC, both located in San Antonio, Texas, and the National Guard Armory located in Hondo, Texas. Accommodation of National Guard Units from the ARNG Readiness Center will also result under the proposed action. Deconstruction/demolition of six facilities may be required. For the purpose of this EA, it is assumed that these facilities will be deconstructed.

2.3 OTHER BRAC ACTIONS

The United States Air Force (USAF) Medical Readiness Courses currently being taught at Sheppard Air Force Base (AFB), Texas, will be moved to Camp Bullis, Texas, due to the 2005 BRAC Commission recommendations to realign medical training from Sheppard AFB to Fort Sam Houston, Texas. Camp Bullis will receive the medical readiness training contingent being relocated to Fort Sam Houston, Texas.

Approximately 100 full-time personnel will require approximately 152 acres of land; 25,000 sf of classroom and administrative space; 25,000 sf of warehouse space; and 55,000 sf of tent pads to support seven courses conducted in the field. The average aggregate daily student load for these courses is estimated to be 400 students.

The environmental impacts of the medical training from Sheppard AFB and other BRAC actions on Camp Bullis will be addressed under an EIS that is currently under development for Fort Sam Houston. The USAF training actions and other BRAC actions are dissimilar and independent from the AFRC. Therefore, these actions are not part of the EA, which addresses construction and activities covered by the specific BRAC recommendations for Camp Bullis. The impacts of the AFRC and other activities on Camp Bullis will be addressed in Section 4.14, Cumulative Impacts.

2.4 ENVIRONMENTAL ASSESSMENT FOR MISSION UPDATE AT CAMP BULLIS, TEXAS

The Army recently completed a comprehensive environmental analysis for Camp Bullis to evaluate the environmental impacts of increased training activity. This analysis was documented in the *Environmental Assessment of Current and Proposed Mission Activities at Camp Bullis, Texas and Comal Counties, Texas* (Mission EA; U.S. Army, 2006b). This comprehensive analysis of increased training encompasses the type of training that units assigned to the proposed new AFRC could schedule at Camp Bullis.

Because of the Global War on Terrorism (GWOT), there has been a need for an increased utilization rate of Camp Bullis facilities. The Army Garrison Commander at Fort Sam Houston, Texas proposed to increase the operations tempo of training activities conducted at Camp Bullis. Through its military departments, the DoD has an ongoing and increasing requirement to train Soldiers, Sailors, Airmen, and Marines in survival tactics. The nature of current operations in the

Middle East requires an increased emphasis in basic infantry war-fighting skills to combat service support personnel engaged in convoy operations and medical support.

The Mission EA analyzed the environmental impacts of continuing to use Camp Bullis for field training of DoD personnel at a more intense level to fulfill the needs resulting from the demands of the GWOT and realignment of missions, forces, and installations to better prepare DoD for future conflicts. Wartime experience in Iraq, in particular, demonstrated that the Soldiers running the Army's logistical system (mechanics, truck drivers, cooks, clerks, network administrators, and medics) require realistic training under simulated combat conditions as much as the infantry, armor, and artillery Soldiers. The Air Force has also changed the training its supporting Airmen receive, particularly security police and medical specialists, again emphasizing survival under hostile fire.

The Mission EA analyzed the proposal to authorize a level of usage of facilities at Camp Bullis to increase up to 1,000,000 man-days annually from the Fiscal Year (FY) 2004 baseline of approximately 750,000 man-days of training. Table 2-1 presents the total annual and average daily use of Camp Bullis for FY 2005 and proposed training loads.

The training activities included classroom and barracks training site "mock-up," non-tactical training for tenant units (see Table 2-2), and tactical field maneuvers and training by military units of various sizes and configurations at the small arms ranges, maneuver areas, and other outdoor training areas. The proposal did not increase the extent of existing training or maneuver areas (see Figure 2-1). The proposed AFRC activities would fit under the activities assessed.

The CEQ regulations provide for tiering of previous environmental analyses and decisions that are relevant to a subsequent action in order to avoid unnecessary duplication. The BRAC proposed action would potentially increase the level of training activity at Camp Bullis to a level that is within the scope of the previously completed analyses. The Affected Environment and Consequences section of this EA will incorporate the findings of the Mission EA as appropriate to discuss the effects of training by units occupying the AFRC at Camp Bullis.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Table 2-1 Total Annual and Average Daily Use of Camp Bullis and Proposed Training Loads

Training Activity	Daily Use	Total Fy04 Man-Days	Total Fy05 Man-Days	Proposed Man-Days
AD Army	Total Annual Average	267,211 732	226,787 621	357,895 980
AD USAF	Total Annual Average	270,927 742	280,112 767	311,566 994
Other AD	Total Annual Average	3,104 9	3,710 10	4,157 12
Reserves	Total Annual Average	72,332 198	64,905 178	96,879 265
National Guard	Total Annual Average	36,101 99	56,495 155	43,353 133
ROTC	Total Annual Average	50,039 137	31,503 86	67,021 183
AVN TNG	Total Annual Average	5,350 15	3,265 9	7,166 20
Civilian Organization	Total Annual Average	41,555 114	38,532 106	55,658 153
Total	Total Annual Average	746,619 2,046	705,309 1,932	1,000,000 2,740

Note: FY 2004 had 366 days (29 in February); however, the source data from Camp Bullis does not indicate such.

AD = Active Duty

USAF = U.S. Air Force

AVN TNG = Aviation Training

ROTC = Reserve Officers Training Corps

Source: See Jennings 2005a in Mission EA (Army 2006b); Morgan, 2006

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Table 2-2 Camp Bullis Tenant Units

Organization	Military Department	Mission
343 TRS, Detachment 1 Air Force Ground Combat Skills Course	Air Force – Air Education & Training Command	Train air base security forces
AMEDDC&S DMRTI C4 School Training Parks DMSET 91 W Site E Company	Joint/DoD Delegated to AMEDD C&S Army Army Army Army	AMEDDC&S the doctrinal proponent of Army medical training; DMRTI and 91W: courses offered at Fort Sam Houston and Camp Bullis; DMSET: a training venue; E Company: a logistical support unit for the AMEDDC&S
6th MI Battalion, 3rd BDE, 95th Division (Institutional Training)	Army Reserve	Army Reserve unit drill location; conducts advanced individual training for MI branch at Fort Huachuca, Arizona when mobilized
Southwestern Army Reserve Intelligence Support Center (SW ARISC)	Army Reserve	Operations center for the production of classified analyses products for combatant commanders and other users
HQ 1st BN 141st Infantry (Texas ARNG)	Army National Guard	Infantry – Combat Arms
IAAFA Field Training Site	Air Force	Military school on Lackland AFB for foreign exchange students from allied Latin American nations

91W = Health Care Specialist. Military Occupational Specialty awarded to Army Soldiers trained as combat medics.

AMEDDC&S = Army Medical Department Center and School

AMEDD = Army Medical Department

ARNG = Army National Guard

BDE = Brigade

BN = Battalion

C4 = Combat Casualty Care Course

DMRTI = Defense Medical Readiness Training Institute

DMSET = Deployable Mobile Systems Equipment for Training

HQ = Headquarters

IAAFA = Inter-American Air Force Academy

MI = Military Intelligence

TRS = Training Squadron

Source: See Jennings 2005a in Mission EA (Army 2006b); Morgan, 2006

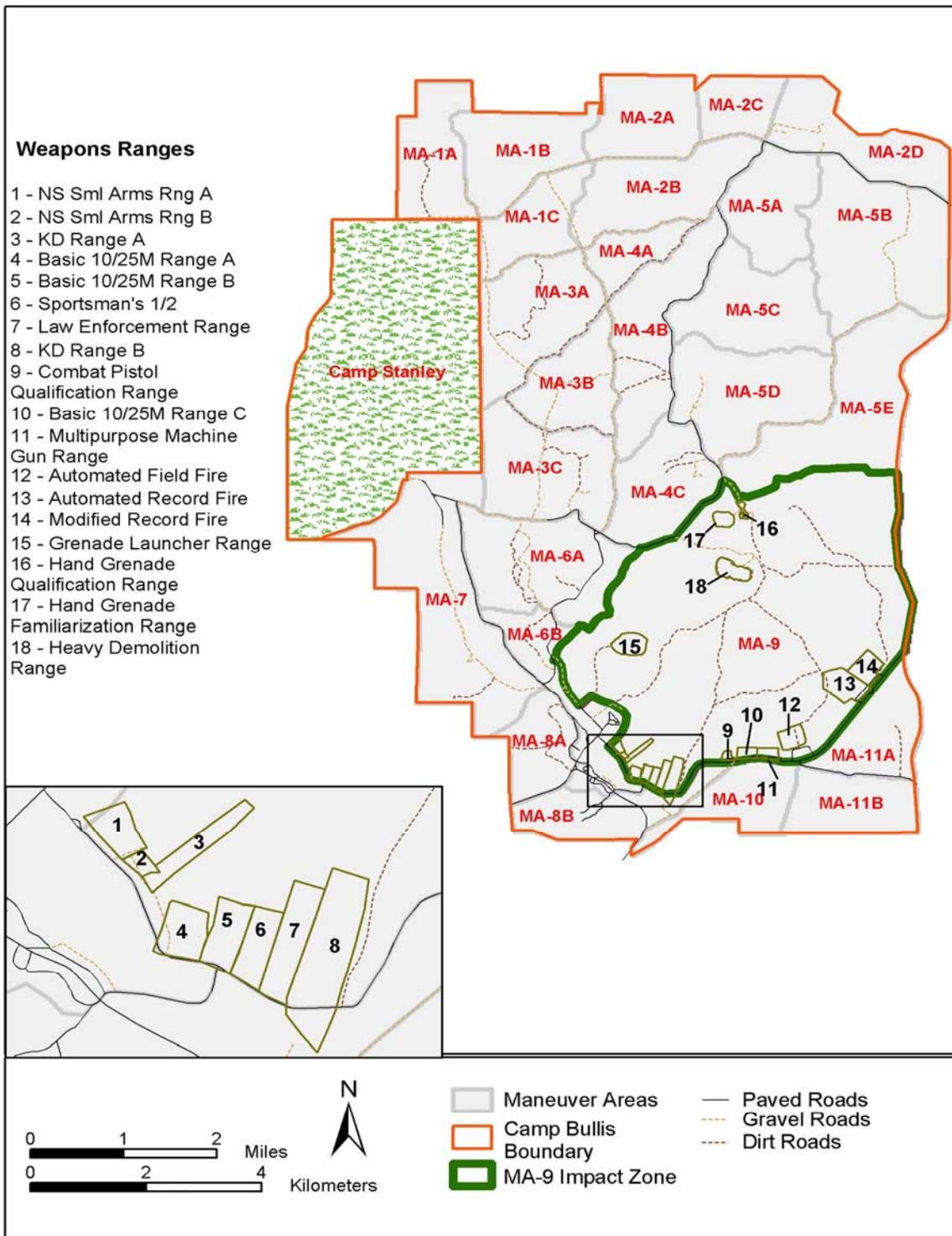


Figure 2-1 Ranges and Impact Areas at Camp Bullis

Source: U.S. Army, 2006a

3.0 ALTERNATIVES

3.1 INTRODUCTION

This section presents the Army's development of alternatives and addresses alternatives available for the proposed action. The section also describes the no action alternative and the alternatives that were not carried forward as viable options.

A bedrock principle of NEPA is that an agency should consider reasonable alternatives to a proposed action. Considering alternatives helps to avoid unnecessary impacts and allows analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be "ripe" for decision making (any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. The following discussion identifies alternatives considered by the Army and identifies whether they are feasible and, hence, subject to detailed evaluation in this EA.

3.2 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the no action alternative. The no action alternative serves as a baseline against which the impacts of the proposed action and alternatives are compared.

Under the no action alternative, Camp Bullis would not implement the proposed action. Organizations presently assigned to Camp Bullis would continue to train at and operate from the post. Fort Sam Houston would use its current inventory of facilities, though routine replacement or renovations actions could occur through normal military maintenance and construction procedures as circumstances independently warrant. Implementation of this alternative is not possible, however, in light of the BRAC closure and realignment recommendations having the force of law. Evaluation of the no action alternative is presented in detail in this EA as a baseline only.

3.3 REALIGNMENT (PREFERRED) ALTERNATIVE

Implementation of this proposed action would relocate approximately 1,100 people, including 1,068 military and 33 civilians. This relocation would require construction of new facilities within the existing cantonment area to provide administrative, classroom, barracks, storage, and maintenance space for incoming units and organizations.

Under the preferred alternative, the proposed area for construction includes three parcels for construction of the AFRC as shown in Figure 3-1. The parcels are approximately 52, 22, and 6 acres. An approximately 52-acre parcel located northwest of the garrison command headquarters would be used for the 35,000 sf organizational level vehicle maintenance facility. The approximately 22-acre parcel located northeast of the garrison headquarters along Camp Bullis Road would be used for the 200,000 sf training facility and the 15,000 sf multi-use classroom/barracks. Deconstruction/demolition of six facilities shown in Figure 3-1 is considered to allow sufficient space to construct the required facilities and parking. An approximately 6-acre parcel located west of the Garrison Headquarters, west of Camp Bullis Road would be used for the 10,000 sf unheated storage facility.

3.4 ADDITIONAL ALTERNATIVES REMOVED FROM CONSIDERATION

The construction siting of three AFRC projects on Camp Bullis resulted from a U.S. Army Corps of Engineers (USACE) study that considered various options. Other alternative sites were eliminated due to site constraints and land availability and usability. Site topography and the availability of roadways and utilities were key considerations concerning the costs of the facilities. A single compound with a single large, consolidated facility or a campus of multiple facilities was ideal, but it was prohibited by the land constraints at Camp Bullis. As stated previously, the preferred alternative parcels of land for constructing three facilities, with a total of approximately 260,000 sf of space, are located in the cantonment area, which complies with the land use planning concept for Camp Bullis.

In general, a desirable strategy for managing and preserving facilities and resources is utilization of the existing cantonment area for new construction, unless it must be collocated on a training site in the less developed natural acreage. Therefore, the cantonment area siting option was selected as the preferred alternative. The preferred alternative facility siting will support efforts to keep the natural environment of Camp Bullis in as pristine condition as possible while supporting training requirements, providing outdoor recreation opportunities, and sustaining the natural habitat.

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

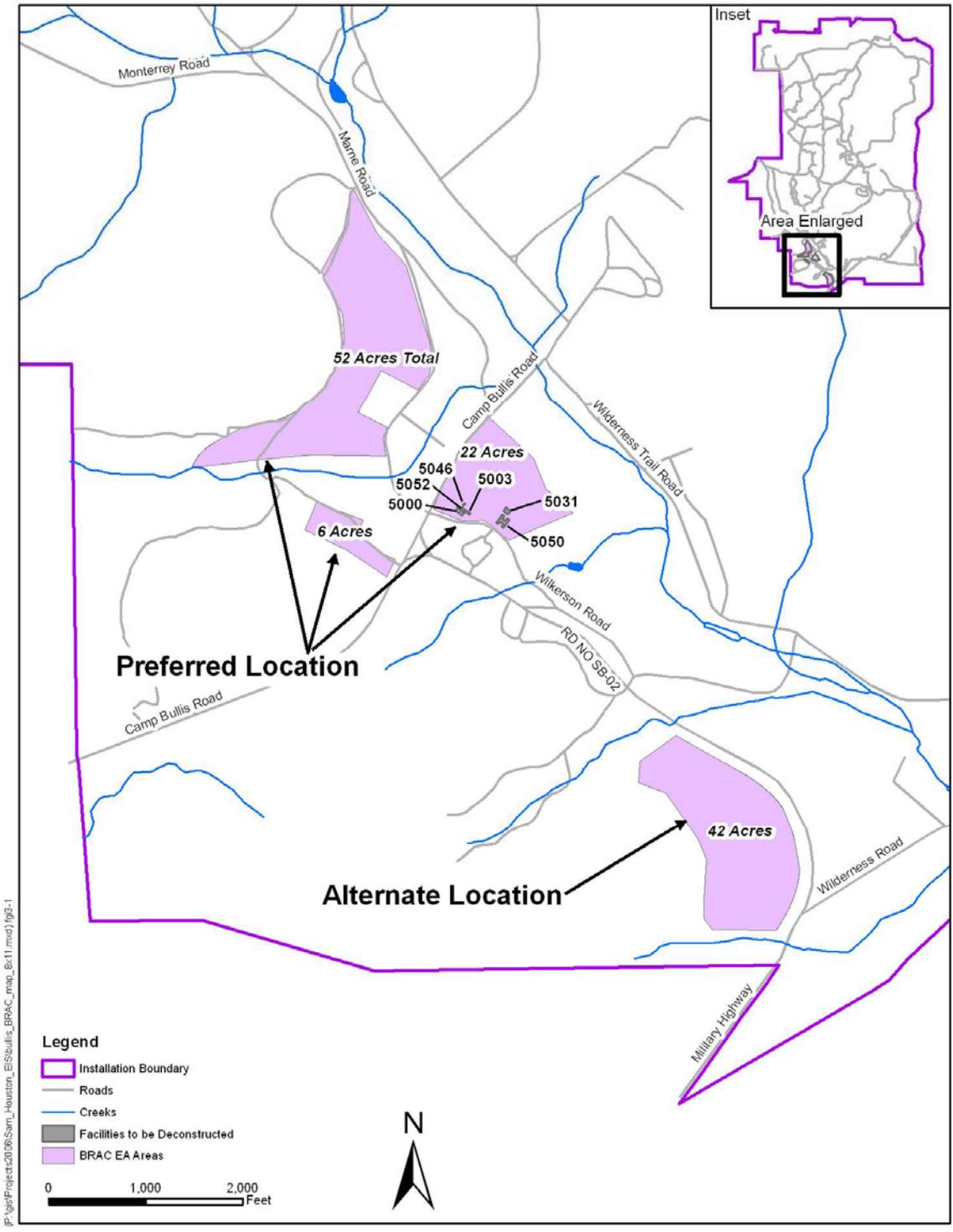


Figure 3-1 AFRC Site Locations – Multi-Use Classroom/Barracks, Vehicle Maintenance Shop, and Organizational Unit Storage
 Source: Camp Bullis GIS

The alternate location of the AFRC Complex is situated on a 42-acre area near the main entrance to Camp Bullis on the west side of Military Highway just inside the main gate. This alternative location would provide satisfactory space to construct new facilities in one compound or campus setting and provide adequate ingress and egress from the post. The site location is also shown in Figure 3-1. Facilities for the alternative location would be very similar to those in the preferred alternative. Site characteristics would require major changes to accommodate grading, parking, and ingress and egress.

Utilities to support the site requirements are not available. Utilities would have to be brought to the site from existing utility locations either on Camp Bullis or from the adjacent utility easements. Data and voice communication lines would have to be tied to the existing Camp Bullis communication lines to provide secure connections. The southern edge of this parcel is also within the Edwards Aquifer recharge zone. The remaining parcel of land not in the recharge zone is in the Edwards Aquifer contributing zone.

The Army also considered five locations for the AFRC in addition to the alternatives shown in Figure 3-1. These included three locations along the eastern boundary, north of Camp Stanley along the west boundary, and a location west of the current Air Force Medical Training Area. Along with the 42-acre area identified in Figure 3-1, these sites were removed from further consideration because of their locations in areas of Camp Bullis that do not have utilities service. Extension of utilities to these locations would result in excessive construction costs and violate the current Garrison Command policy. Current Garrison Command policy is to place all new, permanent facilities inside the cantonment area. In addition, the alternative locations were not considered as primary locations due to the presence of and adverse impact to endangered species and their habitat.

4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 INTRODUCTION

This EA is focused on determining the potential environmental impacts resulting from implementation of the preferred alternative described in Section 3.0. This action is characterized by the construction of three facilities on separate sites within and adjacent to the existing cantonment area at Camp Bullis. The following subsections of Section 4.0 first describe the existing natural and man-made environment (affected environment) for various resource areas at Camp Bullis and then present the potential affects of the Preferred Alternative. The *Environmental Assessment of Current and Proposed Mission Activities at Camp Bullis, Bexar and Comal Counties, Texas* (U.S. Army, 2006c) and *The Overall Mission Environmental Assessment for Camp Bullis, Texas* (U.S. Army, 2001c) provide detailed descriptions of the Camp Bullis and the San Antonio metropolitan area. Therefore, this EA has simply incorporated baseline information about the affected environment for the various resource areas from these documents and augmented it as needed from other sources as referenced.

4.2 LAND USE

4.2.1 Affected Environment

Camp Bullis is a training facility that primarily supports a wide range of realistic tactical field training for Fort Sam Houston, Lackland AFB, and other DoD installations. Camp Bullis also provides outdoor recreational opportunities for active and retired DoD members, their dependents, and DoD civilian personnel. The primary mission of Camp Bullis is to train military personnel, primarily military medical personnel; the built environment in this natural setting is devoted to this purpose. Therefore, land use at Camp Bullis is primarily outdoor ranges and open spaces providing training sites in otherwise undeveloped natural areas throughout the 27,987-acre facility. No development or new construction is planned in these areas under the preferred alternative. Nevertheless, the outdoor ranges, open spaces, and areas that extend beyond the borders of Camp Bullis are briefly described here. Figure 4-1 shows the Camp Bullis cantonment area, the preferred alternative parcels, and the six facilities to be deconstructed.

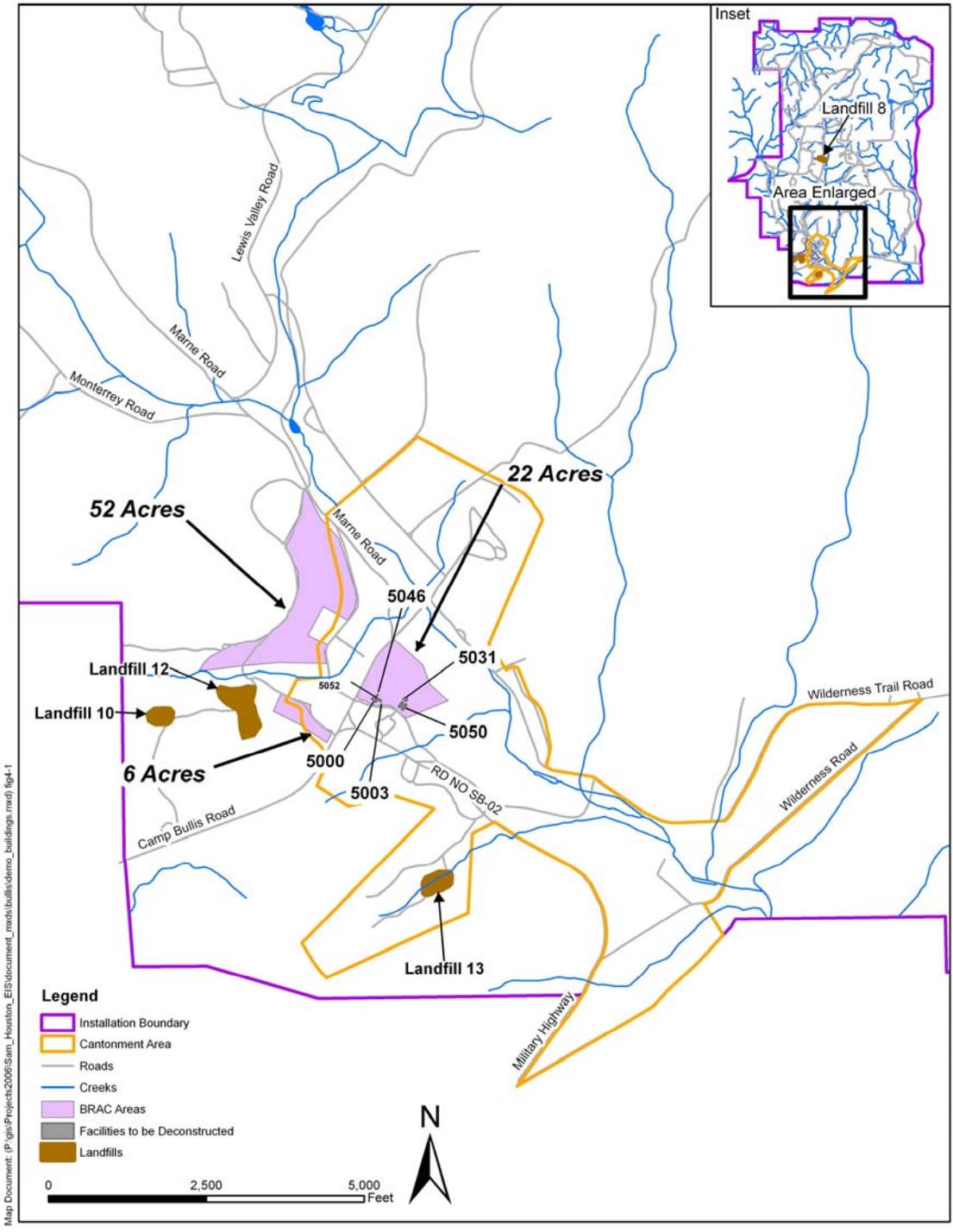


Figure 4-1 Camp Bullis Cantonment Area
Source: Camp Bullis GIS

As stated previously, the preferred alternative involves construction of new facilities within the cantonment area, which is the only portion of Camp Bullis that could be considered a predominantly disturbed environment. The majority of the facilities and the utility distribution systems on Camp Bullis are located within the cantonment area. Land use near the new construction sites could be characterized as low-density, developed area surrounded by primarily undisturbed natural land.

Regional Geographic Setting and Location

The regional physiography is governed primarily by the Balcones Escarpment, a broad area of faulted limestone forming the southern and eastern edge of the Edwards Plateau. This escarpment rises approximately 1,000 feet above the coastal prairie to the south and east. The escarpment extends from near Del Rio, Texas, about 160 miles to the west, through Bexar County to Austin, Texas, about 70 miles to the northeast. Remnants of the escarpment extend as far north as Waco, Texas. This physical feature runs northeast to southwest through the San Antonio area (U.S. Army, 1991a).

To the northwest of the escarpment lies the Edwards Plateau, a rugged hilly region dissected by many small streams. Elevations in the Plateau range from 1,100 to 1,900 feet above mean sea level (amsl). The Edwards Plateau was mapped by Fenneman (1931) as part of the Great Plains Province. Along the base of the escarpment is a hilly area classified as the Blackland Prairie Physiographic Region, which is where Camp Bullis is located (Taylor *et al.*, 1966). Much of this region is covered with gravelly terrace deposits with some valleys cut by stream erosion (U.S. Army, 1991a).

Installation Land/Airspace Use

Camp Bullis was established as a remote rural outpost of Fort Sam Houston, located about 20 miles north of the fort within San Antonio, Texas. This Army facility is used for annual refresher training, field training exercises, orienteering, night driving, tactical vehicle training, survival training, and aviation training in the operation of field hospitals. Selected areas of Camp Bullis are used for recreational activities, including hunting from designated hunting stands.

Air traffic patterns between the San Antonio area (i.e., Fort Sam Houston) and Camp Bullis are described in the Mission EA (U.S. Army, 2001). Close proximity air traffic at Camp Bullis is limited to helicopters that are conducting training missions. These helicopters fly at altitudes of 250 to 500 feet above ground level (AGL) while conducting training missions at the training

areas, typically outside the cantonment area. These training missions are used to simulate casualty on- and off-loading and evacuation. Hoist evacuation training is conducted with helicopters hovering generally between altitudes of 50 and 100 feet AGL (USACE, 1995). A drop zone is also located in the north central area of Camp Bullis. Additionally, Camp Bullis has a Combat Assault Landing Strip (CALs) (see Figure 1-2) in the northeastern section of the installation that supports limited C-130/C-17 use. Historically, the average usage has been 12 flights per year (United States Army Center for Health Promotion and Preventive Medicine [USACHPPM], 2006). Noise considerations from aircraft (rotary and fixed-wing) are covered in Section 4.5.

Surrounding Land/Airspace Use

San Antonio has grown considerably since Camp Bullis was established. Camp Bullis is now bordered on the east, south, and west by suburban residential development. There are more than 50 subdivisions within a 5-mile radius of the installation, many of which either directly abut the installation boundary, or are within 1 mile of it (U.S. Army, 2001a). Figure 4-2 shows the parcels that make up the subdivisions within a 5-mile radius of the preferred alternative location.

Current and Future Development

Most of Camp Bullis lies within Bexar County. A small amount of land (about 2,000 acres) on the north boundary falls within Comal County on the north side of Cibolo Creek. When first established in 1908, the location was chosen partially because it was relatively accessible, and also because it was removed from the city and developed areas.

Currently, Camp Bullis is feeling the rapid growth in the San Antonio area and the expansion of suburban development around its boundaries. Some original rangeland is still found along the north boundary of Camp Bullis, but most surrounding land is being subdivided and used for suburban development. These subdivisions are interspersed with undeveloped and remnant agricultural land. On the west side, Camp Stanley, which is used for ammunition storage and weapons maintenance, abuts Camp Bullis. On the southwestern boundary, a 323-acre area was deeded by Camp Bullis to the City of San Antonio for Eisenhower Park, a natural resource park. Also south of the reservation are several rock quarries and a cemetery. Some commercial and industrial developments are also located along the primary highways south of the installation.

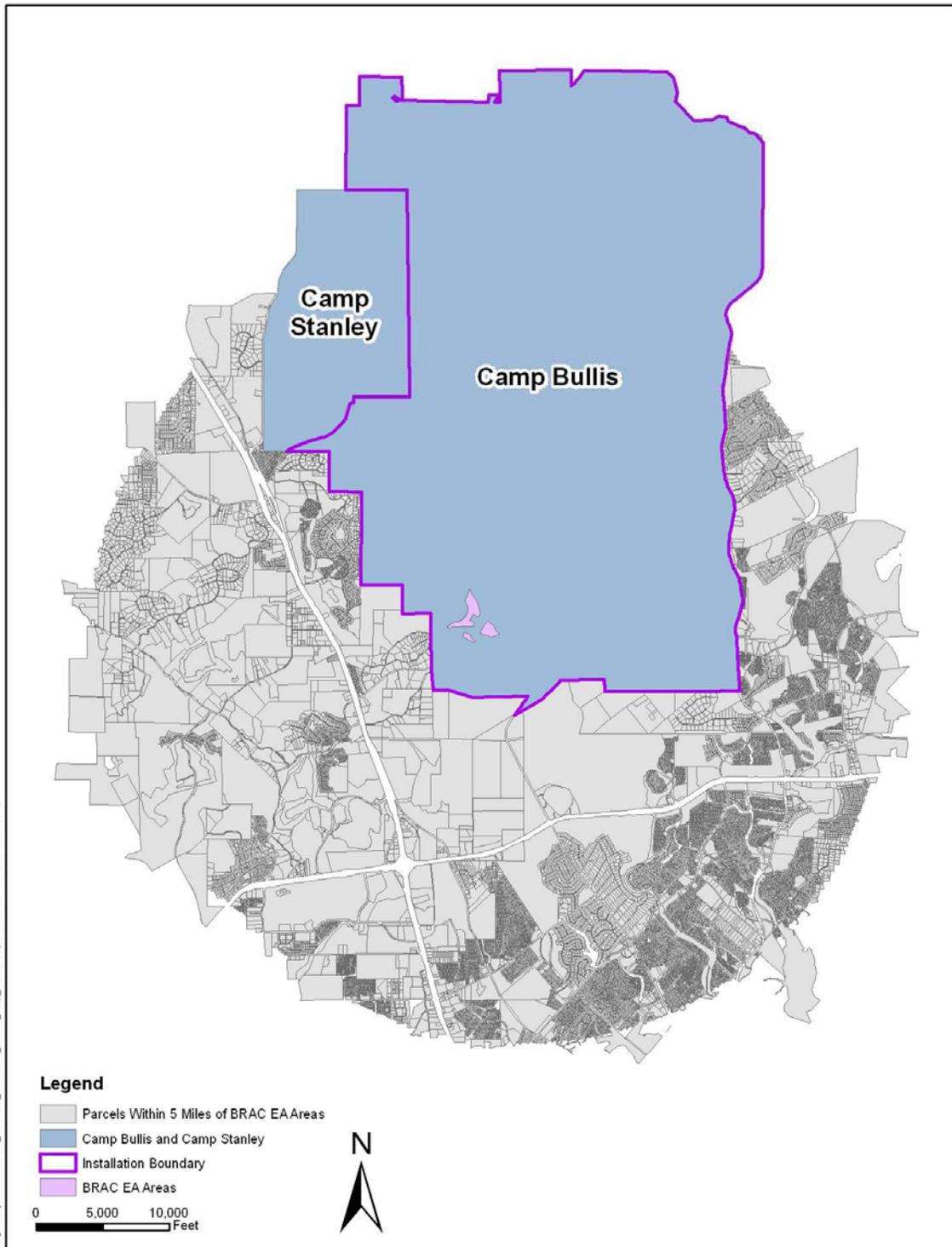


Figure 4-2 Subdivisions within 5 Miles of Camp Bullis
Source: Camp Bullis GIS

San Antonio city limits surround two-thirds of Camp Bullis. Land use controls in unincorporated areas are governed by Texas Local Government Code, Title 7, Subtitle B. Typically, counties regulate subdivision of land but do not have the power to control land use. Under Texas Local Government Code, Chapter 42, Extra Territorial Jurisdiction of Municipalities, the areas within a specified distance of an incorporated boundary (depending on the population of the adjacent municipality) are within an extraterritorial zone (ETZ). The adjacent municipality has approval authority for platting subdivision of land in the ETZ but has no authority to control land use. The City of San Antonio annexed a 1,000-foot-wide strip along the western boundary of Camp Bullis. This action extended San Antonio's ETZ into Comal and Kendall Counties and includes nearly all the land around Camp Bullis. The City of Boerne, about 10 miles northwest of Camp Bullis, also annexed areas that extended its ETZ to the southeast, resulting in overlapping zones. At this point it is unclear which municipality has platting authority in this area. Also within the ETZ, adjacent to Camp Stanley on the northwest side of Camp Bullis, is the incorporated City of Fair Oaks Ranch (U.S. Army, 2001b).

Although most of the land around Camp Bullis is expected to develop into residential and commercial use over the next 10 to 30 years, it is not certain how much will be annexed into a municipality and subject to land use controls. The overall effect is likely to slow the annexation process and limit future actions to larger vacant, contiguous, undeveloped tracts (U.S. Army, 2001b). The City also considers annexation requests from communities that want to be incorporated into the City. This initiates a feasibility study before a community can be included in an Annexation Plan. Suburbanization of surrounding land, however, is likely to continue, whether or not land is incorporated. With annexation comes extension of municipal services that may stimulate additional development and densification. However, annexed areas undergo a formal zoning process, resulting in more control over permitted land uses (U.S. Army, 2001b).

Development controls also apply for areas overlying the Edwards Aquifer. About 3,000 acres of Camp Bullis coincide with the aquifer recharge zone, as discussed in Section 4.7. This aquifer is the only sole-source aquifer in the nation with specific federal regulations (40 CFR 149, Subpart B). Also, local regulations restrict density, types of land uses, and specific facilities that can occur, particularly in the recharge areas.

4.2.2 Consequences

Preferred Alternative

The siting of one of the three AFRC facilities that would provide administrative and training space would require the deconstruction/demolition of six small facilities that range from 347 to 6,484 sf. The facility ages range from 6 to 89 years, and 78 percent of this space in four of the six facilities is more than 30 years old. These facilities are not suitable for reuse by the AFRC. The current functions would be absorbed in current facilities within the cantonment area.

Environmental impacts of the proposed land use would include short-term disturbances of the land use with minimal long-term effects after the initial construction period. The proposed land use is consistent with the present land use. The impact on land use would be revitalization of a portion of the facilities in the cantonment area, which would positively enhance the land use in this area.

No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used. There would be no improvement in the quality of the facilities in this area.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

Visually, approximately 98 percent of Camp Bullis remains in a relatively natural state (U.S. Army, 2001a). Camp Bullis provides a rustic setting with natural vegetation and geologic features typical of this region of Texas. The cantonment area fits well in this natural, park-like atmosphere with a mixture of old and newly constructed facilities in predominantly earth tone colors that are set among older canopy trees and vegetation well adapted to this climate and terrain. The area surrounding the cantonment area provides a natural, park-like backdrop with interesting natural vistas. The closest subdivision directly impacted by Camp Bullis land use is the Dominion, which is best characterized as an exclusive, high-value residential development with multimillion dollar mansions and a private country club. This property is west-northwest of the cantonment area and has properties sited on elevated hills that provide a downward view of the Camp Bullis facility. The Greystone subdivision, located southeast of the installation, does not have a significant view of the cantonment area and is not impacted by Camp Bullis land use.

4.3.2 Consequences

Preferred Alternative

Construction of the three AFRC facilities in the cantonment area would be compatible with the natural park-like setting. This siting would not disrupt the natural land areas of Camp Bullis. The sizes and heights (high bay, single-story or two-story) classroom/administrative facilities would blend in among the high canopy trees in this area of Camp Bullis. The architecture would follow the architectural compatibility guidelines specified in the Installation Design Guide (IDG) and landscaping and signage would be selected to match the installation standards. Additionally, deconstruction/demolition of existing Facilities 5000, 5003, 5031, 5046, 5050, and 5052 on the 22-acre parcel should benefit overall appearance while making land available in the cantonment area for the new structures. These AFRC structures should incorporate architectural treatments, scale, and layout of surrounding facilities where the visual context is important. Potential visual changes in view from elevations bordering on the west (Table ES-1) should not be adversely affected. The addition of facilities over time is slowly changing Camp Bullis' former character as an isolated field camp to a more robust, modern sub-installation.

The design and layout of the new facilities would consider maintaining continuity in the historic landscape with the goal of preserving the historical and cultural image or appearance of Camp Bullis. One of the six facilities (building 5046) considered for removal, might be eligible as a historic property for the National Register of Historic Places (NRHP). Removal of a historic structure can affect the visual context of other historic resources and erode the image of the old camp. The impacts of the removal of historic resources will be further discussed in Section 4.9, Cultural Resources.

No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used. There would be no improvement in the quality of the six facilities on the 22-acre parcel.

4.4 AIR QUALITY

4.4.1 Affected Environment

The San Antonio Metropolitan Statistical Area (MSA), including Bexar and Comal counties, is considered by the Texas Commission on Environmental Quality (TCEQ) to be in near

nonattainment status for ozone (TCEQ 2004). The area is in attainment for all other criteria pollutants.

Title I of the CAA Amendments of 1990 requires that air pollution source owners in nonattainment areas submit an Emission Statement to local regulatory authorities. Camp Bullis is not located in an ozone nonattainment area and, therefore, is not subject to a mandatory submittal under this rule. Title V of the CAA amendments requires each state to institute a permit program that assesses fees based on annual air pollutant emissions. Currently, Camp Bullis falls below Title V threshold limits as established by the U.S. Environmental Protection Agency (USEPA) (Table 4-1). Camp Bullis is not required to submit annual air pollutant emissions to USEPA or TCEQ; TCEQ, however, requests annual submittal of the information in an Emissions Inventory Questionnaire.

Ambient Air Quality Conditions

Air quality at a given location is a function of several factors, including quantity and dispersion rates of pollutants, temperature, presence/absence of inversions, and topographic and geographic features. The CAA (42 USC §§7401-7671q), as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA gives USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set safe concentration levels for six criteria pollutants: particulate matter measuring less than 10 microns in diameter (PM₁₀), sulfur dioxide, carbon monoxide, oxides of nitrogen, ozone, and lead. Primary NAAQS are established to protect public health, and secondary standards provide protection for the public welfare, which includes wildlife, climate, transportation, and economic values (Table 4-1). Additionally, USEPA must ensure that air quality standards are met to control pollutant emissions from mobile (e.g., vehicles) and stationary (e.g., factories) sources.

The NAAQS represent the maximum levels of background pollutants that are considered safe, with an adequate margin of safety to protect the public health and welfare. Short-term standards (1-, 3-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) have been established for pollutants contributing to chronic health effects. Each state is responsible for compliance with the NAAQS and has the authority to adopt standards stricter than those established under the federal program; however, TCEQ accepts the federal standards for the San Antonio MSA.

Areas that violate NAAQS are designated as nonattainment areas; those areas that comply with air quality standards are designated attainment areas for the relevant pollutants. Attainment/maintenance areas are areas that have previously been designated nonattainment and have subsequently been redesignated to attainment for a probationary period due to compliance with the NAAQS. Attainment/maintenance status is achieved through the development and implementation of maintenance plans for criteria pollutants of interest and a reduction of actual pollutants.

Table 4-1 National Ambient Air Quality Standards

Air Pollutant	Averaging Time	NAAQS	
		Primary	Secondary
Carbon Monoxide	1-hour	35 ppm	35 ppm
	8-hour	9 ppm	9 ppm
Oxides of Nitrogen	Annual	0.053 ppm	0.053 ppm
Sulfur Dioxide	3-hour	-	0.50 ppm
	24-hour	0.14 ppm	-
	Annual	0.03 ppm	-
Ozone	1-hour*	0.12 ppm	0.12 ppm
	8-hour	0.08 ppm	0.08 ppm
Lead	Quarterly Average	1.5 µg/m ³	1.5 µg/m ³
PM ₁₀	24-hour	150 µg/m ³	150 µg/m ³
	Annual	50 µg/m ³	50 µg/m ³

* * The ozone 1-hour standard applies only to designated nonattainment areas.

ppm = parts per million

µg/m³ = micrograms per cubic meter

Source: <http://epa.gov/air/criteria.html>

Table 4-2 summarizes the San Antonio area 1-hour and 8-hour ozone averages; included are all continuous air monitoring stations (CAMS) in the San Antonio area: CAMS 23, 58, 59, 501, 502, 503, 504, 505, 506, 622, and 678.

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Table 4-2 San Antonio Area Average Ozone Concentrations

One-hour Averages >125 ppb			Eight-Hour Averages > 85 ppb		
Peak Value		Annual days >125 ppb	Peak value		Annual days >85 ppb
Date	ppb		Date	ppb	
No current 2006 averages over 125			6/13/2006	93	2
No 2005 averages over 125			10/17/2005	94	5
7/19/2004	128	1	7/19/2004	101	10
No 2003 averages over 125			5/28/2003	96	11
9/12/2002	130	2	9/12/2002	111	17
No 2001 averages over 125			6/18/2001	90	1
No 2000 averages over 125			9/18/2000	93	3
No 1999 averages over 125			8/5/1999	100	11
9/4/1998	141	1	9/4/1998	110	4
No 1997 averages over 125			No 1997 averages over 85		

ppb = parts per billion

Source: http://www.tceq.state.tx.us/nav/data/ozone_data.html

Ambient air quality at Camp Bullis is measured on a continuous basis by TCEQ ambient air quality monitoring station CAMS 58. CAMS 58 has been providing real-time monitoring since 12 August 1998 for nitrogen oxide, nitrogen dioxide, nitrogen oxides, carbon monoxide, wind speed, wind direction, ambient air temperature, and solar radiation. CAMS 58 is part of a regional air monitoring program administered by TCEQ to track pollutant migration across Texas, as well as to assess regional air quality and ensure compliance with the NAAQS. Table 4-3 shows the four highest daily maximum 8-hour ozone concentrations measured at CAMS 58.

Table 4-3 CAMS 58 Annual Four Highest Ozone Concentrations

Highest			Second Highest			Third Highest			Fourth Highest		
Date	Time	ppb	Date	Time	ppb	Date	Time	ppb	Date	Time	ppb
6/13/2006	1100	93	6/14/2006	1100	90	6/8/2006	1100	84	6/3/2006	1100	80
10/17/2005	1000	91	5/27/2005	1100	91	6/22/2005	1000	88	6/21/2005	1100	86
9/10/2004	1000	95	9/29/2004	1000	91	8/5/2004	1200	89	7/20/2004	1000	89
6/7/2003	1200	89	5/23/2003	1100	88	9/7/2003	1000	87	5/24/2003	1000	85
6/24/2002	1100	100	9/13/2002	1000	97	6/23/2002	1000	96	6/18/2002	900	95
6/18/2001	1000	90	9/27/2001	1000	81	8/4/2001	1100	81	5/23/2001	1100	81
9/18/2000	1000	93	9/2/2000	1100	83	9/6/2000	1000	80	8/13/2000	1100	80
9/18/1999	1000	96	9/19/1999	1000	91	10/1/1999	1000	88	8/31/1999	1100	87
9/4/1998	1100	110	10/9/1998	1000	95	8/30/1998	1200	92	9/3/1998	1000	87

ppb = parts per billion

Source: http://www.tceq.state.tx.us/nav/data/ozone_data.html

Prescribed burning has been conducted at Camp Bullis to sustain the ecosystem in a way that produces diversity of habitat. Prescribed burning typically releases large amounts of particulate matter and potential volatile organic compounds (VOCs) into the atmosphere. Historically,

however, emissions from prescribed burning are not reported to TCEQ as they are fugitive emissions and not counted as base emissions. The current prescribed burn program, detailed in the Integrated Wildland Fire Management Plan (U.S. Army, 2003) has been carried out over a 5-year cycle (2003 to 2008) with the goal of burning one fifth of the areas requiring burning per year. The current plan identifies 7,100 acres that require burning, which equates to 1,420 acres per year. To date, approximately 3,000 acres have been burned since 2003. Prescribed burning is addressed under Title 30 Texas Administrative Code (TAC) Section 111.201 to 111.221.

Air Pollutant Emissions at Installation

Emission summaries provided by the Emission Statement may be used to calculate any applicable fees that are based on actual pollutant emission rates. TCEQ requires all facilities with emissions greater than regulatory threshold limits to file emission inventory information. Following an emissions survey of more than 43 emissions sources at the installation in 1997, it was determined that emissions from Camp Bullis were less than regulatory thresholds (Department of Public Works, 1998). Therefore, information regarding air pollution sources at Camp Bullis is not reported to TCEQ.

A 2003 update to the 1997 air emissions inventory (AEI) is summarized in Table 4-4.

Table 4-4 Camp Bullis 2003 Air Emissions

Pollutant	2003 Actual Emissions (tons/yr)	TCEQ Threshold* (tons/yr)
Total Suspended Particulates	0.4307	20
Volatile Organic Compounds	0.2344	20
Sulfur Dioxide	0.0452	20
Oxides of Nitrogen	1.7410	20
Carbon Monoxide	0.2895	80

* (<http://www.tceq.state.tx.us/assets/public/assistance/sblga/overview.pdf>)

Regional Air Pollutant Emissions Summary

The San Antonio area is considered “better than national standards” for all criteria pollutants other than ozone. San Antonio is classified as “nonattainment-deferred” as of 30 April 2004. In June 2002 USEPA Region 6 endorsed the concept of early voluntary 8-hour ozone air quality plans known as Early Action Compacts (EACs). An EAC is tailored to local needs and is developed to implement control strategies to account for regional growth while achieving and maintaining the 8-hour ozone standards. This approach offers a more expeditious timeline for achieving emission reductions earlier than USEPA's expected 8-hour implementation rulemaking, while offering "fail-safe" provisions for the area to revert to the traditional State Implementation

Plan (SIP) process if specific milestone are not met. On 9 December 2002, the Alamo Area Council of Governments (AACOG), representing the San Antonio EAC Region (SAER), entered into an EAC agreement with TCEQ and USEPA. A final EAC was developed and submitted to TCEQ on 31 March 2004. On 2 June 2005, USEPA issued final approval to extend the deferral of the effective date of air quality designation for EAC areas that will still be covered by the 1-hour ozone standards as they work to meet the 8-hour standard ahead of schedule. One of these areas is the SAER. USEPA has extended the deferral of the effective date for each EAC area until 31 December 2006. Under the EAC, the SAER must keep certain 1-hour ozone controls in place until they meet the more protective 8-hour ozone standard. In exchange for a deferred effective date of their 8-hour ozone designation, AACOG has agreed to take action to achieve clean air earlier than required under the 8-hour ozone standard (<http://www.tceq.state.tx.us/implementation/air/sip/eac.html>). Table 4-5 summarizes air pollutant emissions for Bexar and Comal Counties in 2002.

Table 4-5 2002 Bexar and Comal Counties Air Emissions

County	VOC (ton/yr)	NO_x (ton/yr)	CO (ton/yr)
Bexar	77,469.05	30,297.79	80,425.94
Comal	9,876.51	5,839.46	11,438.61

VOC = volatile organic compounds

NO_x = oxides of nitrogen

CO = carbon monoxide

Source: http://www.aacog.com/NaturalResources/2002_NET_EI

4.4.2 Consequences

Preferred Alternative

Increased boiler usage and propane combustion from new boilers/heaters associated with the preferred alternative would potentially cause air pollutant emissions to increase. No other increases in air emissions from other sources are indicated from the preferred alternative.

Boiler/heater emissions increases are estimated at:

- NO_x: 0.10 ton per year (200 pounds per year)
- VOC: 0.01 ton per year (20 pounds per year)
- CO: 0.17 ton per year (340 pounds per year)

Combustion sources in the six buildings would be removed as part of the deconstruction/demolition. The new AFRC would require new combustion sources for space heating.

Annual emissions from Camp Bullis are not expected to increase sufficiently to trigger permitting requirements at the state or federal level. Camp Bullis air emissions would increase from the 2003 baseline only slightly from implementing the preferred alternative. Camp Bullis emissions would be roughly only 0.01 percent of the overall Bexar County emissions. The generation of ozone precursors (VOCs and NO_x) from construction and operation of the AFRC would not be expected to contribute appreciably to the formation of ozone in Bexar or Comal Counties. Nevertheless, there would be a potential increase in criteria pollutants from AFRC operation (Table ES-1). Dust suppression best management practices (BMPs) would be implemented during the construction phase to reduce or eliminate fugitive dust.

No Action Alternative

Under the no action alternative, conditions affecting the air quality would remain the same as the present activities.

4.5 NOISE

Section 4(b) of the Noise Control Act (NCA) of 1972 (Public Law 92-574) directs federal agencies to comply with applicable federal, state, and local noise requirements with respect to the control and abatement of environmental noise. Congress defined environmental noise in the NCA to mean the intensity, duration, and character of sounds from all sources. The City of San Antonio and the State of Texas have not enacted any noise regulations or statutes (USACHPPM, 2005).

Noise is commonly defined as any sound that is undesired or interferes with hearing or is loud. Noise pollution is defined as “environmental pollution consisting of annoying or harmful noise.” A number of sounds produced by Army installations are considered noise or noise pollution by the military community and those who live and work around installations (USACHPPM, 2005).

4.5.1 Affected Environment

Description of Noise Sources

The major sources of noise at Camp Bullis include small arms ranges, the use of explosive simulators in training areas and ranges, the use of explosives during quarrying and training

exercises, and aircraft noise (U.S. Army, 2006b; USACHPPM, 1999). None of these sources of noise are associated with the preferred alternative. The noise associated with the preferred alternative would be due to the construction phase of the project.

Noise Descriptors

The day-night level (DNL) is the primary descriptor for military noise, except for small arms. The DNL is the time-weighted energy average sound level occurring over a 24-hour period with a 10-decibel (dB) penalty added to the nighttime levels between 10 pm and 7 am. Sound is the variation of the air pressure about a mean atmospheric pressure of 1.47 pounds per square inch. Sound pressure levels are expressed as dB (USACHPPM, 2005).

DNL combines five major factors of noise annoyance into a single index: loudness, duration, frequency, time of day, and nature of the disturbance (USACHPPM, 2005). Noise frequency weighting is used since the human ear is not equally sensitive to all the frequencies of sound within the entire spectrum. "A weighting" (dBA) parallels the sensitivity of the human ear when it is exposed to normal levels, and a "C weighting" (dBC) is suitable for use when the ear is exposed to higher sound levels. Therefore, dBA has been used for aircraft noise models and dBC for explosives and large-caliber weapons noise models. For small arms (50 caliber and below) research has indicated that weather is a consideration when evaluating noise associated with discharging these weapons on outdoor ranges. The peak metric (PK15 [met]) contour shows sound levels that are expected to fall within the contours 85 percent of the time. This metric represents the best available data for assessing the complaint risk of large and small caliber weapons ranges. The peak metric PK15 (met) is used for predicting this noise attenuation (USACHPPM, 2006).

Noise consideration in the cantonment area is limited to elevated noise levels due to existing small arms and large weapons training and helicopter noise generated by flights along the Camp Bullis Road corridor. The noise level from these sources indicate a Noise Zone II land use that is acceptable for commercial, industrial, and transportation uses, but if used for residential then a noise level reduction of 25-30 dB incorporated in the design and construction of facilities is recommended.

4.5.2 Consequences

Noise impacts would be considered significant if there were long-term increases in the number of people highly annoyed by the noise environment or unacceptable increases to the noise

environment for sensitive receptors were expected. A sensitive receptor is defined as any person or group of persons in an environment where low noise levels are expected, such as schools, daycare facilities, hospitals, and nursing homes. The City of San Antonio defines noise sensitive uses to include these noise sensitive receptors: residences, religious institutions, libraries, museums, concert halls, bank shells, auditoriums, research facilities, and other land uses which require a quiet environment to function effectively (City of San Antonio Municipal Code).

Preferred Alternative

The primary sources of noise associated with construction activities would be the use of heavy trucks (dump trucks and concrete mixers), bulldozers, backhoes, generators, and ground compactors. These vehicles and equipment items generate noise during deconstruction/demolition, site and foundation preparation, construction, and finishing work. The levels of noise generated by these vehicles and equipment during these activities are shown in Table 4-6.

Table 4-6 Peak Sound Pressure Level of Heavy Equipment

Equipment	Noise Level* (dBA)
Bulldozer	62-95
Scraper	76-98
Front Loader	77-94
Backhoe	74-92
Grader	72-92
Crane	70-94

*from a single source at a distance of 50 ft

Source: US DOT

There would be a slight increase in overall noise levels at the preferred alternative site from the construction activity and a slight increase in vehicle traffic.

There are no noise sensitive uses at Camp Bullis. The residential subdivisions near Camp Bullis are noise sensitive areas. However, construction noise would not be expected to travel off-post. Short-term, localized interference with speech at construction sites may occur. Construction noise would be managed as an occupation health matter under Occupational Health and Safety Administration (OSHA) regulations at 29 CFR 1926. Adherence to the personnel protective equipment and safety training requirements in these OSHA regulations would minimize or eliminate risk of hearing loss to construction workers.

The preferred alternative siting in the cantonment area is compatible with the existing noise levels generated by training activities on Camp Bullis without restrictions. The Army uses the PK 15 (met) noise level to account for the statistical variation in weapons noise levels due to weather. Weather conditions from day to day can hinder or favor sound propagation. The noise programs calculate a range of PK levels to account for different weather conditions. The PK15 (met) contours for small caliber weapons noise at Camp Bullis indicate a low probability for receiving noise complaints from occupants of the barracks at the new AFRC. Disturbance to barracks occupants would not be expected to occur, except during night firing operations at Small Arms Ranges 1 and 2. The noise level reduction of 20-25 dB for small arms that normal, energy efficient, permanent construction provides can be expected to reduce the complaint potential.

No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used.

4.6 GEOLOGY AND SOILS

4.6.1 Affected Environment

Geology

Camp Bullis lies on the edge of the Edwards Plateau in a region called the Texas Hill Country. A broad area of faulted limestone known as the Balcones Escarpment forms the southern and eastern edge of the Edwards Plateau and crosses the southeastern corner of Camp Bullis near the cantonment area and the preferred alternative location.

Camp Bullis is underlain primarily by formations of the Trinity Group, including the lower and upper members of the Glen Rose Limestone (Texas Department of Water Resources [TDWR], 1983). The Upper Glen Rose, which consists of beds of moderately resistant and massive chalky limestone alternating with beds of less resistant, marly (loose and crumbly) limestone, covers approximately 74 percent of Camp Bullis. The Lower Glen Rose covers 14 percent at the northern edge of the training site. Overlying a small portion of the Glen Rose at the southern edge of Camp Bullis is the Kainer Formation of the Edwards Group (Veni, 1998).

Caves and Karst Features

The Camp Bullis landform is a typical representative of karst geology. Karst geology is defined as an aggregate of characteristic landforms (lapis, sinkholes) and subsurface features (caves) produced primarily by the dissolution of soluble rocks (Soil Science Society of America, 2005).

Subsurface karst features (caves) commonly occur in the Edwards Group. Caves have been located throughout Camp Bullis but are predominantly found in the Lower Glen Rose Formation and Kainer Formation of the Edwards Group. As of 2006, 964 karst features, including 102 caves, 23 caves with federally listed species (*Rhadine infernalis ewersi*, *R. exilis* and/or *Cicurina madla*), and 160 other karst features, had been identified on Camp Bullis (Veni, 2006).

Five types of noncavernous karst features are present on Camp Bullis, with sinkholes being the dominant type. Collapsed sinkholes occur when surface bedrock and soil drop into the underlying void. The dominant karst feature found on Camp Bullis, solution sinkholes (formed by flowing water), account for approximately half of those identified. Many of these are small, less than 7 feet in diameter and less than 1 foot deep. Most of these solution sinkholes are short, shallow drainage features leading to highly permeable fractures, cavities, or pits. Highly permeable fractured limestone allows sufficient drainage into the ground, minimizing overland flow that would promote development of sinkholes (Veni, 1994).

The greatest number of solution-enlarged fractures occurs in the southern portion of Camp Bullis. Most of these features are buried under soil and rubble and are not visible at the surface. Some of the other features are exposed but may be only a few millimeters wide. To reveal the full extent of features or to gain access to them, soil, rubble, and debris must be excavated. Karst features in relation to the location of the preferred alternative is shown in Figure 4-3.

Topography

The topography of Camp Bullis consists of numerous hills and valleys that are drained by intermittent streams that flow east and south. Erosional differences between the stratigraphic units of the Upper Glen Rose layers have resulted in the formation of a terrace type of topography. King Ridge (elevation 1,515 feet), Otis Ridge (elevation 1,480 feet), and High Hill (elevation 1,490 feet) are the most prominent landforms on Camp Bullis. Salado Creek and Lewis Creek are the major drainages that direct surface water runoff from Camp Bullis (United States Geological Survey [USGS], 1992).

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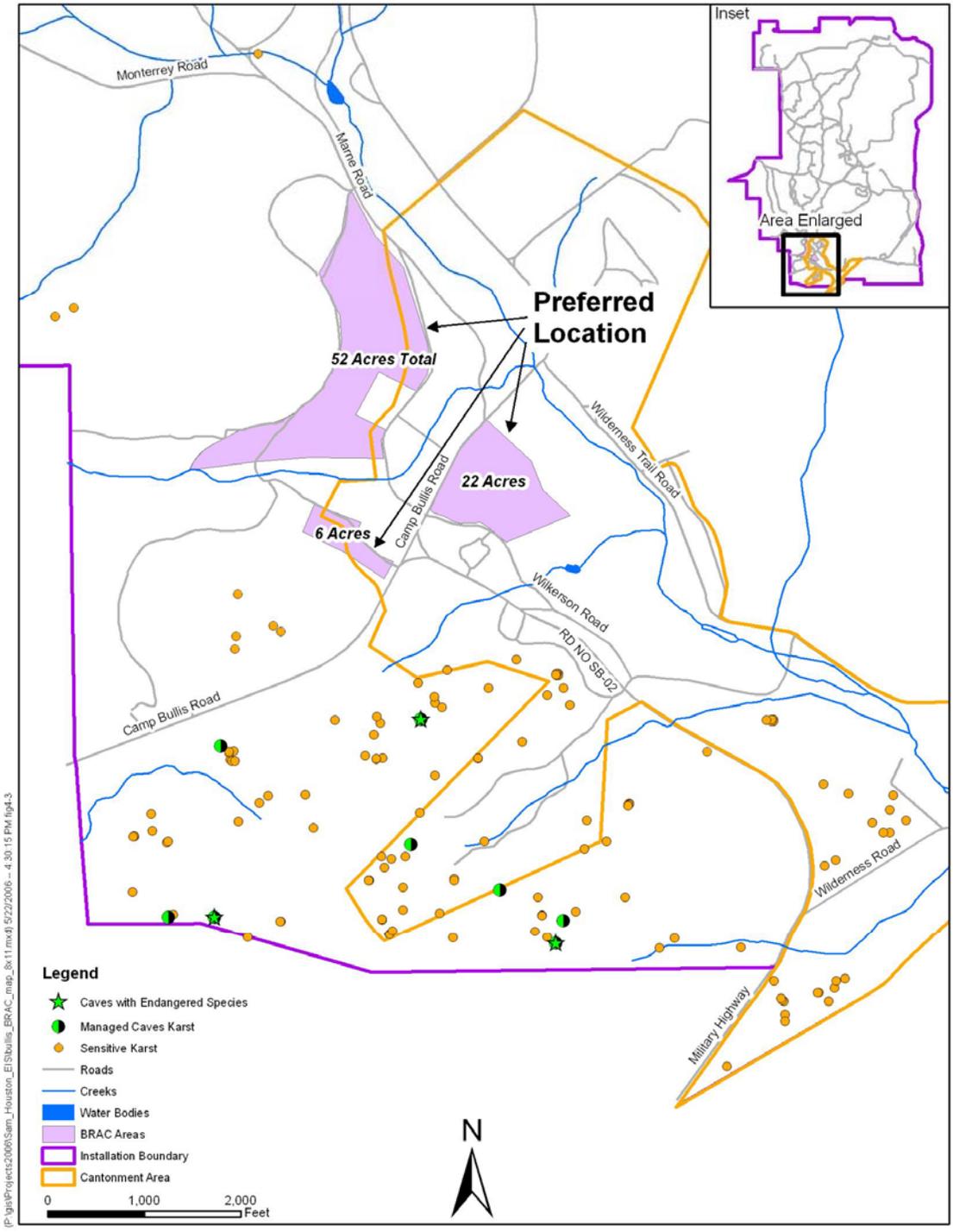


Figure 4-3 Karst and Archaeological Features within the Cantonment Area
 Source: Camp Bullis GIS

Soils

The predominant soils on Camp Bullis are of the Tarrant and Bracket series. These thin clay soils form in weathered limestone bedrock. The Tarrant series occurs on gently undulating, 1 to 5 percent slopes and consists of stony soils of limestone prairies. The Bracket series is on steeper slopes (12 to 30 percent) and are predominantly clay and loam. Both of these soils are well drained, but both have high erosion potential (Natural Resources Conservation Service [NRCS], 1999).

Other soil series on Camp Bullis include Krum, Lewisville, Crawford, Patrick, Venus, and Bexar. Two soil complexes occur on Camp Bullis—the Crawford and Bexar and the Trinity and Frio—where each soil series is so intermixed with the other that mapping at the scale used precludes separating into discrete units. The Trinity and Frio soils are clay and clay loam and occur in the floodplains of small and large drainages. They are flooded at least once annually and on Camp Bullis are found in the Salado Creek drainage. Trinity is the only hydric soil found on Camp Bullis (NRCS, 1995). Soils within the 52-acre parcel are fill material that has been brought into the site to provide a level surface for training operations. Erosion has caused deep crevices to form, creating water diversion channels that divert the stormwater runoff and create further erosion.

4.6.2 Consequences

Preferred Alternative

The preferred alternative would have no significant adverse impact on the geology at Camp Bullis. Prior to construction, an SWPPP would be developed and implemented to control erosion and runoff on all three parcels. Specific permitting and technical requirements for this Stormwater Pollution Prevention Plan (SWPPP) are discussed in Section 4.7.2. No significant long-term impacts to the soils would be expected as a result of the preferred alternative. Short-term impacts could be mitigated by the aforementioned BMPs, including erosion and sediment control, along with land reclamation.

No detrimental effects to karst features are expected, as the closest known feature is more than 1,000 feet away from the preferred alternative locations (see Figure 4-3). Additionally, site improvements as a result of the preferred alternative should improve the grading and reduce the erosion potential from the barren land in the 52-acre parcel.

No Action Alternative

Under the no action alternative, conditions affecting the geology and soils would remain the same as the present activities; there would be no significant impacts. Additionally, the no action alternative would not improve the land surface or stabilize the soil, allowing erosion to continue.

4.7 WATER RESOURCES

Water resources at Camp Bullis include surface water, groundwater, floodplains, and wetlands. Wetlands are further defined in Section 4.8.

4.7.1 Affected Environment

Surface Water

Surface water resources include lakes, ponds, rivers, and streams. Six small creeks drain Camp Bullis. The creeks are intermittent in nature, fed primarily by precipitation from storms, and exist as dry streambeds the remainder of the year. Stormwater runoff at Camp Bullis flows overland as sheet wash, is collected by these natural channels and streams, and eventually drains into the San Antonio River. In addition, springs along Panther Springs Creek and Lewis Creek periodically produce surface flow for several hundred feet before disappearing into fractures, caves, and sinkholes in the streambeds (U.S. Army, 2005a). Panther Springs Creek originates in the east central portion of Camp Bullis. Lewis Creek forms in the northern portion of Camp Bullis and flows southeast into Salado Creek approximately ½-mile north of the preferred alternative location. Salado Creek, the primary surface water drainage on Camp Bullis, is located near the west edge of the installation and drains southeast. Runoff from the proposed location flows south and east into drainage that heads east to Salado Creek. Additional primary surface water drainage on Camp Bullis is provided by Cibolo Creek. Surface water features in the vicinity of the preferred alternative are shown in Figure 4-4.

Camp Bullis has three large flood control structures. These structures, which are owned and maintained by the San Antonio River Authority (SARA), are not designed to permanently impound large quantities of water; however, they allow stormwater runoff to flow downstream at a controlled rate. There are also several man-made stock ponds and wildlife guzzlers (small water-gathering structures for wildlife) scattered throughout the camp, as well as wastewater holding ponds in the cantonment area (U.S. Army, 2005c). Two semi-permanent ponds are located on Camp Bullis: Pond 22 on Lewis Creek and Sewell Pond on an unnamed drainage into Panther Springs Creek (USGS, 1992).

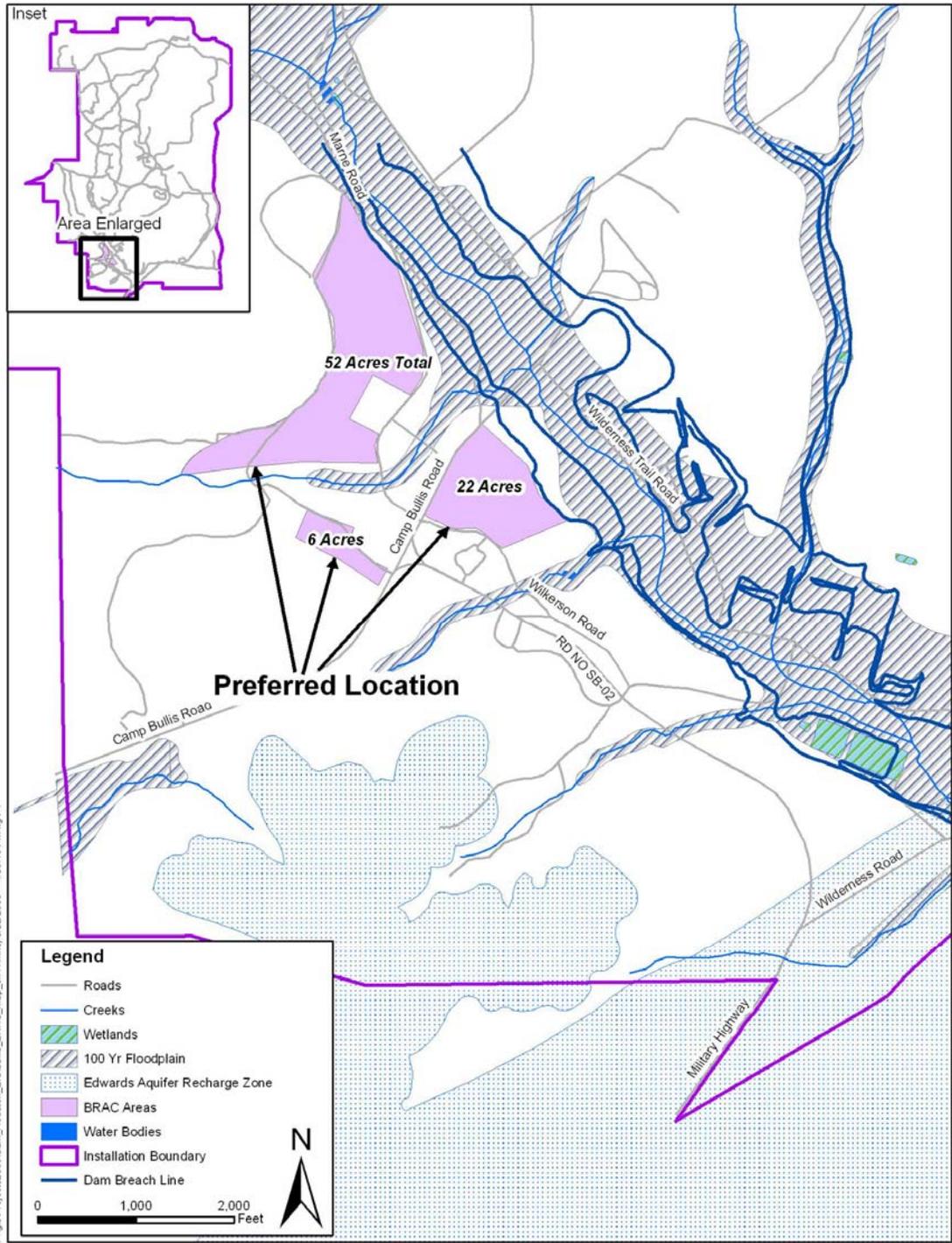


Figure 4-4 Water Features Within the Cantonment Area
Source: Camp Bullis GIS

Camp Bullis protects the water quality in its watershed through compliance with a number of federal, state, local, and DoD environmental regulations that require the installation to have detailed spill control and response procedures and to implement stormwater pollution prevention BMP. Camp Bullis maintains specific stormwater protection measures including an SWPPP; a Spill Prevention, Control, and Countermeasures Plan (SPCCP); and a Hazardous Waste Management Plan (HWMP). Compliance with these plans reduces the potential for adverse effects on water quality.

Hydrogeology/Groundwater

Groundwater includes subsurface water resources such as aquifers that are used for domestic, agricultural, and industrial purposes. Groundwater beneath Camp Bullis exists in stratigraphic layers that contain enough space for water to move freely. The limestone formations beneath the camp exhibit faults, fractures, and areas of dissolution that contribute to its ability to contain groundwater. Shale, marl, and clay produce confining layers that inhibit groundwater movement; however, if faulting or fracturing displaces these layers, a pathway for groundwater to move is created (TDWR, 1983).

The oldest formations containing groundwater under Camp Bullis are the Travis Peak Formation and Glen Rose Formation. Collectively, these formations make up the Trinity Group, which has been divided into three water-bearing units based on hydraulic continuity. The upper member of the Glen Rose Formation (also known as the Glen Rose Aquifer) makes up the upper member of the Trinity Group Aquifer. The lower member of the Glen Rose Formation is part of the middle member of the Trinity Group Aquifer. The rest of the middle and the lower members of the Trinity Group Aquifer represent the Travis Peak Formation (TDWR, 1983). The Edwards Aquifer contains rock younger than the Trinity Group and is restricted to the southeast corner and northern edge of the installation. The Edwards Aquifer recharge zone along the southern boundary of the cantonment area is shown in Figure 4-4, along with the location of the preferred alternative sites. Groundwater movement in the Trinity and Edwards aquifers is extremely variable due to the physical characteristics of the rock. Limestone and calcareously cemented sandstone depend on secondary porosity in the form of solution channels, fractures, and faults to transmit groundwater. Water production in these rock types can be erratic, resulting in unpredictable yields at different well locations.

The Edwards Limestone and Glen Rose Formation both outcrop in Camp Bullis. As a result, portions of Camp Bullis recharge both aquifers. The Glen Rose Formation derives its recharge

from direct precipitation on the outcrop and streams flowing across the outcrop. The northern portion and southeast corner of the installation provide recharge to the Edwards Aquifer. Stream flow in Salado Creek crosses the Edwards Limestone in the south-central portion of Camp Bullis, providing recharge to the Edwards Aquifer. Cibolo Creek at the north end of the facility also recharges the Edwards Aquifer. Camp Bullis obtains its water supply from wells installed in the Upper Trinity (Glen Rose) Aquifer (U.S. Army, 2005c; TDWR 1983).

Floodplains

Low-lying areas that are prone to flooding are defined as floodplains. The Federal Emergency Management Agency (FEMA) defines a 100-year flood as a flood that has a 1 percent chance of being equaled or exceeded in any given year. The area affected by the 100-yr flood is defined as the 100-yr floodplain. Areas within the 100-year floodplain are considered susceptible to flooding.

The cantonment area is adjacent to the Salado Creek floodplain. The drainage for Salado Creek above the cantonment area is approximately 12,350 acres. To minimize severity of downstream flooding, three water retention dams were installed on Camp Bullis. These flood control structures and other natural drainages provide adequate storage and stormwater desynchronization to almost eliminate flooding at the installation (U.S. Army, 2005c). In addition, water impoundment would provide some recharge to the Edwards Aquifer (Edwards Aquifer Authority [EAA], 2006); however, no studies have been completed to quantify the recharge (SARA, 2006). Although flooding is seldom a problem on Camp Bullis, low water crossings are occasionally inundated during storm events. The proposed location lies west of and above the 100-year floodplain. Floodplains in the preferred alternative location are shown in Figure 4-4. Dam breach lines for the flood retention basin downstream of the preferred alternative site are shown in this figure.

Wetlands

Wetlands are addressed from a biological resource perspective further and in greater detail in Section 4.8. Wetlands in the vicinity of the preferred alternative are shown in Figure 4-4.

4.7.2 Consequences

Preferred Alternative

Surface Water

The preferred alternative to construct an AFRC in the cantonment area of Camp Bullis would have no significant adverse impacts on surface water. The Army does not propose to divert or alter current streambeds or creeks, nor conduct any other activity that would threaten or damage a unique hydrologic characteristic. Although the AFRC is not within the Edwards Aquifer Recharge Zone, it is within the Edwards Aquifer Contributing Zone. Before any work is initiated, an Edwards Aquifer Contributing Zone Plan would be prepared in addition to the SWPPP. Additionally, because the construction site is on Edwards Aquifer Contributing Zone, Edwards Aquifer Protection and Contributing Plans would be required by TCEQ Subchapters 213A and 213B.

The area of construction would disturb an area of 5 or more acres, or would be part of a larger common plan of development that disturbs 5 or more acres, which is subject to regulation under TCEQ Construction General NPDES Permit TXR150000. This permit covers projects of this size from which runoff goes into or adjacent to any surface water in the state. This permit requires development and implementation of a SWPPP before construction activities begin. The SWPPP must include erosion and sediment controls, interim and permanent stabilization controls, and, if necessary, a description of any structural controls to divert flows away from exposed soils. For downslope boundaries, silt fences, vegetative buffer strips, or equivalent sediment controls would be required. Prior to construction on the preferred alternative site, a Notice of Intent for coverage under this permit would be submitted and a SWPPP would be developed and implemented.

Camp Bullis also has a Pollution Prevention Plan (PPP) and an SPCCP for preventing and handling accidental spills. These plans also help to avoid or minimize any potential significant adverse impacts to surface water. BMPs are in place to prevent surface water runoff from causing surface soil erosion and siltation in the streams and creeks. The installation SWPPP for industrial sources, SPCCP, and PPP would be updated to address the preferred alternative sites, to include the AFRC vehicle maintenance facility.

Groundwater

Camp Bullis obtains its drinking water from the Glen Rose Aquifer. At this time, there are no withdrawal limits on the Glen Rose Aquifer; therefore, water availability and increased water

usage due to the preferred alternative is not an immediate concern. The development of areas around Camp Bullis continues to increase demand for the groundwater supplies in the Glen Rose Aquifer.

Contamination has been detected in the groundwater at Landfill 8 in the central portion of the installation (see Figure 4-8). Camp Bullis is still investigating the extent of this contamination and determining the manner in which it will be addressed; the installation has an active program to monitor the potential migration of groundwater contamination from old waste sites. Groundwater contamination is not anticipated to have reached the cantonment area. The groundwater at Landfill 8 is part of the Glen Rose Aquifer.

Camp Bullis does not pump water from the Edwards Aquifer but relies completely on the Glen Rose Aquifer for potable water. Although there is some evidence that the Glen Rose and Edwards aquifers may be connected in some manner, this connection has not been fully accepted, and the nature of the interrelation between the two aquifers, if any, is not known.

The northern boundary and southeastern portion of the installation provide recharge to the Edwards Aquifer (see Figure 4-4). For the most part, Camp Bullis limits the types of training that may occur in the recharge areas. Activities with little potential for impact, such as orienteering, compass courses, limited bivouacs, and patrolling, are permitted. Vehicles are used in the recharge areas only for troop transport and general maintenance of the installation and are restricted to established roads and trails in each training area. Activities with great potential for impact, such as field kitchens, field laundries, field bath units, field refueling, and field decontamination exercises, are not allowed in the recharge zone.

Selection of the preferred alternative should have no significant negative impacts on groundwater quality. Camp Bullis does not use a large amount of water from the Glen Rose Aquifer, nor does it pump from the Edwards Aquifer. In addition, the installation no longer disposes of solid waste on site. Furthermore, focused management plans, such as the SWPPP and PPP, have been developed for Camp Bullis and are in place to protect against or mitigate negative effects on groundwater quality that may be caused by installation activities.

Camp Bullis is rapidly becoming one of the last regions in Bexar County that still contain relatively pristine portions of the Edwards Aquifer recharge area. As the City of San Antonio expands over its portions of the Edwards Aquifer recharge zone, Camp Bullis remains proactive

in its protection of those portions of the recharge zone within its boundaries and is seeking community partners to join its efforts in recharge enhancement (U.S. Army, 2006b).

Floodplains

Training exercises in floodplains could increase erosion from additional traffic, resulting in increased levels of suspended solids. Erosion of the waterways and siltation of the floodplains is minimized, however, by the use of BMPs and preventive measures. Those training activities with greatest potential for causing or aggravating erosion (e.g., tracked-vehicle maneuvers) are conducted in a manner designed to reduce impacts (e.g., stream crossings at specially constructed and designated crossing points only). Because these measures are used, there would be no significant adverse impacts to floodplains (U.S. Army, 2006a).

No Action Alternative

Under the no action alternative, conditions at the installation would remain the same with no change. There would be no significant impacts to the water resources on base due to the selection of the no action alternative.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

Camp Bullis is located in a residential/rural environment. The majority of the land is undeveloped.

Vegetation

Camp Bullis and the location of the preferred alternative are situated in Bexar and Comal counties, which lie within two of the Level IV Ecoregions of Texas, the Northern Blackland Prairies (Ecoregion 32a) and the Balcones Canyonlands (Ecoregion 30c). Each ecoregion is described below (Griffith et al., 2004).

The rolling to nearly level plains of the Northern Blackland Prairie ecoregion are underlain by interbedded chinks, marls, limestones, and shales of Cretaceous age. Soils are mostly fine-textured, dark, calcareous, and productive Vertisols. Historical vegetation was dominated by little bluestem, big bluestem, yellow Indiangrass, and tall dropseed. In lowlands and more mesic sites, such as on some of the clayey Vertisol soils in the higher precipitation areas to the northeast, dominant grasses were eastern gamagrass and switchgrass. Also in the northeast, over loamy Alfisols, were grass communities dominated by Silveanus dropseed, Mead's sedge,

bluestems, and long-spike tridens. Common forbs included asters, prairie bluet, prairie clovers, and black-eyed susan. Stream bottoms were often wooded with bur oak, Shumard's oak, sugar hackberry, elm, ash, eastern cottonwood, and pecan. Most of the prairie has been converted to cropland, non-native pasture, and expanding urban uses around Dallas, Waco, Austin, and San Antonio.

The Balcones Canyonlands ecoregion forms the southeastern boundary of the Edwards Plateau (Ecoregion 30). The Edwards Plateau was uplifted during the Miocene epoch at the Balcones Fault Zone, separating central Texas from the coastal plain. The Balcones Canyonlands are highly dissected through the erosion and solution of springs, streams, and rivers working both above and below ground; percolation through the porous limestone contributes to the recharge of the Edwards Aquifer. High-gradient streams originating from springs in steep-sided canyons supply water for development on the Texas Blackland Prairies (Ecoregion 32) at the eastern base of the escarpment. Ecoregion 30c supports several endemic plants and has a higher representation of deciduous woodland than elsewhere on the Edwards Plateau (Ecoregion 30), with escarpment black cherry, Texas mountain-laurel, madrone, Lacey oak, bigtooth maple, and carolina basswood. Some relics of eastern swamp communities, such as bald cypress, American sycamore, and black willow, occur along major stream courses. It is likely that these trees have persisted as relics of moister, cooler climates following the Pleistocene glacial epoch. Toward the west, the vegetation changes gradually as the climate becomes more arid. Plateau live oak woodland is eventually restricted to north- and east-facing slopes and floodplains, and dry slopes are covered with open shrublands of juniper, sumac, sotol, acacia, honey mesquite, and ceniza.

Vegetation on Camp Bullis is typical for the Edwards Plateau area of Texas. Vegetation was studied on Camp Bullis in 1994, 1995, and 1996 and consists of over 500 species (U.S. Army, 2001). These studies found five distinct plant communities: woodland plant communities of intermittent streams and adjacent floodplains, wetland plant communities, grassland savanna plant communities, upland wood plant communities, and plant succession on disturbed ground. According to the Integrated Natural Resources Management Plan (INRMP), 61 percent of the installation consists of woodland plant communities, 31 percent was grassland savanna, 6.5 percent was disturbed grassland communities, and the remainder was developed/urban areas (U.S. Army, 2001a).

Wildlife

Various studies have indicated that Camp Bullis contains at least 57 mammal species, 157 bird species, 92 species of reptiles and amphibians, and 14 species of fish (U.S. Army, 2001). A full listing of these species is detailed in the 2001 INRMP.

Sensitive Species

According to the U.S. Fish and Wildlife Service (USFWS), 19 species protected under the Endangered Species Act potentially occur or are imminently affected by actions in Bexar County, and 10 species potentially occur or are imminently affected by actions in Comal County. Critical habitat in Bexar County (1,063 acres in 22 units) for the nine federally endangered karst/invertebrate species was designated in April 2003 (50 CFR §17). Neither Fort Sam Houston nor Camp Bullis contain federally designated critical habitat for these invertebrate species. Additionally, the Texas Parks and Wildlife Department (TPWD) has listed 18 species as state threatened or endangered in Bexar County and 11 species in Comal County.

Table A-1 in Appendix A presents the habitat requirements and threatened and endangered species lists for state and federally listed threatened and endangered species occurring or potentially occurring in Bexar and Comal counties. According to USFWS records, several threatened and endangered bird species could use portions of the installations during annual migration, including the whooping crane and arctic peregrine falcon. Two species listed as threatened by TPWD, the widemouth blindcat and the toothless blindcat, may be present near Camp Bullis (U.S. Army, 2001a). Camp Bullis is known to have habitat for five federally protected species (2 bird species and 3 invertebrate species).

Camp Bullis annually monitors for golden-cheeked warbler (GCW) and black-capped vireo (BCV) (U.S. Army, 2005a). Table 4-7 indicates the estimated population of GCW and the number of territories of BCV from 1991 to 2005.

Table 4-7 Summary of GCW and BCV Indicators at Camp Bullis

Year	GCW Estimated Population	BCV Territories
1991	184	11-13
1992	158	9-11
1993	126	12
1994	130	10-11
1995	nda	7-9
1996	nda	6-8
1997	nda	12-17
1998	155	13
1999	317	9-11
2000	249	10
2001	672	7
2002	750	18
2003	551	28
2004	673	23
2005	485	13

nda = no data available

As of 2006, 964 karst features, including 102 caves, 23 caves with federally listed species (*Rhadine infernalis ewersi*, *R. exilis* and/or *Cicurina madla*), and 160 other karst features, had been identified on Camp Bullis (Veni, 2006). All the federally listed cave-dwelling species identified by the USFWS are threatened by urban expansion onto karst features of San Antonio and communities surrounding Camp Bullis and into the recharge areas associated with the Glen Rose and Edwards aquifers (U.S. Army, 2006b). Sensitive habitats near the preferred alternative locations are shown in Figure 4-5.

Wetlands

Activities that result in dredging and/or filling of jurisdictional waters of the United States are regulated under Section 404 of the CWA and by EO 11990, *Protection of Wetlands*. USACE has established Nationwide Permits (NWP) to efficiently authorize common activities that do not significantly impact waters of the United States. The NWP were modified and reissued by USACE in the Federal Register on 18 March 2002. USACE has the responsibility to authorize permitting under a NWP or to require an Individual Permit (IP). Nonjurisdictional wetlands on federal properties are also protected under EO 11990. Federal agencies are directed to all extent practicable to avoid or minimize impacts to wetlands and to enhance and protect existing wetlands. Impacts to wetlands should be avoided unless there is no practicable alternative to avoid or minimize impacts to these waters. If affected, the wetlands should be mitigated to ensure no net loss of functions and values as provided by the impacted wetlands.

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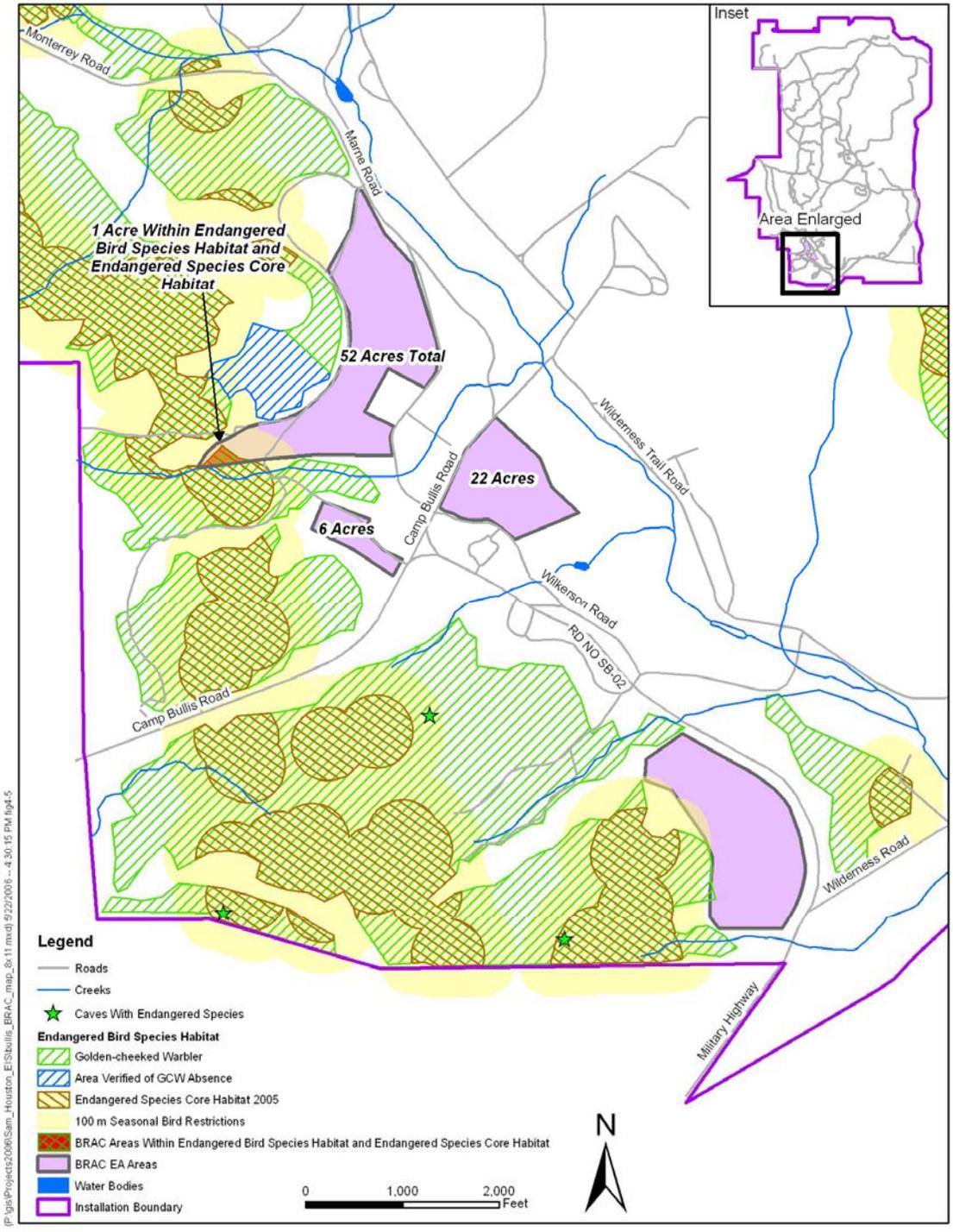


Figure 4-5 Endangered Species Habitat
Source: Camp Bullis GIS

A wetlands inventory of Camp Bullis was also conducted by USFWS in 1999 (U.S. Army, 2001a). This inventory identified 88 acres of wetlands in the installation. These wetlands were classified as 40 percent palustrine emergent wetlands (PEW), 25 percent palustrine unconsolidated shores (PUS), 20 percent palustrine unconsolidated bottom (PUB), 10 percent palustrine forested wetlands (PFW), and 5 percent palustrine scrub/shrub (PSS). Additionally, 42 acres of lacustrine unconsolidated shores (LUS) were identified. Wetlands near the proposed alternative location are shown in Figure 4-4.

Management Plans

Camp Bullis natural resources are managed under an overarching INRMP. Additional management plans for Camp Bullis exist due to the presence of federally protected species and unique ecological areas. The INRMP for Fort Sam Houston and Camp Bullis describes the existing environment, the natural resources management goals, and project objectives for the 5-year period from 2000 to 2005. The INRMP is the baseline document for natural resources management and is supplemented through additional management plans as the need arises. The Endangered Species Management Plan (ESMP) is a tool to minimize the effects to federally protected species and their habitats located on Camp Bullis (U.S. Army, 2005b). This plan is written for the period for FY 2005 through FY 2009. Table A-2 in Appendix A describes the objectives of the ESMP and the actions proposed and undertaken to meet those objectives.

Karst Management Plan

A Karst Management Plan (KMP) was developed in 2002 to assist Camp Bullis in managing the protection of karst species by protecting the unique ecological zones containing and adjacent to karst features on the installation. The KMP identified 37 biologically significant caves within the Camp Bullis karst management areas. No known karst features were within approximately 1,000 feet of the preferred alternative location (see Figure 4-3).

Biological Opinion

The GCW and BCV are managed and studied under the terms of the 28 July 2005 Biological Opinion (BO) from the USFWS (U.S. Army, 2005c). Under the BO, the USFWS requested the following reasonable and prudent measures are necessary and appropriate to minimize incidental take of GCW and BCV:

1. Minimize harassment and harm of GCW or BCV during activities associated with implementing the projects

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2. Minimize effects of temporary losses and degradation of habitat of GCW and BCV and, to the greatest extent practicable, restore habitat to pre-project conditions

The following terms and conditions were requested by USFWS to implement reasonable and prudent measure number one:

- A. To the greatest extent practicable, conduct authorized activities within GCW or BCV between 15 August and 28 February. This is the non-nesting period for GCW and BCV and potential adverse effects are minimized and avoided.
- B. To the greatest extent practicable, minimize authorized activities within core GCW habitat and adjacent riparian areas or within known nesting territories of BCV during the nesting and post-fledging season (1 March to 14 August).
- C. Inform personnel involved in any authorized activity covered by this programmatic opinion of the terms and conditions of this biological opinion before implementation of the authorized activity.
- D. Allow GCW or BCV encountered during authorized activities to move away from activities on their own. Capture and relocation of trapped or injured birds can only be attempted by personnel with current USFWS recovery permits pursuant to section 10(a)1(A) of the Act.
- E. To the greatest extent practicable, restrict movement of heavy equipment between a project site and established roadways to minimize habitat disturbance.
- F. Conduct BCV and GCW surveys annually to facilitate routine operation planning efforts that will avoid and minimize adverse effects caused by routine operations.

The following terms and conditions were requested by USFWS to implement reasonable and prudent measure number two:

- A. Designate known occupied habitat of federally-listed species as Environmentally Sensitive Areas, and personnel shall, to the greatest extent practicable, avoid such areas.
- B. After completion of activities covered by this programmatic opinion that result in habitat alteration, remove temporary fill, construction, or other debris and, wherever feasible, disturbed areas to pre-project conditions.
- C. Ensure compliance with the Reporting Requirements to assist in management decisions that will avoid and minimize effects on GCW, BCV, and their associated habitats.

4.8.2 Consequences

Preferred Alternative

Implementing the preferred alternative would not result in significant effects to biological resources at Camp Bullis. Under the preferred alternative, approximately 80 acres would be used for the construction of and operational activities at the AFRC. The preferred alternative location is adjacent to the cantonment area of Camp Bullis, which is developed and contains associated infrastructure for facilities. This alternative would construct facilities and additional infrastructure on the majority of the acreage, thereby removing a small percentage (less than 1 percent of the land area) of disturbed grassland/oak savanna acreage on the installation. Existing wildlife would be anticipated to relocate to other adjacent areas within the installation.

This alternative is adjacent to and contains approximately 1 acre of core habitat for the federally endangered GCW. "Core" habitat is habitat that has been occupied during the past three consecutive years and is delineated by placing a 10-acre circle around each bird location (U.S. Army, 2005b). The ESMP also imposes a 100-meter noise buffer zone around core habitat to protect GCW during the breeding season. The noise buffer zone covers some of the southwestern portion as shown in Figure 4-5. However, given the training restrictions currently in place for managing GCW and BCV habitat, and the steep slope the habitat at the preferred alternative site is unlikely to be developed. Under this alternative, no other protected habitats would be disturbed. Implementing the preferred alternative would not increase the training activities outside the limits described in the Camp Bullis Mission Update EA (U.S. Army, 2006). Effects from relocation of the USARCs could increase noise levels on the installation during peak event periods; however, research has indicated limited noise-related effects on the GCW and BCV outside sensitive activity periods (i.e., breeding season). Since Camp Bullis has training restrictions in place to limit exposure of these protected species during sensitive periods, no substantial effects would be anticipated from implementing the preferred alternative.

BCV are highly dependent on vocal communication, particularly during the courtship and early nesting season. During the breeding season, male BCV sing persistently well into the heat of the day, and the intensity of their singing seems to increase after singing by other local species has waned. This species' songs with alternating phrases are typical of those of many other vireo species, but they are unusual in being derived from a large syllable repertoire, an order of magnitude greater than that of other vireos (Grzybowski, 1995). BCV vocalizations are within

the 2 to 6 kilohertz (KHz) range (Robbins, 1983) and its hearing is assumed to be predominantly within this range.

The projected noise levels associated with construction and operational activities at the habitat is anticipated to be below 1 KHz and can reasonably be expected to be below the hearing threshold of the species. Therefore, training and construction noise is not expected to interfere with the courtship process, territorial establishment, or reproductive success of transient BCV that could occur on Camp Bullis.

Likewise, other protected species habitats (i.e., biologically sensitive karst features) do not occur or have a low probability of occurrence in the preferred alternative areas. Therefore, no effects are anticipated to these other species or habitats.

No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used. There would be no improvement in the quality of the facilities in this area, and any minor short-term impacts to biological resources would be avoided.

4.9 CULTURAL RESOURCES

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources have been divided for ease of discussion into three main categories: prehistoric and historic archaeological resources, historic facilities and structures, and traditional resources. In this EA, the term “historic properties” refers to cultural resources listed on or eligible for inclusion in the NRHP. Archaeological sites in relation to the location of the preferred alternative were shown previously in Figure 4-3.

Federal regulatory requirements for the protection of cultural resources are chiefly guided by the NHPA of 1966 (16 USC 470 et seq., as amended), the Archaeological and Historic Preservation Act (AHPA) of 1974 (16 USC 469a et seq.), and the Archaeological Resources Protection Act (ARPA) of 1979 (16 USC 470aa-470ll). These laws are designed to ensure adequate consideration of the values of historic properties in carrying out federal activities and to attempt to identify and mitigate impacts to significant historic properties. The NHPA is the principal

authority used to protect historic properties; federal agencies must determine the effect of their actions on cultural resources and take certain steps to ensure that these resources are located, identified, evaluated, and protected.

The NHPA implementing regulations at 36 CFR §800 define the responsibilities of the state, the federal government, and the Advisory Council on Historic Preservation (ACHP) in protecting historic properties identified in a project area. 36 CFR §60 establishes the NRHP and defines the criteria for evaluating eligibility of cultural resources for listing on the NRHP. The ARPA protects archaeological resources on federal lands. Legal mandates pertaining to Native American cultural resources and religious freedom include the NHPA, NAGPRA of 1990 (25 USC 3001 et seq., 43 CFR §10), NEPA, ARPA, American Indian Religious Freedom Act (AIRFA) of 1978, as amended (42 USC 1996-1996a), and EO 13007. Army regulations and guidelines (AR 200-4), Department of the Army Pamphlet (DA PAM) 200-4, and the Annotated Policy Document for the American Indian and Alaska Native Policy (27 October 1999) recommend the following steps be taken to facilitate consultation:

- Establishment of an ongoing consultation relationship with Native Americans
- Designation of a Coordinator for Native American Affairs
- Incorporation of consultation procedures into existing Army planning and procedural documents

4.9.1 Affected Environment

The affected environment for the analysis of cultural resources at Camp Bullis includes all areas where activities will increase due to the AFRC activities, i.e., 80 acres of land to be disturbed during construction.

Prehistoric and Historic Background

To provide a context for the cultural resources analyzed within this EA, very brief discussions of the prehistory and history at Camp Bullis are presented. Additional, detailed information can be found in several previously prepared reports, including the *Integrated Cultural Resources Management Plan: Camp Bullis Training Site* (ICRMP; USACE, 2001).

Camp Bullis is in the Central Texas archaeological region. Four major cultural periods are recognized within this region—the Paleo-Indian Period (10,000-6000 B.C.); the Archaic Period (6000 B.C.–A.D. 800); the Late Prehistoric Period (A.D. 800–1700); and the Historic Period

(post A.D. 1525), with several phases or complexes defined within each. From the information derived from archaeological investigations conducted in the region, it appears that the first inhabitants in Central Texas arrived over 11,000 years ago during the Paleo-Indian period. Evidence of Paleo-Indian activity in central Texas, however, is infrequent. Archaeological studies conducted at Camp Bullis suggest that it was first occupied during the latter part of this period.

Numerous Archaic period sites, primarily lithic scatters, lithic procurement sites, and campsites, are found at Camp Bullis. In Central Texas, the Archaic period is defined by increasing sedentism and population growth, with associated social differentiation and several distinct cultural groups evolving.

The Late Prehistoric period, which is also represented in Camp Bullis' archaeological record, is marked by economic adaptations arising from the adoption of the bow and arrow as the weapon of choice among Central Texas groups. The greater efficiency of the bow and arrow may have led to changes in the relative importance of hunting as opposed to gathering, but there is little evidence indicating the adoption of agriculture. Trade with the Caddoan groups of East Texas is indicated by the ceramics found at some Late Prehistoric sites (a single shard of Caddoan pottery has been found at Camp Bullis). Late Prehistoric sites at Camp Bullis are primarily lithic procurement sites, campsites, and lithic scatters.

Native American use of the Camp Bullis area appears to have continued through at least the early part of the Contact Period (A.D. 1525-1820), a period that is marked first by Spanish expeditions into the region in 1691 and later the establishment of missions.

During the early part of the Historic Period (post 1820), the Mexican government sanctioned settlement in the interior portions of Texas, allowing Anglo-Americans and Euro-Americans to legally inhabit the Central Texas region. Despite immigration, the population of San Antonio and the surrounding area remained relatively low until the 1840s, when a large number of German immigrants moved into the region. In the 1850s, cattle ranchers started large-scale ranches in Central and South Texas, dominating the economy for decades to come. After the Civil War, the arrival of the railroad to San Antonio spurred a post-war boom and accelerated immigration into the region. It was at this point, during the mid- to late 1880s, that Camp Bullis became the site of at least a dozen small farms and ranches. Structural and archaeological evidence of these farms

still exist on installation, including the home of Otto Schell (Facility 6201), a German immigrant who moved to the property as early as 1888.

Military use of Camp Bullis began in 1906, when the impracticalities of heavy weaponry training at the nearby Army post of Fort Sam Houston prompted the creation of an adjunct reservation. Since that time, the property has been used for military training purposes and contains archaeological resources associated with that history. Military-related archaeological sites at Camp Bullis include World War I- and World War II-era site training features (i.e., bunkers and encampments), cisterns, and trash pits.

To date, most of undisturbed parcels on Camp Bullis have been surveyed for archaeological resources, and over 329 archaeological sites have been recorded, the majority of which (280+) are not eligible for listing in the NRHP. The cantonment area is likely heavily disturbed from previous construction and operational use, and the potential for intact archaeological resources to be identified is limited.

Status of Cultural Resource Inventories and Section 106 Consultations

Cultural resource inventories conducted at Camp Bullis include architectural surveys and evaluation, archaeological survey and evaluation studies, and landscape studies. The results of the resources inventories are available in *Historic Properties Component to Fort Sam Houston and Camp Bullis Training Site Integrated Cultural Resources Management Plans* (USACE, 2006) and the ICRMP developed for Camp Bullis (USACE, 2001).

The Historic Properties Component (HPC) provides procedures for identifying, evaluating, determining, and resolving the effects of undertakings on historic properties. The purpose of the HPC is to enable compliance with the NHPA Section 106 process on a programmatic, as opposed to case-by-case, basis through certification to operate under the Army Alternative Procedures (AAP). Under the Advisory Council for Historic Preservation's regulations at 36 CFR Part 800.14, Federal agencies can adopt, with the Council's approval, alternative procedures that may be used in lieu of the Council's procedures for compliance with Section 106. The Department of the Army has gone through this process and has adopted the AAP to 36 CFR Part 800. The AAP was published in the Federal Register at Volume 69, Number 74, page 2057. The AAP authorizes Army Installation Commanders to develop an HPC to the installation's ICRMP. Once certified by the Council, the HPC serves as the installation's Section 106 compliance agreement for a 5-year period. The installation's Section 106 compliance responsibilities would be met

through internal installation implementation of the HPC. The HPC includes background data and standard operating procedures (SOPs). SOPs are the systematic procedures that Fort Sam Houston will follow to consider the effects of its activities on historic properties and to manage them responsibly.

There are 364 facilities and structures on Camp Bullis. These include landscape features such as wells, roads, and culverts, as well as facilities, hutments, and other structures. A total of 89 facilities or structures and 37 landscape features are more than 50 years old, and 81 features of all types need further study to determine whether they are eligible for the NRHP.

Archaeological surveys have been completed on 96.7 percent of the 23,032 acres of maneuver lands at Camp Bullis. According to the 2006 ICRMP for Camp Bullis, those surveys have identified 287 archaeological sites, of which 221 have been determined ineligible for the NRHP. Thirty-five of the Camp Bullis sites were either determined to be eligible for the NRHP or require additional consideration. The eligibility status of 31 sites is unknown. The 2001 ICRMP prepared for Camp Bullis estimated that, at that time, approximately 5,604 acres of the previously surveyed lands would require resurveying to meet current coverage standards. A reassessment is currently underway for some of the archaeological sites. Additional archaeological sites may be encountered in the future at this previously surveyed facility or unsurveyed lands. Unmarked cemeteries and individual graves may also await discovery. A formal cultural landscape study has not been conducted for Camp Bullis.

Native American Resources

Traditional Cultural Properties (TCPs) may be embodied in a broad range of cultural and natural areas. These may include archaeological sites, ceremonial areas, places, or natural areas. TCPs are subject to the same regulations as other types of cultural properties, and the level of protection afforded by NRHP eligibility or listing may be extended to TCPs. Native American groups that may potentially have TCPs at Camp Bullis include the Tonkawa, the Lipan Apache, the Mescalero Apache, the Wichita, the Comanche, the Kiowa/Kiowa Apache, and the Caddo. No TCPs have been identified at Camp Bullis.

4.9.2 Consequences

Preferred Alternative

The preferred alternative would result in ground-disturbing activities and possible deconstruction/demolition of six facilities (including one historic facility) on the 22-acre site.

Under the HPC, identification, evaluation, and resolution of effects of deconstruction/demolition on historic properties will be conducted internally by Fort Sam Houston. The historic facility (Facility 5046) potentially requiring deconstruction/demolition is approximately 347 sf and was built in 1934.

The results of prior archaeological studies and surveys on Camp Bullis indicate that Non-National Register Eligible archeological sites may be disturbed during construction on portions of the 52-acre and 6-acre sites. Further investigation may be warranted prior to construction if the locations of potential ground disturbance in these areas are more precisely established after definitive facility site plans are developed. If during construction archeological evidence is unearthed, then the SOPs in the HPC would be followed to comply with the Section 106 requirements.

No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used. There would be no improvement in the quality of the facilities in this area. The removal of a historic property would be avoided.

4.10 SOCIOECONOMICS

Socioeconomic analyses generally include detailed investigations of the prevailing population, income, employment, and housing conditions of a community or area of interest. The socioeconomic conditions of a Region of Influence (ROI) could be affected by changes in the rate of population growth, changes in the demographic characteristics of an ROI, or changes in employment within the ROI caused by implementation of the preferred alternative. In addition to these characteristics, populations of special concern, as addressed by EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 1994), are identified and analyzed for environmental justice impacts.

EO 12898 requires a federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations.” A message from President Clinton concerning EO 12898 stated that federal agencies should collect and analyze information concerning a project’s effects on minorities or low-income groups, when required by NEPA. If such investigations find that minority or

low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are to be undertaken.

According to the CEQ (1997), a minority population can be described as being composed of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic, and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. Race and ethnicity are two separate categories of minority populations. A minority population can be defined by race, by ethnicity, or by a combination of the two distinct classifications.

Race as defined by the U.S. Census Bureau (USCB, 2001) includes:

- White – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa
- Black or African American – A person having origins in any of the Black racial groups of Africa
- American Indian or Alaska Native – A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment
- Asian – A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, or the Philippine Islands
- Native Hawaiian and Other Pacific Islanders – A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands

USCB defines ethnicity as either being of Hispanic origin or not being of Hispanic origin. Hispanic origin is defined as “a person of Cuban, Mexican, Puerto Rican, South or Central America, or other Spanish culture or origin regardless of race” (USCB, 2001).

A minority population can be defined in multiple ways; for example, a population under consideration may be demographically composed of 45 percent Black, 6 percent Asian, 40 percent White, and 9 percent all other races or combination of races. Additionally, a minority population can also be defined through ethnicity, where the population under consideration is demographically composed of 80 percent White, 10 percent Black, and 10 percent all other races or combination of races but has an ethnic composition of 98 percent Hispanic origin and 2 percent

of the population not of Hispanic origin. Race and ethnicity each individually total a population of 100 percent.

Each year the USCB defines the national poverty thresholds, which are measured in terms of household income depending on the number of persons in the household. Individuals falling below the poverty threshold (\$17,603 for a household of four in 2000) are considered low-income individuals. USCB census tracts where at least 20 percent of the residents are considered poor are known as *poverty areas* (USCB, 1995). When the percentage of residents considered poor is greater than 40 percent, the census tract becomes an *extreme poverty area*.

4.10.1 Affected Environment

The Camp Bullis ROI for the socioeconomics analysis was a comparison of the San Antonio MSA (Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson counties); Bexar County; and USCB Census Tract 191600, block group 1, which contains Camp Bullis and adjacent census tracts¹ and block groups² (Figures 4-6 and 4-7).

Economic Development

Personal Income

Median personal income levels increased within all household types in the ROI between 1990 and 2000. The largest nominal percent changes were observed in the San Antonio MSA. In the Camp Bullis ROI, the highest median household income in the combined census tracts was \$109,424 (USCB Census Tract 191803), while the lowest median household income was \$64,953 (USCB Census Tract 310700). Within the combined block groups of the Camp Bullis ROI, the highest median household income was \$121,829 (block group 3, USCB Census Tract 191803), and the lowest was \$67,619 (block group 2, USCB Census Tract 310700) (USCB, 2002). The PCPI ranged within the Camp Bullis ROI combined census tracts from a high of \$53,462 (USCB Census Tract 191803) to a low of \$26,849 (USCB Census Tract 310700) (USCB, 2002). The PCPI within the combined block groups of the Camp Bullis ROI was within a similar range.

¹ USCB 2000 Census Tracts immediately outside Camp Bullis include 191804, 191805, 191803, 182101, and 310700.

² USCB 2000 Census block groups immediately outside Camp Bullis include block groups 1 and 2 in Census Tract 191804, block group 2 in Census Tract 191805, block groups 1-3 in Census Tract 191803, block group 1 in Census Tract 182101, and block group 2 in Census Tract 310700.

Industry Earnings

Earnings data indicated personal income within the San Antonio MSA increased by approximately 89 percent between 1990 and 2000, to \$41.1 billion. In Bexar County, personal income increased by approximately 85 percent during this period to \$36.3 billion (Bureau of Economic Analysis [BEA], 2002a). Nonfarm increased approximately 90 percent during this period in the San Antonio MSA to approximately \$41 billion and 85 percent in Bexar County to approximately \$36 billion. Farm income increased 187 percent to approximately \$74 million in the San Antonio MSA and increased 238 percent to approximately \$60 million in Bexar County during this period. The industries with the greatest increase in earnings between 1990 and 2000 in both the San Antonio MSA and Bexar County were agricultural services, mining, construction, and transportation and public utilities (BEA, 2002a). Only federal, civilian earnings decreased in both the San Antonio MSA and Bexar County (BEA, 2002a).

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

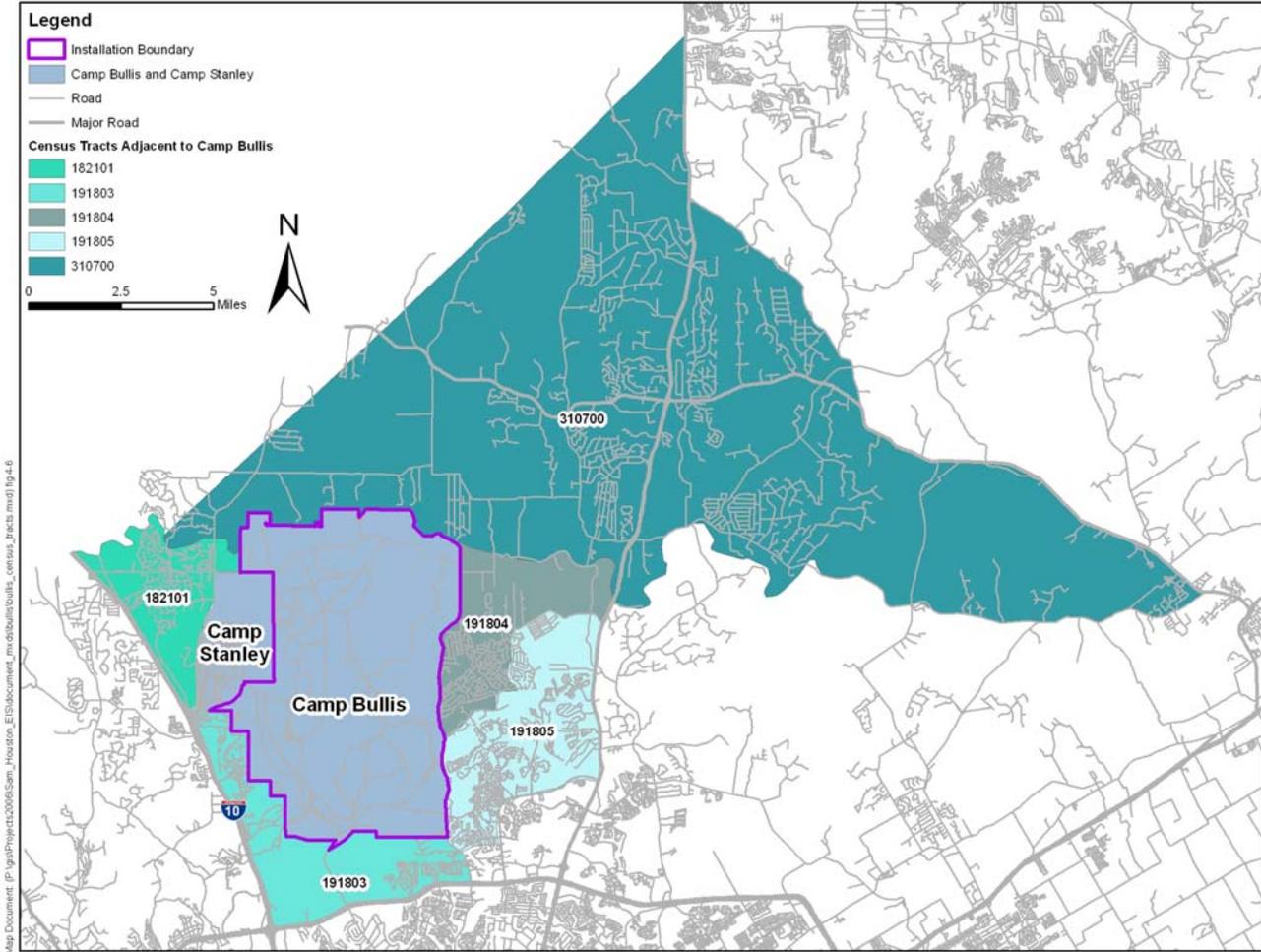


Figure 4-6 Camp Bullis Census Tracts
Source: Camp Bullis GIS

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

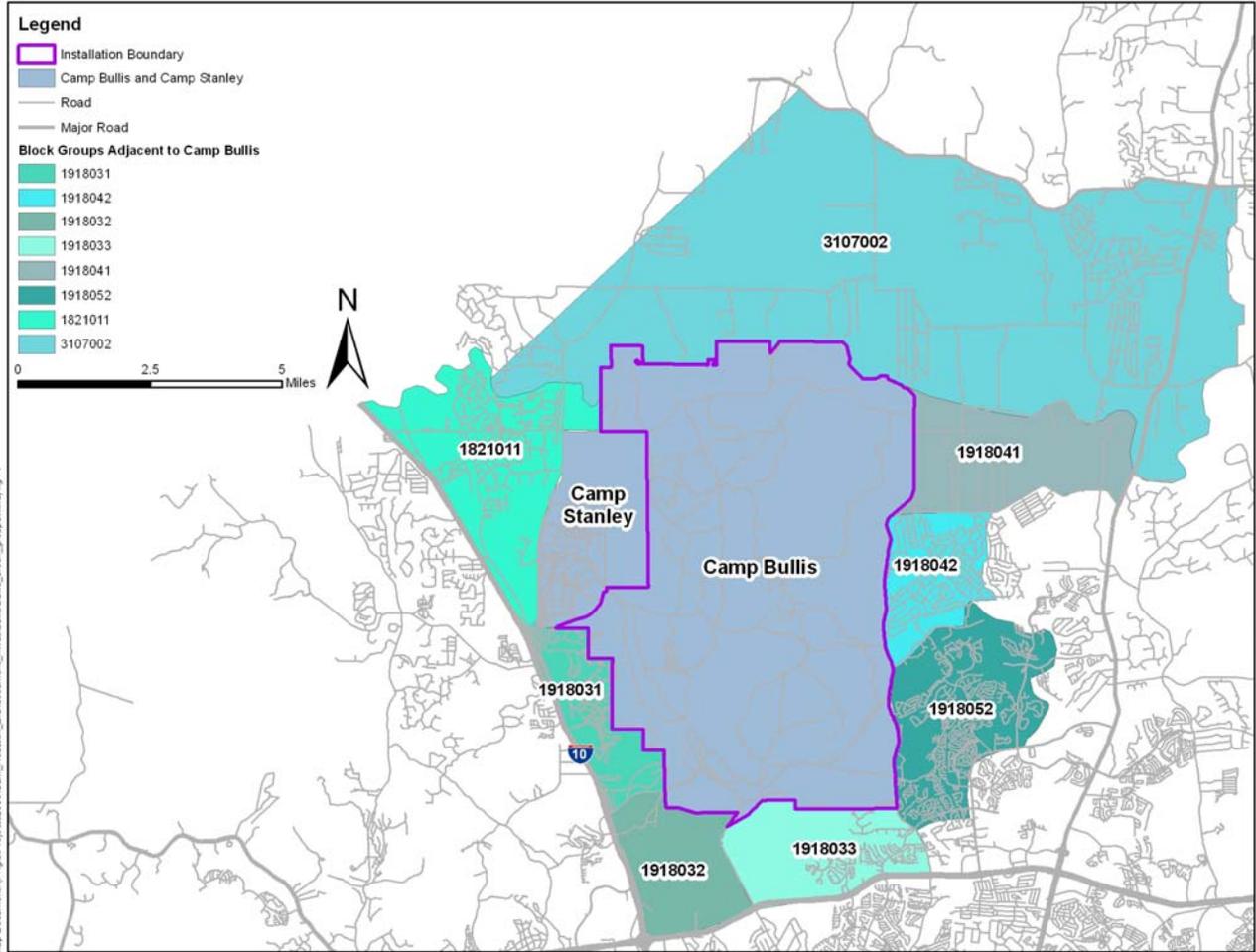


Figure 4-7 Camp Bullis Block Groups
Source: Camp Bullis GIS

Employment

Total full-time and part-time employment increased approximately 35 percent in the San Antonio MSA and approximately 34 percent in Bexar County between 1990 and 2000. Substantial increases in employment were identified in agricultural services, construction, transportation and public utilities, and services in both the San Antonio MSA and Bexar County during this period. Decreases in employment opportunities were identified in mining, federal, civilian, and military in both the San Antonio MSA and Bexar County between 1990 and 2000 (BEA, 2002b).

Demographics

The population in the San Antonio MSA increased approximately 22 percent between 1990 and 2000 to approximately 1.6 million people (USCB, 1993, 2002). The population of Bexar County increased approximately 17 percent between 1990 and 2000 to approximately 1.4 million people. Table 4-8 details the total population, percentage urban versus rural population, sex, and age within the ROI. The population in all geographic areas slightly favors the female population at 50.19 percent to 51.50 percent of the total population (Table 4-9). The largest cohort group population in all geographic areas falls in the 30 to 59 year-old age groups. All geographic areas, excluding Camp Bullis, have approximately 40 percent of the population fall within the 30-59 years age cohort. Within the Camp Bullis ROI, this cohort accounts for approximately 50 percent of the population. The next largest cohort is the 0 to 18 years across all geographic areas.

Table 4-8 2000 Population Profile of all Geographic Areas within the ROI

	San Antonio MSA	Bexar County	Camp Bullis (Combined Census Tracts)
Total Population	1,592,383	1,392,931	35,293
Percent Urban	88.67	94.05	54.44
Percent Rural	11.33	5.95	45.56
Male Population	773,656	675,559	17,578
0-18 Years	242,668	213,006	5,644
19-29 Years	126,927	115,009	1,258
30-59 Years	309,303	268,062	8,648
60+ Years	94,758	79,482	2,028
Female Population	818,727	717,372	17,715
0-18 Years	232,752	204,569	5,291
19-29 Years	128,642	116,783	1,292
30-59 Years	328,318	285,536	9,119
60+ Years	129,015	110,484	2,013

Source: USCB 2002

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Table 4-9 Sex and Age Cohorts for all Geographic Areas within the ROI

	San Antonio MSA		Bexar County		Camp Bullis*	
	#	%	#	%	#	%
Total Population	1,592,383		1,392,931		35,293	
Sex						
Male	773,656	48.58	675,559	48.50	17,578	49.81
Female	818,727	51.42	717,372	51.50	17,715	50.19
Age Cohort						
0-18 Years	475,420	29.86	417,575	29.98	10,935	30.98
19-29 Years	255,569	16.05	231,792	16.64	2,550	7.23
30-59 Years	637,621	40.04	553,598	39.74	17,767	50.34
60+ Years	223,773	14.05	189,966	13.64	4,041	11.45

* includes all combined census tracts

Source: USCB 2002.

Housing

The number of housing units in all geographic areas has increased more than 14 percent between 1990 and 2000 (USCB, 1993, 2002). Table 4-10 details the general housing profile for the ROI. From 2000 to 2004, residential facility permits within the San Antonio MSA increased 103.79 percent. Table 4-11 details the growth in housing units in the counties of the San Antonio MSA from 2000 to 2004. During this period, Comal County was ranked as the 83rd fastest growing county in the United States increasing housing units at 17.7 percent. Kendall County was ranked 89th, with an increase of 17.3 percent in the number of housing units (USCB, 2005a). In the period between 2003 to 2004, Kendall County ranked as the 37th fastest growing county, with an increase of 5.0 percent in the number of housing units, while Comal County was ranked 59th (4.4 percent increase) (USCB, 2005b).

Table 4-10 Basic Housing Details within the Fort Sam Houston and Camp Bullis ROI

	San Antonio MSA			Bexar County			Camp Bullis*		
	1990	2000	Nominal Percent Change	1990	2000	Nominal Percent Change	1990	2000	Nominal Percent Change
Housing Units	504,411	599,772	18.91	455,832	521,359	14.38	7,150	12,909	80.55
Median Year Built	1972	1976	n/a	1971	1975	n/a	1979	1992	
Median Value	56,400	74,900	32.80	55,000	71,800	30.55	117,500	169,050	43.87

* includes all combined census tracts

n/a = not available

Source: USCB 1993, 2002

Table 4-11 Housing Unit Estimates within the San Antonio MSA 2000-2004

Geographic Area	Housing Unit Estimates				
	2004	2003	2002	2001	2000
Atascosa County	15,511	15,404	15,303	15,176	14,935
Bandera County	9,861	9,811	9,765	9,686	9,539
Bexar County	560,820	551,995	542,494	532,281	523,536
Comal County	38,512	36,878	35,471	34,289	33,030
Guadalupe County	37,002	35,892	35,028	34,433	33,753
Kendall County	11,272	10,738	10,371	10,011	9,689
Medina County	15,410	15,270	15,211	15,094	14,878
Wilson County	12,658	12,590	12,501	12,324	12,152
San Antonio MSA	703,050	690,581	678,146	665,295	653,512

Source: USCB 2005

Quality of Life

Recreational Opportunities

The San Antonio MSA lies within six Level IV ecological regions providing numerous opportunities for varied outdoor recreational amenities. There are 31 state parks, state historic sites, or state natural areas and 5 national parks, national historic sites, national recreation areas, or national seashores within 100 miles of San Antonio. Additionally, San Antonio is within 100 miles of multiple locations on the World Birding Center Site Partner locations. The San Antonio Parks and Recreation Department manage over 16,000 acres of park and open space, with 4,600 acres of developed parks and over 40 miles of developed trails in 210 parks. Within San Antonio, there are numerous cultural facilities including the San Antonio Symphony and the Lyric Opera of San Antonio; museums such as the Institute of Texan Cultures, Witte Memorial Museum, and McNay Art Museum; theaters; and amusement parks and attractions such as Sea World San Antonio, Fiesta Texas, and Paseo del Rio. San Antonio is the location for sporting events, such as the San Antonio Spurs (professional basketball), San Antonio Rampage (professional ice hockey), San Antonio Missions (AA minor league baseball), Valero Texas Open (professional golf), and the Texas Hill Country Triathlon.

The Sikes Act of 1960 (16 USC 670a et seq.) and amendments authorize the Secretary of Defense to carry out a program “to provide for the conservation and rehabilitation of natural resources on military installations, the sustainable multipurpose use of the resources, which shall include hunting, fishing, trapping, and nonconsumptive uses.” The Sikes Act Improvement Act of 1997 also requires an INRMP that shall provide for “fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation.” It also states that to the extent

appropriate and applicable, the INRMP shall provide for “sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources and is subject to requirements necessary to ensure safety and military security.” AR 200-3 provides that natural resources will be managed to allow outdoor recreational opportunities whenever practicable.

According to the INRMP (U.S. Army, 2001a), the Camp Bullis Outdoor Recreation Program consists of fishing, hunting, camping, hiking, walking, shooting sports, recreational vehicle storage and hook-ups, and a volleyball court for eligible personnel³. Currently, fishing is restricted to a catfish pond in the cantonment area. All deer hunting is from assigned stands to which each hunter is given a specific travel route. Turkey hunting follows the same procedures as deer hunting, except that blinds/areas are assigned to each hunter. Camping is allowed year-round on Camp Bullis. Primitive camping is allowed in designated areas only. The developed sites are used by recreational vehicles with full hook-up provided. A Sportsmans Range is available for marksmanship practice with shotguns, pistols, and rifles. Horseback riding, dog training, and other clubs request access to Camp Bullis for their activities. Also, the Alamo Area Council of Boy Scouts of America requests the use of facilities to enhance their program. Scout requests for camp-outs and field learning skill activities are usually granted when there are no conflicts with military training.

Educational Opportunities

As of October 2005, 327,926 students were enrolled in 507 regular public educational institutions in the San Antonio MSA. Table 4-12 provides a break-out by county of the number of school districts or independent units, the number of schools, and the number of students in each county. San Antonio is home to 14 institutions of higher learning, including the 4 schools in the Alamo Community College District and 10 four-year colleges and universities. The San Antonio Public Library System operates 22 public libraries, 1 non-public library, and 2 libraries under construction.

³ An eligible person is defined as an active Department of Defense identification card holder. Depending on the type of activity, an eligible person may sponsor a dependent.

Table 4-12 Primary Public School General Population Profile by County within the San Antonio MSA, October 2005

County	Number of Districts	Number of Schools	Number of Students
Atascosa	5	20	8,498
Bandera	2	6	2,870
Bexar	27	376	284,780
Comal	2	26	19,601
Guadalupe	4	33	18,683
Kendall	2	13	7,266
Medina	5	18	8,607
Wilson	4	15	7,621
San Antonio MSA Total	51	507	357,926

Source: TEA, 2006

Environmental Justice

Minority Populations

Table 4-13 lists the 2000 demographic profile of the Camp Bullis ROI and the population change from 1990 to 2000. Since there are no permanent residents at Camp Bullis, the ROI evaluated the surrounding census tracts and block groups. The population in the combined census tracts containing the Camp Bullis ROI increased 87.56 percent between 1990 and 2000, while the combined block groups increased 203.21 percent during this period (USCB 1993, 2002). As shown in Table 4-13, neither the combined census tracts nor block groups would be considered a concentrated minority area.

Table 4-13 2000 Demographic Profile of the Camp Bullis ROI

Decennial Census Population	Combined Census Tracts		Combined Block Groups	
	Number	Percentage	Number	Percentage
1990	18,817		8,261	
2000	35,293		25,048	
Percent Increase	87.6		203.2	
Race/Ethnicity	Number	Percentage	Number	Percentage
White, non-Hispanic	28,202	79.91	19,660	78.49
Black/African American	375	1.06	326	1.30
American Indian or Alaska Native	110	0.31	56	0.22
Asian	450	1.28	395	1.58
Native Hawaiian or Other Pacific Islander	25	0.07	11	0.04
All Other Races or Combination of Races	648	1.82	511	2.04
Hispanic	5,487	15.55	4,089	16.32
Total Minority Population	7,091	20.09	5,388	21.51

Source: USCB 1993, 2002

Limited English Proficiency Populations

In August 2000, EO 13166 (Improving Access to Services for Persons with Limited English Proficiency [LEP]) was signed. This EO requires that federal agencies improve the accessibility of federal programs to eligible LEP individuals. Additionally, this EO also requires federal agencies to ensure that stakeholders (such as LEP individuals and their representative organizations, recipients, and other appropriate individuals or entities) have an adequate opportunity to provide input. These consultations will assist the agencies in developing an approach to ensure meaningful access by LEP individuals that is practical and effective, fiscally responsible, responsive to the particular circumstances of each agency, and readily implementable.

In 2000, approximately 40,938 households (7.3 percent) in the San Antonio MSA and 38,043 households (7.8 percent) in Bexar County were considered linguistically isolated⁴ (USCB, 2002). In the Camp Bullis ROI, 141 households (1.16 percent) were considered linguistically isolated within the combined census tracts (USCB, 2002). In the combined block groups of the Camp Bullis ROI, 57 households (0.66 percent) were considered linguistically isolated. Table 4-14 lists the number of linguistically isolated households per area by language.

⁴ A linguistically isolated household is one in which no member 14 years old and over (1) speaks only English or (2) speaks a non-English language and speaks English “very well.” In other words, all members 14 years old and over have at least some difficulty with English (USCB 2002).

Table 4-14 Linguistically Isolated Households by Area and Language

Language	Areas (number of linguistically isolated households/percent of total linguistically isolated households)			
	San Antonio MSA	Bexar County	Camp Bullis ROI	
			Combined Census Tracts	Combined Block Groups
Spanish	37,766 / 92.3%	35,190 / 92.5%	107 / 75.9%	39 / 68.4%
Other Indo-European	1,185 / 2.9%	940 / 2.5%	29 / 20.6%	13 / 22.8%
Asian/Pacific Island	1,780 / 4.4%	1,706 / 4.5%	5 / 3.6%	5 / 8.8%
Other	207 / 0.5%	207 / 0.5%	0 / 0.00%	0 / 0.0%
Total Linguistically Isolated Households	40,938 / 7.3%	38,043 / 7.8%	141 / 1.2%	57 / 0.7%
Total Households	560,293	489,252	12,142	8,572

Source: USCB, 2002

The average household size in the combined block groups was 2.44 persons per household; in the San Antonio MSA, it was 2.84; and in Bexar County, it was 2.85 in 2000 (USCB, 2002). Average household size in both combined areas for the Camp Bullis ROI was 2.91 persons per household. Extrapolating average household size and the number of linguistically isolated households yields an estimated number of linguistically isolated individuals in all areas (Table 4-15).

Table 4-15 Linguistically Isolated Individuals by Area and Language

Language	Areas			
	San Antonio MSA	Bexar County	Camp Bullis ROI	
			Combined Census Tracts	Combined Block Groups
Spanish	107,256	100,292	311	113
Other Indo-European	3,365	2,679	84	38
Asian/Pacific Island	5,055	4,862	15	15
Other	588	590	0	0
Total Linguistically Isolated Individuals	116,264	108,423	410	166
Total Individuals	1,592,383	1,392,931	35,293	25,048

Source: USCB, 2002

Low Income Populations

The poverty rate decreased approximately 4 percent in Bexar County to 15.9 percent, and 2.5 percent in the San Antonio MSA to 15.1 percent, between 1990 and 2000 (USCB, 1993, 2002). In the Camp Bullis ROI, the 2001 poverty rate within the combined census tracts was 3.01 percent, and within the combined block groups, it was 2.18 percent in 2000 (USCB, 2002).

Protection of Children

In April 1997, EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks) was signed. This EO requires that all federal agencies (a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children, and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. The EO considered environmental health and safety risks to mean risk to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (i.e., air, food, water, soil, and products used or exposed to).

In the combined block groups including and adjacent to Camp Bullis, 31.26 percent of the total population was 18 years old or younger. The highest concentration of this age cohort was identified in Block Group 3, Census Tract 191803 (40.10 percent or 863 persons). The greatest number of this age cohort was identified in Block Group 2, Census Tract 191805 (2,900 persons).

No children reside at Camp Bullis. Children may access Camp Bullis for recreational activities, such as Boy Scout camp-outs, fishing, camping, volleyball, and horseback riding, only when properly escorted by an eligible person.

4.10.2 Consequences

Preferred Alternative

Economic Development

Implementing the preferred alternative would not result in significant effects to socioeconomics in the ROI containing Camp Bullis. Under the preferred alternative, approximately 1,100 employment positions (879 part-time and 73 full-time) would be relocated to Camp Bullis. This relocation of positions would not require the relocation of personnel outside the defined ROI. Therefore there would be no effects on personal income, population growth, or housing from this action. Because Camp Bullis is within an acceptable commuting distance from the current locations of the USARCs, no relocations of households would be anticipated from the relocation

of employment opportunities, and no effects to local educational or community services would be anticipated.

As part of the preferred alternative, approximately 238,000 sf of new construction would occur on Camp Bullis. The value of the new construction would be approximately \$52 million. Through the use of the Economic Impact Forecast System (see Appendix B) with a 4.46 multiplier for employment and income, the value of construction would flow through the regional economy as a 0.33 percent increase in total sales volume, a 0.12 percent increase in total personal income, and a 0.11 percent increase in total employment. The construction investment is anticipated to induce an additional \$179 million in sales, \$44 million in total personal income, and 1,056 employment positions. Additional analysis using lower multipliers based on the Regional Input-Output Modeling Systems (RIMS II) indicates that the final demand for construction activities would generate an additional \$119.5 million in final output of products, \$39.2 million in household earnings, and 1,138 new employment positions in the San Antonio MSA (BEA, 2006). Using this range of multipliers indicates the potential range of economic flow-down effects throughout the ROI. This beneficial flow-down effect would be minor, temporary, and would subside after the completion of construction activities. Construction spending would create short-term beneficial economic effects; however, the effects would be minor when compared to spending in the San Antonio MSA in general. Operational activities would be similar to those that occur in the current USARCs; therefore, there would be no substantial change to anticipated spending from these activities. There would be no permanent, long-term anticipated effects to the regional economy from implementing the preferred alternative.

Environmental Justice

As mentioned previously, Camp Bullis and the area immediately surrounding Camp Bullis would not be considered either an area of concentrated minority population or low-income populations. Also, the area immediately surrounding Camp Bullis has a linguistically isolated population of 141 households (1.16 percent of total households). Since implementing the preferred alternative would only create minor beneficial effects from construction activities, environmental justice effects (disproportionately high adverse environmental or human health effects) would not be anticipated for the minority or low-income populations within the ROI.

Protection of Children

Because (1) Camp Bullis does not contain housing for military families and (2) the location of the preferred alternative is not near the perimeter of the installation, access by children would be

anticipated only for recreational activities that are supervised by an eligible person. Implementing the preferred alternative would not create a potential attractive nuisance due to the low population of children near the site and measures that would be implemented to ensure controlled access to the construction site. Additionally, implementing the preferred alternative would not increase the number of forecast unhealthy days based on the Air Quality Index, would not substantially increase the amount of hazardous air pollutants, and would not create adverse water quality conditions in the general population potable water supply. There would be no significant effects to the environmental health and/or safety risks of children.

No Action Alternative

Under the no action alternative, Camp Bullis would not accept the relocation of units from the Boswell Street and Callaghan Road USARCs and would not construct the AFRC facilities. Therefore there would not be any change in the regional economic outlook and no significant effects to the existing socioeconomics.

4.11 TRANSPORTATION

The ROI for transportation includes Camp Bullis and access roads to and from the installation.

4.11.1 Affected Environment

The San Antonio region is served by a network of major interstate, federal, and state highways with the City of San Antonio as the focal point. Interstate routes radiating from San Antonio include Interstate Highway-35 (IH-35), IH-10, IH-37, IH-410, and IH-1604 (IH-410 and IH-1604 serve as exchanges for the other major routes). IH-35 provides north-south linkage from Fort Worth-Dallas, through Austin, and south to Laredo. IH-10 provides east-west linkage from Houston and further east, through San Antonio, and to the west toward El Paso. IH-37 connects San Antonio to Corpus Christi in a southerly direction. Federal Highway 90 runs west to Del Rio, and U.S. Highway 281 provides an alternate major north-south route to the Lower Rio Grande Valley and Wichita Falls to the north. State highways and farm-to-market roads serve as an important network for local movement and access to the major transportation arteries.

Camp Bullis is located in a suburban setting in the northwest corner of the San Antonio metropolitan area, approximately 19 miles from downtown San Antonio. The post is easily accessible via IH-10 (located about 0.5 mile west of the installation) and IH-1604 (located 1 to 2 miles to the south). Access to the installation from IH-10 is provided along Camp Bullis Road; from Loop 1604, the access is along Northwest Military Highway. Both roads lead directly into

the cantonment area of the installation. Traffic in the vicinity of Camp Bullis is influenced primarily by traffic on IH-10 and IH-1604. The traffic in this area is generally heavy at peak times due to the rural setting.

Currently, only Northwest Military Highway (also known as Farm-to-Market Road 1535) is open for private and commercial traffic through a 24-hour gate. No public transportation systems or networks provide transportation onto or in the immediate vicinity of Camp Bullis.

Roadways and Traffic

An Access Control Measures Programmatic Environmental Assessment completed in March 2004, provided traffic counts for vehicles entering Camp Bullis over a 1-week period. During that week, 1,110 vehicles were counted entering through the Northwest Military Highway gate. It is estimated that 90 percent of this traffic occurred during the 5-day work week, or a traffic count of 999 vehicles Monday through Friday and 111 vehicles Saturday through Sunday.

Installation Transportation

Installation transportation is provided for trainees located temporarily on post. Trainees at Fort Sam Houston currently commute to Camp Bullis for training via buses. No provision for post transportation is provided for non-trainees.

4.11.2 Consequences

Preferred Alternative

The preferred alternative at Camp Bullis will affect traffic patterns on Northwest Military Highway, Camp Bullis Road, and Marne Road. Construction of parking lots, facilities, and utility easements will more than likely require traffic detours to allow construction crews a reasonable margin of safety in which to conduct construction activities. The duration of construction detours is expected to be short and will ultimately provide greater parking, better access, and have minimal detrimental effect on Camp Bullis traffic.

Weekday traffic is not expected to increase significantly (less than 1 percent). Weekend traffic during training weekends will increase but should not increase beyond the current capacity of the roadways currently in place. During training weekends, vehicle traffic could increase by as many as 200 vehicles, based on an average trainee count of 250 with ride sharing of approximately 25 percent. Peak traffic flow for the Camp Bullis gate is approximately 270 vehicles per hour at 0600. Checkpoint processing rates for incoming traffic with 100 percent ID and vehicle decal

check is 450 to 600 vehicles, with two ID checkers per lane per hour. Two security personnel are assigned to this gate. This could increase the delay times passing through the vehicle check point prior to the beginning of the duty day. Additional trips off-post during working hours by reserve personnel could increase vehicle traffic by an additional 25 percent for a combined vehicle count increase of 250 vehicles (USACE, 2004).

No Action Alternative

Under the no action alternative, Camp Bullis would not accept the relocation of units from the Boswell Street or Callaghan Road USARCs and would not construct the AFRC facilities or parking structures. Therefore, there would be no change to the current transportation network on Camp Bullis.

4.12 UTILITIES

The utility systems addressed in this analysis include the facilities and infrastructure used for:

- Water pumping, treatment, storage, and distribution
- Waste water collection, pumping, treatment, storage, and discharge
- Storm water collection and discharge
- Energy generation and distribution, including electricity and natural gas
- Communications systems
- Solid waste collection and disposal

Locations of facilities for the utility systems are shown in Figure 4-8. The installation operates its own water production, storage, and distribution system, which draws from the Glen Rose and Trinity Aquifers (U.S. Army, 2001b). Individual facility usage is not tracked at Camp Bullis. Metering is provided where the service enters the installation or where it is produced.

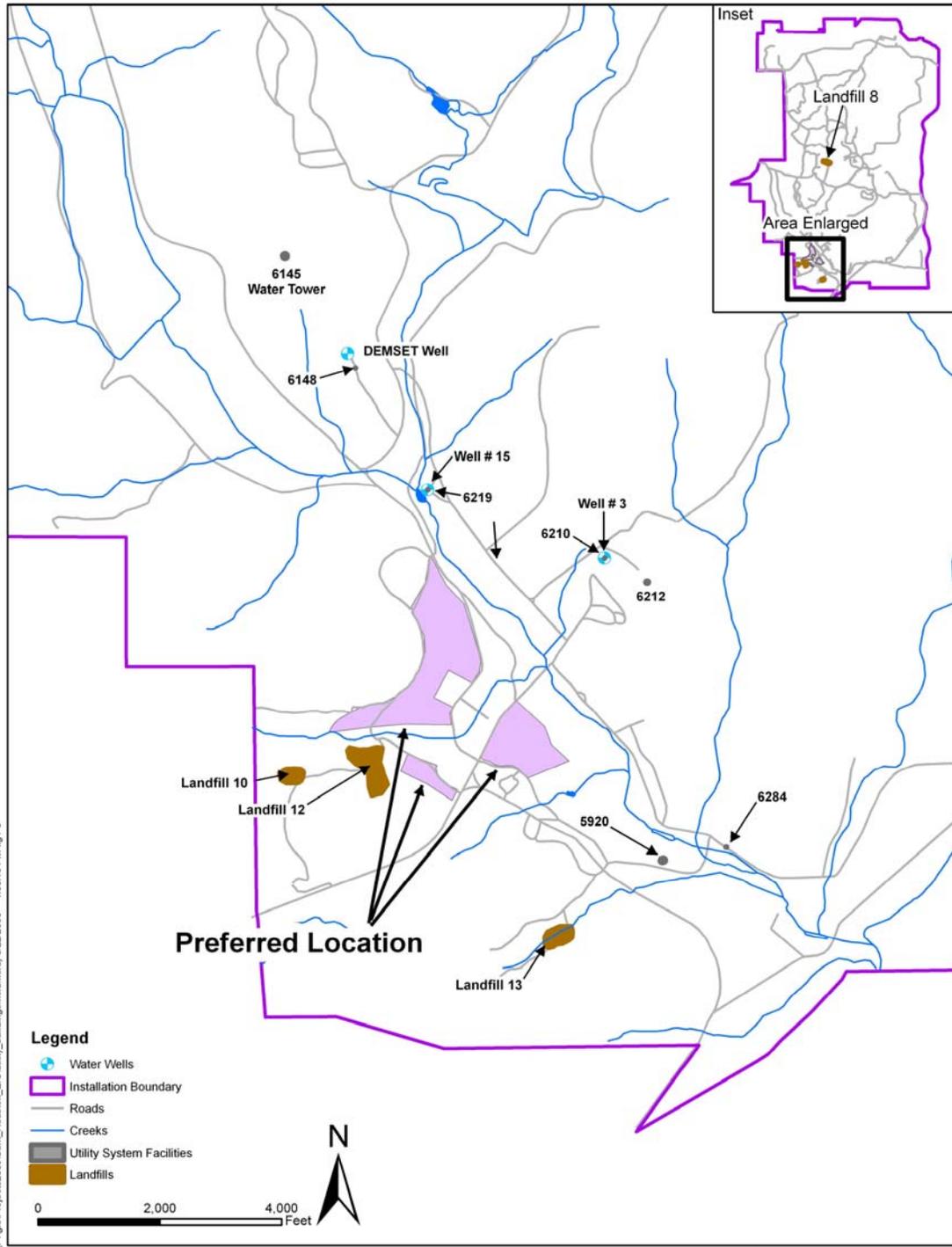


Figure 4-8 Utility-related Facilities
Source: Camp Bullis GIS

4.12.1 Affected Environment

Potable Water Supply

Potable water for Camp Bullis is supplied by three wells (Nos. 3, 15, and “DMSET” [Deployable Medical Systems Equipment for Training] well). Water Well Nos. 3 and 15 can produce a total of 0.19 million gallons per day (MGD) from the Glen Rose Aquifer. The DMSET well production rate is manually operated and restricted to 40 gallons per minute to control drawdown from the Glen Rose aquifer while maintaining a minimum water level in the elevated storage tank. Potable water treatment for all three wells consists of injection of chlorine, fluoride, and a corrosion inhibitor (phosphate) into the raw water supply prior to pumping to elevated storage tanks. Total storage capacity on post is 0.45 million gallons. Historical water usage is shown in Table 4-16. Water for the proposed AFRC facilities will come from the existing wells and water storage facilities.

Table 4-16 Camp Bullis Historical Water Consumption

Fiscal Year	Water Consumption (10³ gallons)
1996	25,781
1997	22,932
1998	23,880
1999	30,134
2000	27,556
2001	29,884
2002	37,693
2003	65,251
2004	48,742
2005	57,093
2006	34,290 (through May)

North water storage tank (Facility 6145): A 200,000-gallon, elevated water storage tank is on an unnamed gravel road between Marne Road and Lewis Valley Road. Included on this property is Facility 6144, a potable water support/treatment facility that houses the potable water treatment chemicals and feed pumps.

DMSET water well (Facility 6148): Facility 6148 and the associated potable water support/treatment facility (Facility 6149) are south of the north water storage tank on an unnamed gravel road between Marne Road and Lewis Valley Road. Facility 6149 houses the potable water treatment chemicals and feed pumps used to treat water from the DMSET Water Well.

Water well No. 3 (Facility 6210): This facility is east of the housing quarters on a gravel road extension of Bullis Road.

South water storage tank (Facility 6212): A 250,000-gallon elevated water storage tank is on an unnamed gravel road extension of Bullis Road. Included on this property are Facilities 6207 (potable water valve facility), 6208 (potable water booster pump), 6209 (potable water treatment), and 6211 (formerly housed water treatment activities) and open storage areas (empty tanks, heavy equipment, surplus plumbing supplies, surplus facility materials, etc.).

Water Well No. 15 (Facility 6219): Facility 6219 and the associated potable water support/treatment facility (Facility 6217) are south of the north water storage tank on unnamed gravel road west of Lewis Valley Road. Facility 6217 houses the potable water treatment chemicals and feed pumps used to treat water from Water Well No. 15.

As part of the Texas Department of State Health Services (TDSHS) requirements for public supply water wells, the water quality from the three water wells is periodically tested. The water testing includes analysis for VOCs, semivolatile organic compounds (SVOCs), pesticides, herbicides, and inorganic chemical constituents (including lead). Based on testing of the system to date, all three water wells currently comply with the Safe Drinking Water Act. VOCs have been detected in the DMSET Water Well and Water Well No. 15 at concentrations less than the Maximum Contaminant Level established by USEPA. The results of water testing conducted to date indicate that the water does not presently pose a threat to human health or the environment (Tetra Tech, 2001).

Wastewater System

The wastewater collection system consists of approximately 43,000 linear feet of main pipelines. The system includes six lift stations, five of which are stand-alone stations while the sixth is located within Facility 6284. The lift stations deliver wastewater to the Camp Bullis wastewater treatment plant. Treated effluent is temporarily stored in evaporation/storage ponds and is ultimately discharged through spray irrigation. Camp Bullis operates under a zero discharge operating permit (TCEQ permit No. 12080-01), redistributing all produced wastewater effluent through irrigation of the nearby firing ranges.

Wastewater treatment plant (Facility 5920): The treatment plant is designed for a daily flow of 0.68 MGD and a two-hour peak flow of 2.38 MGD of influent. Clarifiers, lift stations, and a 200,000-gallon wastewater process tank used for secondary treatment are located east of the

cantonment area in the southern portion of the installation. The wastewater treatment plant is located on the north of Range Control Road between Military Highway and Wilderness Trail. The treatment facility was installed in 1997 to replace an abandoned wastewater treatment facility. The waste water treatment facilities at Camp Bullis consist of an activated sludge process plant using the conventional aeration mode. Treatment units include a bar screen, a grit chamber, an aeration basin, a final clarifier, a chlorine contact chamber, and an evaporating/storage pond system with a spray irrigation system for treated water. Sediment and sludge generated at the wastewater treatment plant are transported off-site as needed for final disposal (Tetra Tech, 2001).

Spray irrigation holding ponds: Oxidation ponds, are located with Facility 5925 southeast of the wastewater treatment plant on the south side of Range Control Road. Facility 5925 was designed as the tertiary water treatment facility, but the pumps have been removed and the facility currently serves as the spray irrigation holding pond service facility.

Historical wastewater treatment volumes are listed in Table 4-17.

Table 4-17 Camp Bullis Historical Wastewater Treatment

Fiscal Year	Wastewater Treatment (10³ gallons)
1996	17,700
1997	14,881
1998	12,599
1999	15,703
2000	15,778
2001	13,671
2002	12,796
2003	9,431
2004	14,230
2005	20,516
2006	12,293 (through May)

Storm Water System

No storm water system is currently in place at Camp Bullis. Storm water drainage at Camp Bullis is generally through natural settings (interim creeks, valleys, etc.). Natural drainage is enhanced by curbing, parking lots, and ditches. Storm water management requirements for construction and operation of the AFRC are described in Section 4.7.2.

Energy Sources

Camp Bullis is supplied with electric power by contract with the City Public Service (CPS). There are currently no contractual limitations on the amount of electricity the installation may purchase. Emergency generators are in place to provide electrical power to facilities with sensitive or critical operations. Camp Bullis used approximately 15,000 megawatt hours of electricity in 2005.

Camp Bullis uses propane to fuel boilers and heaters on the installation. Propane will be used to fuel future expansion on the installation because natural gas services are not available. Propane usage during 2005 is estimated at 112,785 gallons.

Communications

The Fort Sam Houston Directorate of Information Management (DOIM) plans to install new communications cabling and use existing cable service in existing and new underground conduit to provide service to the AFRC. BRAC-anticipated facility and user growth will require new underground cabling and duct work to support both telephone and data requirements. Currently, there are no plans at Fort Sam Houston or Camp Bullis to install aerial communication cables in support of BRAC. Planned cabling will provide required communications infrastructure to support AFRC mission. Cabling will support all current and planned data and telephone communications transmission speeds (Martin, 2006).

Solid Waste

Solid waste is collected and disposed off-site by contract disposal services at an approved and certified, TCEQ solid waste landfill.

4.12.2 Consequences

Preferred Alternative

Implementation of the preferred alternative would utilize installation resources, including potable water consumption, wastewater generation, energy consumption, and generate solid waste. Capacities for potable water production, wastewater treatment, energy distribution, and solid waste disposal are adequate to support the preferred alternative. Table 4-18 provides estimates of the increased utility usage due to the implementation of the preferred alternative. Utility usage increases were based on the percentage increase from current installation operations, while construction debris was estimated as the amount of material resulting from the

deconstruction/demolition of six existing facilities. Construction debris was estimated using EPA data averaging 6 pounds of construction debris per square foot of a structure.

Table 4-18 Camp Bullis Utility Increase Due to Preferred Alternative

Utility	Current Average Utilization	Increase Due to Preferred Alternative
Potable Water (10 ³ gal/yr)	36,895	9,224
Waste Water (10 ³ gal/yr)	14,731	3,683
Electricity (Annual MWH)	15,000	3,750
Propane (gallons/yr)	112,785	28,196
Solid Waste (tons/yr)	850	212.5
Construction Debris (total tons)	N/A	40 tons

Environmental regulations promulgated by RCRA require characterization of deconstruction/demolition debris to determine proper disposal criteria. State regulations may also exist that require more stringent disposal criteria.

Suspected lead characterization activities for building materials should be carried out using the installation's Lead Hazard Management Plan before deconstruction/demolition occurs. This plan also specifies sampling, abatement, transportation, manifest, and disposal procedures.

No Action Alternative

Under the no action alternative, no Army Reserve troops would be relocated to Camp Bullis. The utility systems would not be changed or adversely affected.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

Hazardous and toxic materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released or improperly managed. The terms hazardous material, hazardous waste, and hazardous substance have specific legal and scientific definitions in federal regulations.

Hazardous materials are defined under Department of Transportation (DOT) regulations as chemicals that present risks to safety, health, and property during transportation. DOT

regulations include requirements for shipping documents, packaging, labeling, transport vehicle placards, and training of personnel who handle hazardous materials.

Hazardous wastes are defined and regulated by RCRA and the Hazardous and Solid Waste Amendments of 1984. RCRA considers a waste hazardous if it meets certain levels of reactivity, ignitability, corrosivity, or toxicity or is otherwise listed as a hazardous waste in 40 CFR §261. RCRA regulations include detailed requirements for facilities that generate, transport, store, treat, or dispose of hazardous wastes.

Hazardous substances are defined by the CWA and CERCLA (or Superfund) as chemicals that are harmful to aquatic life or the environment if spilled or released into the environment.

4.13.1 Affected Environment

Army policy for hazardous waste management and waste-related pollution prevention is outlined in Section 5.0 of AR 200-1, Environmental Protection and Enhancement. The Installation Restoration Program (IRP) is the basis for response actions at military installations for sites contaminated with hazardous substances under the provisions of CERCLA and the Superfund Amendments and Reauthorization Act.

Historical hazardous materials and waste issues of concern at Camp Bullis include unexploded ordnance (UXO), asbestos-containing materials (ACMs), lead-based paint, and potential groundwater and/or soil contamination from inactive landfills.

Most hazardous materials at Camp Bullis are used in small to moderate quantities with limited spill potential. Some materials and chemicals, however, are stored in larger quantities depending on the needs for specific facilities. The Camp Bullis SPCCP specifies spill detection, reporting, containment, cleanup and disposal procedures for spills of oils or hazardous substances. The Camp Bullis Installation Spill Contingency Plan (ISCP) also contains spill response procedures and also lists local, state, and regional spill response resources that could be used for spill response, if necessary.

Uses of Hazardous Materials

Current activities and maintenance processes at Camp Bullis sometimes require the use of hazardous and toxic chemicals (paints, solvents, thinners, adhesives, oils, cleaners, pesticides, batteries, acids, bases, compressed gases, and chlorofluorocarbons). The Army and USEPA encourage a reduction in the use of these materials.

The Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. §136 et seq.) (FIFRA) of 1972 (amended in 1996 by the Food Quality Protection Act) regulates the registration and use of pesticides to protect applicators, consumers and the environment. Pesticide management activities are subject to federal regulations contained in 40 CFR Parts 162, 165, 166, 170, and 171. Texas regulations are promulgated under Act 171, the Pesticide Control Act of 1976 (as amended). Other guidelines and regulations concerning pest management practices are contained in the DoD pest management policy (DoD 4150.7) and the Army pest management program (AR 420-76). Pest management activities at Camp Bullis are conducted in accordance with federal, state, and DoD guidelines and instruction.

Camp Bullis follows an Integrated Pest Management Plan (IPM) as mandated by Public Law (PL 104-170, Section 303). The control strategies in the IPM program include structural and procedural modifications to reduce food and habitat used by pest, non-pesticide technologies including traps and monitoring devices, and application of chemical compounds that present the lowest potential hazard to human health and the environment.

Migratory birds are protected at all sites on installation property. No pest management operations (including chemical applications) may be enacted that would likely have a negative impact on these species or their habitats without prior approval and issuance of a permit. Establishment of a 170 foot buffer zone between the area requiring protection and the closet point of application is usually necessary when sensitive species are present.

The normal application of pesticides is not regulated by the TCEQ and is not considered a waste as defined by the Solid Waste Disposal Act, Texas Health and Safety Code §361. No pesticides or herbicides have been stored or disposed on Camp Bullis beyond usable quantities. Although, pesticides were applied at Camp Bullis by contractors licensed to apply these products by the State of Texas.

Storage and Handling Areas

Most chemicals used in training activities or maintenance of Camp Bullis are stored at Fort Sam Houston or ordered when needed. The current vehicle maintenance facility stores only small amounts of chemicals used at Camp Bullis.

Two underground storage tanks (USTs) and 13 aboveground storage tanks (ASTs) were identified at Camp Bullis. Table 4-19 summarizes storage tanks at Camp Bullis.

Table 4-19 Camp Bullis Storage Tanks

Tank ID	Facility No	Size (gal)	Contents	Year Installed	Tank Material	Type of Tank
65	6102	10,000	JP-8	Unknown	FRP	UST
66	6102	10,000	JP-8	Unknown	FRP	UST
	5000	200	DF-2	Unknown	Steel	AST
	5132	600	DF-2	Unknown	Aluminum	AST
	5132	600	DF-2	Unknown	Aluminum	AST
	5010	230	DF-2	Unknown	Steel	AST
	5020	300	DF-2	Unknown	Steel	AST
	5920	300	DF-2	Unknown	Steel	AST
	6118	500	DF-2	Unknown	Steel	AST
	6210	200	DF-2	Unknown	Steel	AST
	6208	500	DF-2	Unknown	Steel	AST
	6210	500	DF-2	Unknown	Steel	AST
	Lawn Maint	1,000	DF-2	Unknown	Steel	AST
	Black Jack	515	DF-2	Unknown	Steel	AST
	DEPMED	500	Unused	Unknown	Steel	AST

UST – Underground Storage Tank

AST – Aboveground Storage Tank

JP-8 – Jet Propellant

Source: FSHEd, 2003

DF-2 – Number 2 Diesel Fuel

FRP – Fiberglass Reinforced Plastic

A generator belly tank at Facility 6149 (not listed above) had a diesel release of approximately 100 to 150 gallons in December 1999. Approximately 130 cubic yards of impacted soil was subsequently excavated and transported to a regional landfill for disposal. The results of soil sampling activities on the open excavation indicated that fuel-related VOCs were not present and that moderate concentrations of total petroleum hydrocarbons remain in the soil. The open excavation was subsequently backfilled with clean soils (Alamo, 2000).

The results of the investigations conducted to date indicate that though the soils northwest of Facility 6149 contain fuel-related compounds, the concentrations do not presently pose a threat to human health or the environment.

Hazardous Waste Disposal

It is the responsibility of the Defense Reutilization Marketing Office (DRMO) to dispose of hazardous wastes generated on the installation (PES, 1999). In accordance with state and federal waste regulations, hazardous waste is transported off-site for proper disposal within 180 days. A Hazardous Waste Permit (RCRA Part B Permit HW-50335) was issued to Camp Bullis in 1997 pertaining to the management of hazardous waste at the Open Burn/Open Detonation unit (munitions site). Medical wastes generated at Camp Bullis are transported off-installation for disposal. No radioactive materials or wastes are stored on Camp Bullis (PES, 1999).

Recycling efforts and procedural changes, including product substitutions, have been implemented where feasible to reduce the need for hazardous waste disposal from installation activities. Some of the current activities for hazardous waste reduction at Camp Bullis include:

- Direct exchange of used vehicle batteries for new ones and use of rechargeable batteries were applicable.
- Limited recycling of used antifreeze
- Used oil recycling by Safety-Kleen and recycling
- Occasional off-spec fuel reuse
- Closed-loop biodegradable parts washers at some maintenance facilities
- Prime vendor pharmaceuticals contract at dental and medical activities
- Partial implementation of Hazardous Substance Management System (HSMS) and Hazardous Material (HM) pharmacy operations at the Readiness Logistics Business Center (RLBC) to reduce excess storage of HMs that may become waste

Site Contamination and Cleanup

Current SPCC and Pollution Prevention Plans are in place to prevent spills, provide cleanup guidance, as well as to detail site contamination determination procedures.

Special Hazards

Ordnance

Inventories of closed, transferring, and transferred (CTT) ranges and unexploded ordnances, discarded military munitions and/or munitions constituents (UXO-DMM-MC) was conducted in January 2003 for Camp Bullis. The CTT inventory includes all non-active/inactive areas within the installation boundary, and areas that may have been used in the past for ordnance-related testing or training. The main driver for the CTT inventory is the Defense Environment Restoration Program as amended by the Defense Authorization Act of 2002 (Public Law 107-107). The CTT inventory process involved mapping of CTT ranges, data collection for the Army Range Inventory Database (ARID), and conducting a risk assessment for explosive hazards. The results of the CTT inventory (January 2003) show the following estimated acreage for CTT military ranges and UXO-DMM-MC sites at Camp Bullis:

- Closed sites: 117.88 total acres
- No sites designated as transferring

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

- No sites designated as being transferred

The closed sites at Camp Bullis include two ranges (one machine gun range and one small arms range) totaling 15.39 acres, and two UXO-DMM-MC sites (102.49 acres) discovered during construction and maintenance activities. The Texas Army National Guard Unit Training and Equipment Site (UTES) is also located on 10 acres in Camp Bullis and included in the CTT inventory. No ranges or UXO-DMM-MC were discovered in this area.

Table 4-20 CTT Range and Site Details for Camp Bullis

Range/Site	Area (acres)	Current Use	Munitions Type(s)	Munitions Constituents	RAC¹ Score
100 Target Range	7.95	Currently used for sewage oxidation ponds	Small Arms	Yes	5
75mm Munitions Site	1.00	Several live 75 mm rounds were removed from a pit formerly located near the Motor Pool (Building 6104). It is currently used as an unimproved parking area	Large caliber (37mm and larger); Mortars, HE	Yes	2
8 Target Range	7.44	This range lies north of Salado Creek and the Wilderness Trail Road, except for the 1000-yard firing position. This area is currently undeveloped.	Small Arms	Yes	5
Stokes Mortars Munitions Site	101.49	Munitions were found during grading, land clearing, mowing and trenching activities in this area. Building 6215 (Outdoor Recreation Headquarters), a recreational vehicle parking area and a baseball field is located on this site.	Large caliber (37mm and larger); Mortars, HE; Mortars (WP, incendiary, illumination, smoke)	Unknown	5

¹ RAC – Risk Assessment Code. The RAC score is an indication of the explosives risk. A RAC score of "1" is assigned for the highest explosives safety risk, and a "5" for negligible explosives safety risk.

CTT = Closed, Transferring, and Transferred

The presence of UXO is unlikely, since much of the installation has been disturbed. A visual site inspection in 1999 did not indicate any ordnance material (PES, 1999), but a survey should be completed if the areas of the preferred alternative are suspected of containing UXO. U.S. Army Explosive Ordnance Disposal (EOD) personnel will dispose of UXO, if discovered.

Pesticides

Record keeping and application of pesticides at Camp Bullis is the responsibility of the Entomology Shop at Fort Sam Houston. Pesticide use is documented monthly in the Pest Management Report, and pesticide application follows federal, state, and local statutes; DoD

Directives; Army Regulations; and Camp Bullis Pest Management Plan. The methods used at Camp Bullis ensure the safe use of pesticides and comply with procedural and statutory criteria (EA for Mission Update, 2006).

Lead-Based Paint

Lead is a highly toxic metal that was used for many years in paint on and around facilities. Lead exposure can cause a range of health effects, from behavioral problems and learning disabilities to seizures and death. Army lead hazard management policy is outlined in Section 4.6 of AR 200-1, Environmental Protection and Enhancement. All facilities at Camp Bullis constructed or renovated before 1978 potentially contain lead-based paint. Deconstruction/demolition or renovation of structures built prior to 1978 typically requires removal of lead-containing materials. In such cases, Camp Bullis follows industry and Army standards for the encapsulation, removal, and disposal of the lead-based paint or lead-containing materials (EA for Mission Update, Feb. 2006). The six facilities to be deconstructed will need to be surveyed for lead-based paint before deconstruction/demolition begins, as 78 percent of the building space was constructed prior to 1978.

Asbestos-Containing Material

Asbestos is the name for a group of natural minerals that separate into strong, fine, heat-resistant fibers. When asbestos degrades into microscopic fibers, it becomes a health hazard. This can happen when ACMs are disturbed, typically during renovation or deconstruction/demolition of older structures. Degraded or crumbled asbestos is termed “friable” asbestos. ACMs have been used in a variety of forms for thermal protection, acoustical and decorative purposes, boiler and pipe insulation, construction materials, and appliances. Asphalt shingles are a potential ACM and have been used at Camp Bullis as roofing material (EA for Mission Update, Feb. 2006). The six facilities to be deconstructed will need to be surveyed for ACM before deconstruction/demolition begins.

Facilities most likely to contain friable asbestos are those built or remodeled between 1945 and 1986. The Army asbestos policy is established in Section 8.0 of AR 200-1, Environmental Protection and Enhancement. When asbestos removal is required, Camp Bullis follows industry and Army standards for the encapsulation, removal, and disposal of ACM.

Installation Restoration Program Sites

Contamination of groundwater and soil is tracked and mitigated through the Defense Site Environmental Restoration Tracking System (DSERTS). There are six DSERTS sites at Camp Bullis: two landfills, an unexploded munitions site, a surface impoundment/lagoon, a waste treatment plant, and an oil-water separator. Except for the two landfills and munitions site, the other areas were investigated, and no further action was required for those sites (EA for Mission Update, Feb. 2006).

A Hazardous Waste Permit (RCRA Part B Permit HW-50335) was issued to Camp Bullis in 1997 pertaining to the management of hazardous waste at the Open Burn/Open Detonation unit (munitions site). This is the only regulated hazardous waste management unit at Camp Bullis. Groundwater monitoring results have indicated the presence of VOCs (acetone, benzene, and carbon disulfide), explosives (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX], exahydro-trinitro-triazine [RDX], and nitrobenzene), and barium. In accordance with permit requirements, groundwater contaminated by the munitions site was sampled, and the results confirmed the presence of VOCs, SVOCs, metals, explosives, dioxins/furans, perchlorate, and sulfide (EA for Mission Update, Feb. 2006).

Two inactive sites, Site – 17 (Landfills 1, 10, 12A, 12B, 12C, 13A, and 13B) and Site – 08 (Landfill 8), are present at Camp Bullis (IAP, 2006). Site – 8 is located in the central area of Camp Bullis near Lewis Valley Road. Site -17 landfills are in various locations of Camp Bullis. Site locations are shown in Figure 4-1.

4.13.2 Consequences

Preferred Alternative

Potential construction and deconstruction/demolition activities at Camp Bullis could expose ordnance that would require proper disposal. A comprehensive ordnance survey should be completed before site improvements begin on the preferred alternative locations.

The preferred alternative would not increase long-term pesticide usage nor affect current pesticide application procedures. Additionally, it is not expected that application rates of pesticides would need to be increased.

Potential construction and deconstruction/demolition activities at Camp Bullis could produce short-term releases of ACMs or lead-based paint or increase the quantity of hazardous wastes

requiring disposal. Hazardous wastes or construction debris would be disposed of in accordance with local, city, state, and county regulations. No long-term increases in hazardous material usage or produced wastes are anticipated. The preferred alternative would not increase quantities of lead-based paints or ACM; however, some removal of lead-based paint and ACM would take place due to deconstruction/demolition of the six facilities. The six facilities consist of 12,916 sf with approximately 10,004 sf having the potential for lead-based paint and ACM.

Before deconstruction/demolition is initiated due to the preferred alternative, assessments for lead-based paint and ACM should be completed. Based on the findings of those assessments, abatement may be required. Abatement and removal actions will result in hazardous material that will need disposal in a proper facility.

No IRP sites would be affected by the preferred alternative.

Selection of the preferred alternative will result in increased petroleum, oil, and lubricant (POL) usage at Camp Bullis. An organizational level maintenance shop is scheduled to be constructed that will provide lube, oil, and filter changes for military vehicles used by the AFRC. Additionally, minor vehicle maintenance activities will be performed resulting in generation of minor quantities of brake system parts cleaners, fluids, and rags that will require disposal. Quantities of waste from maintenance activities are not expected to be sufficient to require permitting. Current SPCC, SWPPP, and the OHSCP should be updated to show locations and quantities of waste material generated and provide disposal requirements.

No Action Alternative

Under the no action alternative, conditions at the installation with regard to hazardous materials and wastes would remain the same with no significant impacts. No adverse impacts or beneficial improvements would occur with the selection of the no action alternative.

4.14 CUMULATIVE EFFECTS SUMMARY

CEQ regulations at 40 CFR 1508.27 define a cumulative impact as “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 what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

There are no known planned construction projects or land use changes in the vicinity of Camp Bullis along the southwest border. It appears that suburban residential construction from the northwest clockwise around the installation to the southeast would have no cumulative impact on the preferred alternative.

The activities described herein serve to highlight major influences in the region and to provide perspective on the contribution to any impacts generated by the proposed action.

Fort Sam Houston and its sub-installation, Camp Bullis are continuously evolving to meet the demands of GWOT and the Army's initiatives for transformation into a lighter, more lethal fighting force. Accordingly, construction activities associated with the creation and maintenance of training areas, buildings, and other facilities are commonplace. On Camp Bullis, the creation of a Basic Combat Convoy Course (BC3) and a Basic Combat Convoy Course with Lifesaving (BC3+) is atypical. Operational experience in overseas theaters of war lead to different or increased training requirements which in turn leads to changes in doctrine and creation of training scenarios, programs of instruction and training areas. The BC3 and BC3+ entailed creation of a 130+ acre site in Maneuver Area 3 on the western edge of the post. In this area, a replica of an austere base operating area would be created and approximately 310 students would run through the exercise per week. An EA prepared in November 2004 indicates that no significant impacts from that action were expected. The resource areas that would be most affected are thought to be water resources, earth resources, air quality, and noise. The land disturbance associated with the construction of the site and the activities associated with operation of the training venue (simulated small arms noise, vehicle operations, weapons firing) account for these effects (U.S. Army, 2004a). There would be no cumulative impacts associated with the preferred AFRC alternative and other actions.

Camp Bullis has a continuing need for repair, alteration, renovation, addition, or construction of new facility space to meet current and future mission requirements. Larger projects with funding requirements outside the normal operational budgets are programmed to compete for funding sources such as military construction congressional appropriations. Projects in these programs are not guaranteed funding and must compete with other military needs. For cumulative impacts, the interest would be in projects that are expected to be funded and constructed in the foreseeable future, that, along with the preferred alternative, might increase or mitigate environmental impacts.

Projects in this category for Camp Bullis are limited to a vehicle maintenance facility and a Dining Facility that are planned to be located near the AFRC in the cantonment areas. The facilities would follow the same siting criteria as the AFRC facility to avoid sensitive habitats, floodplains, contaminated sites, or cultural or biological resources. Also, energy conservation, air pollution, stormwater management, and other considerations are incorporated in the facility designs based on DoD mandates. Architectural compatibility, landscaping design criteria, and other exterior design choices would comply with strict guidelines that have been established for the installation. For the vehicle maintenance facility, the handling and storage of hazardous materials and wastes would be a major consideration during facility design and operations.

The construction of these facilities would increase air emissions from heating sources and increase impermeable surfaces but would not collectively cause major environmental impacts. The collective sizes of these facilities are much less than the AFRC facilities, which only insignificantly add to the minor environmental impacts resulting from the Camp Bullis operations. Although speculative at this point in time, there are other potential cantonment area and training area projects that would replace or enhance facilities on the Camp Bullis installation. However, none of the potential projects indicate that there are plans to significantly change the current density of use at Camp Bullis. As individual projects become more definitive and the potential for funding support increases, additional, more focused environmental analyses would be appropriate.

4.15 BEST MANAGEMENT PRACTICES SUMMARY

BMPs specify protection measures to reduce and/or eliminate less than significant effects anticipated to result from undertaking the proposed action. The BMPs are therefore not mitigation measures.

Site layout and landscaping design must be compatible with the existing installation architectural theme and historical context of the site. The architectural style and features of the new facilities must also fit into the natural, park-like setting and complement the other man-made and natural features in the cantonment area.

The ambient noise levels generated by the Camp Bullis training activities must be considered in the design of the facilities. A noise level reduction of 25-30 decibels is required in all sleeping areas.

BMPs must be followed to control fugitive dust and soil erosion on the construction sites. Edwards Aquifer Protection and Contributing Zone Plans must be prepared in accordance with the technical requirements in TCEQ Title 30 Subchapters 213A and 213B.

As required by the ESMP during the GCW breeding season, a 100-meter noise buffer would be placed around the core GCW habitat prior to construction or deconstruction/demolition.

Prior to deconstruction/demolition, Facility 5046 must be addressed following the SOPs in the HCP to comply with the intent of Section 106 of the NHPA.

Existing facilities must be surveyed for lead-based paint and ACM prior to deconstruction/demolition. If their presence is indicated, then proper deconstruction/demolition and debris disposal procedures must be followed. Hazardous materials and wastes related to the construction projects must be properly handled, stored, and disposed in accordance with applicable federal and state laws and regulations, as well as applicable DoD, U.S. Army, Fort Sam Houston, and CB policies and regulations. Prior to construction, a UXO survey should be performed to ensure UXO is not present at the construction site.

4.16 MITIGATION SUMMARY

Mitigation measures are actions required to reduce the significant environmental impacts of implementing a proposed or alternative action. None of the environmental impacts discussed in this EA are expected to be significant. Therefore, no mitigation measures are necessary for the proposed action.

4.17 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that environmental assessment include identification of "...any irreversible and irretrievable commitments of resources which would be involved in the preferred alternative should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

For the preferred alternative, most resource commitments are neither irreversible nor irretrievable. Most impacts are short-term and temporary, or longer lasting but negligible. The preferred alternative would require the use of fuels for vehicle operations at Camp Bullis. This fuel would be required as long as construction activities and military activities occur at Camp Bullis. Deconstruction/demolition, construction, or renovation activities would require the expenditure of fuels and other materials at Camp Bullis. There would be irreversible or irretrievable commitments of construction materials such as concrete, sand, bricks, steel and renovation materials such as insulation, wiring, and paint. The use of human resources for facility construction is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work. The use of human resources for the preferred alternative represents employment opportunities and is considered beneficial.

5.0 FINDINGS AND CONCLUSIONS

5.1 FINDINGS

5.1.1 Consequences of the Realignment (Preferred) Alternative

With the preferred alternative, potential impacts to natural and visual resources would generally occur within the physical boundaries of the preferred alternative location. No long-term adverse impacts to earth (geology, topography, caves, karst features, or soils), water (surface water, groundwater, floodplains, or wetlands), or land use are expected. Similarly, no adverse impacts would occur to utilities or the associated infrastructure.

Cultural resources would be impacted with the removal of Facility 5046. Adverse impacts to biological (vegetation, wildlife, and threatened and endangered species) and visual resources would be minimized by BMPs. Minor air, noise, and transportation impacts would also occur during the short-term construction activities under the preferred alternative. The preferred alternative would not generate disproportionate adverse human or environmental health impacts on minority or low-income populations because no significant population of either group occurs near Camp Bullis. No socioeconomic impacts to military or regional populations, economy, employment, income, housing, community services, and education would result from implementation of the preferred alternative.

BMPs would reduce or eliminate the potential short-term effects to the environment due to deconstruction/demolition and construction activities. Similarly, disposal regulations are in place to guide proper disposal of generated waste and construction debris potentially contaminated with lead-based paint or ACM. Surveys would be conducted before deconstruction/demolition in the case of the historic property, before land disturbance in the case of unexploded ordnance, and before and during deconstruction/demolition of the six facilities inside the cantonment area.

5.1.2 Consequences of the No Action Alternative

Under the no action alternative, no new construction or deconstruction/demolition would occur, and the existing cantonment area facilities would continue to be used. Additionally, air emissions, traffic, noise, geological or soil disturbances, water resources, socioeconomics, utilities, or hazardous waste would be changed only through the continued use of the existing facilities.

5.2 CONCLUSIONS

This section summarizes the environmental effects of undertaking the proposed action and identifies required permits and plans for implementing the preferred alternative and for supporting a FNSI.

5.2.1 Summary of Environmental Effects

Short-term land use disturbances would result from constructing the preferred alternative. AFRC operations would be consistent with the local surrounding land use. Implementing the preferred alternative would improve facilities in the cantonment area but would result in potential visual changes in views from elevations adjacent to the western boundary of Camp Bullis. There would be adverse affects to the aesthetic character of the cantonment area if architectural and landscaping design requirements specified in the Installation Design Guide are not followed.

Construction and deconstruction/demolition activities for the preferred alternative would potentially produce slight increases in criteria pollutant emissions but would not affect local or regional air quality. Slight increases in noise levels would be expected from construction equipment and increased traffic during AFRC operations.

There would be no significant effects to geologic, groundwater, surface water resources or to Karst features from implementing the preferred alternative. Construction activity at the three AFRC parcels would increase the potential for erosional effects. The eroded area at the north parcel would be expected to be improved by appropriate facility design, construction and paving. There would be no expected impact to wetlands or adverse effects to floodplains.

The loss of disturbed grassland and oak savanna habitat at the preferred alternative sites would be approximately 1 percent of this habitat type at Camp Bullis. The GCW habitat overlaps 1 acre of the 52-acre parcel. This habitat would be avoided by placing a 100 meter noise buffer around the core GCW habitat as required by the ESMP during the breeding season.

Deconstruction/demolition of one small facility that is potentially eligible for the NRHP would occur. Adverse effects to historic resources would not occur if HPC procedures are followed. Temporary, minor beneficial socioeconomic effects would occur from the preferred alternative construction. There would be no significant effects to employment, income, or demographics resulting from implementing the BRAC actions. Localized effects on traffic would potentially occur due to construction detours, and a minor increase in traffic would be expected on drill

weekends. The water, wastewater, and electric utility system capacities are adequate to provide for the increase in demand that would be expected from executing the preferred alternative. There would be an increase in the usage of petroleum products and in the generation of construction debris, but no long-term effect to the hazardous materials and waste management operations would be expected.

5.2.2 Required Permits and Plans to Support a FNSI

Before implementation of the preferred alternative, the following permits must be obtained:

- TCEQ Construction General Permit via filing a Notice of Intent for coverage under this permit
- Digging permit per U.S. Army Garrison – Fort Sam Houston
- Edwards Aquifer Protection Plan
- Edwards Aquifer Contributing Zone Plan

6.0 LIST OF PREPARERS

Joe Fleming, PE CAPM
Senior Environmental Engineer
MACTEC Engineering and Consulting, Inc.
Principal Investigator

Rae Lynn Schneider
President
Integrated Environmental Solutions, Inc.
Biological and Socioeconomic Investigator

Ching Wu, PE
Project Manager
MACTEC Engineering and Consulting, Inc.

Gary Baumgartel, PE
Project Principal and Senior Reviewer
MACTEC Engineering and Consulting, Inc.

Josh Jenkins, PG
Senior Geologist
MACTEC Engineering and Consulting, Inc.
Project Coordinator

Mark Lunsford
Project Consultant
MACTEC Engineering and Consulting, Inc.
Technical Coordinator

Ted Parks
GIS Coordinator
MACTEC Engineering and Consulting, Inc.

Sarah Powers
Project Editor
MACTEC Engineering and Consulting, Inc.

7.0 DISTRIBUTION LIST

COMMUNITY ORGANIZATIONS

D. Michael Villyard
District 9 Neighborhood Alliance
20603 Idyllwild
San Antonio, TX 78258

Becky Oliver
Greater San Antonio Builder's Assn.
4204 Gardendale, Suite 312
San Antonio, TX 78229

Liza Meyer
Keep San Antonio Beautiful
1940 Grandstand
San Antonio, TX 78238

Tanya Glover
Management Professionals of Texas
7613 Tezel Rd.
San Antonio, TX 78250

Ramon Duran
Metropolitan Alliance
123 Octavia Place
San Antonio, TX 78214

Darryl Byrd
Planning Commission Chairman
PO Box 839966
San Antonio, TX 78283

Martha Mangum
Real Estate Council of San Antonio
8706 Lockway
San Antonio, TX 78217

Charles Bartlett
Salado Creek Foundation
PO Box 39375
San Antonio, TX 78218

David Guin
San Antonio Apartment Association
6363 De Zavala, Suite 300
San Antonio, TX 78249

Georgina Schwartz
San Antonio Audubon Society
5150 Broadway #257
San Antonio, TX 78209

Robyn Locke
San Antonio Board Of Realtors
9110 West IH10, Suite 1
San Antonio, TX 78230

Julie Brown
TX Dept. of Transportation
PO Box 29928
San Antonio, TX 78229

Ursula Wheeler
University Of Texas at San Antonio
6900 N. FM. 1604 W.
San Antonio, TX 78249

John Barnett
UT at San Antonio Library
6900 North Loop 1604 West
San Antonio, TX 78249

Henry Avila
Zoning Commission Chairman
315 W. Southcross
San Antonio, TX 78251

NEIGHBORHOOD ASSOCIATIONS

Brenda Armstrong
Forests at Inwood HOA
1600 NE Loop 410, Suite 202
San Antonio, TX 78209

Francine Romero
Friends of Friedrich Wilderness Park
21395 Milsa
San Antonio, TX 78256

Oscar Vicks
United Homeowners Improvement
Association, Inc.
PO Box 201721
San Antonio, TX 78220-8721

Dominion Homeowners Association
10 Dominion Drive
San Antonio, Texas 78257

Greystone Homeowners Assn.
Ron Kraemer, President
1600 N.E. Loop 410, Suite #202
San Antonio, Texas 78209

UNITED STATES SENATE 2006

Honorable John Cornyn
Senate Russell Bldg, Court Yard No. 5
Washington, DC 20510

Honorable Kay Bailey Hutchison
145 Duncan Drive, Suite 120
San Antonio, TX 78226-1898

UNITED STATES HOUSE OF REPRESENTATIVES

Honorable Henry Bonilla
11120 Wurzbach, Suite 300
San Antonio, TX 78230

Honorable Charles A Gonzalez
727 E. Durango, Suite B 124
San Antonio, TX 78206

Honorable Henry Cuellar and Mrs. Cuellar
1149 E. Commerce St., 210 2nd Floor
San Antonio, TX 78205-3315

Honorable Lamar Smith
1100 NE Loop 410, No. 640
San Antonio, TX 78216

STATE OFFICIAL TEXAS SENATE

Honorable Leticia Van De Putte
700 N. St. Marys St., Suite 1725
San Antonio, TX 78205-3546

Honorable Jeff Wentworth
1250 NE Loop 410, Suite 925
San Antonio, TX 78209

TEXAS STATE REPRESENTATIVES

BEXAR COUNTY

Honorable Frank Corte, Jr.
2040 Babcock Road, Suite 402
San Antonio, TX 78229

Honorable Trey Martinez Fischer
1910 Fredericksburg Road
San Antonio, TX 78201

Honorable Ruth Jones McClendon
403 S. WW White Rd., Suite 210
San Antonio, TX 78219

Honorable Robert R. Puente
2823 E. Southcross
San Antonio, TX 78223

Honorable Carlos Uresti
1114 SW Military Drive, Suite 103
San Antonio, TX 78221

BEXAR COUNTY OFFICIALS

Honorable Lyle Larson
Bexar County Courthouse
100 Dolorosa, 1st Floor
San Antonio, TX 78205-3036

Honorable Tommy Adkisson
Bexar County Courthouse
100 Dolorosa, 1st Floor
San Antonio, TX 78205-3036

Honorable Nelson W Wolff
Bexar County Courthouse
100 Dolorosa, 1st Floor
San Antonio, TX 78205-3036

Mr. Ralph Lopez
200 N. Comal
San Antonio, TX 78201

Honorable Susan Reed
Bexar County Criminal Justice Center
300 Dolorosa
San Antonio, TX 78205-3030

SAN ANTONIO, CITY COUNCIL

Honorable Phil Hardberger
PO Box 839966
San Antonio, TX 78283-3966

Honorable Sheila D. McNeil
PO Box 83996
San Antonio, TX 78283-3966

Honorable Roland Gutierrez
PO Box 83996
San Antonio, TX 78283-3966

Honorable Richard Perez
PO Box 83996
San Antonio, TX 78283-3966

Honorable Kevin Wolff
PO Box 83996
San Antonio, TX 78283-3966

Honorable Christopher Haass
PO Box 83996
San Antonio, TX 78283-3966

SAN ANTONIO, CITY MANAGERS OFFICE

Mrs. Sheryl L. Sculley
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Ms. Jelynn Leblanc Burley
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mrs. Frances A. Gonzalez
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

CITY OF SAN ANTONIO DEPARTMENTS

Mr. Michael Bernard
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mr. Ramiro Cavazos
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mr. Robert Ojeda
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mr. Emil Moncivais
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mr. Charles McManus
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

Mr. Ben Gorzell
City Managers Office
PO Box 839966
San Antonio, TX 78283-3966

ADDITIONAL LIST

Ms. Betsy Merritt
The National Trust for Historic Preservation
1785 Massachusetts Avenue NW
Washington, DC 20036-2117

Ms. Donna McFadden, Tribal Historic
Preservation Officer
Mescalero Apache Tribe
101 Central Avenue
Mescalero, NM 88340

Mr. Dave Berwick
Army Program Manager
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue NW #809
Washington, DC 20004

Mr. Don Klima
The Advisory Council on Historic
Preservation
1100 Pennsylvania Avenue NW
Washington, DC 20004

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Mr. Lawrence Oaks
Executive Director
Texas Historical Commission
PO Box 12276, Capitol Station
Austin, TX 78711-2276

Ms. Anne Benson-McGlone
City of San Antonio, Texas
Historic Preservation Office
114 W. Commerce
San Antonio, TX 78283

Ms. Barbara Johnson
San Antonio Conservation Society
107 King William
San Antonio, TX 78204

Mrs. Joan Gaither
Society for the Preservation of Historic Fort
Sam Houston
PO Box 340308
Fort Sam Houston, TX 78234

Mr. Tom Keohan
National Park Service
Intermountain Support Office
PO Box 25287
Denver, CO 80225

Mr. Joseph Murphey
United States Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102-0300

Wallace Coffey, Chairman
Comanche Tribe
PO Box 908
Lawton, OK 73502

Southwest Region Installation Management
1204 Stanley Road, Suite 9
Fort Sam Houston, TX 78234-5009

Mark Chino, President
Mescalero Apache and Affiliated Tribes
PO Box 227
Mescalero, NM 88340

Carl Martin, President
Tonkawa Tribe
PO Box 70
Tonkawa, OK 74653

Gary McAdams, President
Wichita and Affiliated Tribes
PO Box 729
Anadarko, OK 73005

Theodosa Herrera, Tribal Leader
Tap Pilam Coahuiltecan Nation
PO Box 460346
San Antonio, TX 78246

Mr. Robert T. Pine
Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin, TX 78758

Mr. Robert Cook
Texas House of Representatives
219 E. Main Street
P.O. Box 217
Eagle Lake, TX 77434

Ms. Abbi Power
Texas Commission on Environmental
Quality
1450 Judson Road
San Antonio, TX 78233

Ms. Marilyn Grossman
Office of the Director
301 Tarrow, Suite 364
College Station, TX 77840-7896

Mr. George Ozuna
U.S. Geological Survey
5563 De Zavala Road,
Suite 290
San Antonio, TX 78249

Mr. David Chardavoyne
President/CEO
San Antonio Water System
2800 U.S. Hwy 281
PO Box 2449
San Antonio, TX 78298-2449

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Mr. Robert J. Potts
General Manager
Edwards Aquifer Authority
1615 N. St. Mary St.
San Antonio, TX 78215

Aquifer Guardians in Urban Areas
PO Box 15618
San Antonio, TX 78212

Mr. Gregg Rothe
General Manager
San Antonio River Authority
100 East Guenther St.
San Antonio, TX 78204

Judith Ingalls Small Business Development
Center
University of Texas San Antonio
501 Durango Blvd
San Antonio, Texas 78207-4415

Phillip Covington
San Antonio Development Agency
PO Box 831386-1386
San Antonio, Texas 78283-1386

Bill Mock
San Antonio Greater Chamber of Commerce
602 East Commerce
P.O. Box 1628
San Antonio, Texas 78296-1628

VP Economic Development
United States Environmental Protection
Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

M. Ravichandran
37 CES/CEVR
1555 Gott St.
Lackland AFB, TX 78236-5645

Kathy Boydston
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

MEDIA CONTACTS

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9.0 PERSONS CONSULTED

Ms. Jackie Schlatter, Fort Sam Houston Natural and Cultural Resources

Mr. Peter Pagoulatos, Fort Sam Houston Natural and Cultural Resources

Mr. Lucas Cooksey, Wildlife Biologist, Camp Bullis

1LT Stephanie Nelson, Fort Sam Houston, BRAC Admin

Algie B. Byrd, USAG, RMO

Mr. Robert Martin, Fort Sam Houston DOIM Information Management Specialist/BRAC

Mr. Michael E. Main, Human Resources Specialist, Fort Sam Houston Directorate of Human Resources

Ms. Mellisse Morgan, Camp Bullis BRAC Analyst

Mr. Burwell Pike, Fort Sam Houston Environmental Protection Specialist

Mr. Roberto Rivera, Camp Bullis Directorate of Safety, Environment, and Fire, Environmental Engineer

Mr. Gerardo Salazar, Fort Sam Houston Utilities Services

Ms. Patricia Seader, Fort Sam Houston Public Works Analyst

Ms. Heather Stewart, TCEQ Monitoring Operations Division

Mr. Jim Blair, San Antonio River Authority

Mr. Geary Schindel, Edwards Aquifer Authority

Mr. Dan Ryan, Fort Sam Houston

APPENDIX A

**HABITAT REQUIREMENTS FOR STATE AND FEDERALLY LISTED THREATENED
AND ENDANGERED SPECIES OCCURRING OR POTENTIALLY OCCURRING IN
BEXAR COUNTY, TEXAS**

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APPENDIX A

Table A-1 Habitat Requirements for State and Federally Listed Threatened and Endangered Species Occurring or Potentially Occurring in Bexar County, Texas

Common Name (Scientific Name)	Federal Status	State Status	General Habitat Description	Habitat Potentially Present on Camp Bullis?	Known Occurrence on Camp Bullis?
REPTILES					
Cagle's Map Turtle (<i>Graptemys caglei</i>)	C1	T	Endemic; Guadalupe River System; short stretches of shallow water with swift to moderate flow and gravel or cobble bottom, connected by deeper pools with a slower flow rate and a silt or mud bottom; gravel bar riffles and transition areas between riffles and pools especially important in providing insect prey items; nest on gently sloping sand banks within 30 feet of water's edge	No	No
Indigo Snake (<i>Drymarchon corais</i>)	--	T	Texas, south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter	Yes ²	No
Texas Horned Lizard (<i>Phrynosoma cornutum</i>)	--	T	Open, arid and semiarid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	Yes ²	No
Texas Tortoise (<i>Gopherus berlandieri</i>)	--	T	Open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November	No	No
BIRDS					
Arctic Peregrine Falcon (<i>Falco peregrinus tundrius</i>)	DL	T	Potential migrant	Yes ²	No
Black-capped Vireo (<i>Vireo atricapilla</i>)	E	E	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nests mid-April-late summer	Yes ²	Yes ²
Golden-cheeked Warbler (<i>Dendroica chrysoparia</i>)	E	E	Juniper-oak woodlands; dependent on Ashe juniper (<i>Juniperus asheii</i>) for long fine bark strips, only available from mature trees, used in nest construction; nests placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar breaks can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nests late March-early summer	Yes ²	Yes ²

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Common Name (Scientific Name)	Federal Status	State Status	General Habitat Description	Habitat Potentially Present on Camp Bullis?	Known Occurrence on Camp Bullis?
Interior Least Tern (<i>Sterna antillarum athalassos</i>)	--	E	this subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish & crustaceans, when breeding forages within a few hundred feet of colony	No	No
White-faced Ibis (<i>Plegadis chihi</i>)	--	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but can be found in brackish and saltwater habitats	No	No
Whooping Crane (<i>Grus americana</i>)	--	E	Potential migrant	Yes ²	No
Wood Stork (<i>Mycteria americana</i>)	--	T	Forages in prairie ponds, flooded pastures, or fields, ditches, and other shallow standing water, including saltwater; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e., active heronries); breeds in Mexico and birds move into Gulf States in search of mudflats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960	No	No
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	--	T	Arid open country, including open deciduous or pine-oak woodland, mesa, or mountain country, often near watercourses, and wooded canyons and tree-lined rivers along middle slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions	Yes ²	No
MAMMALS					
Black Bear (<i>Ursus americanus</i>)	--	T	Within historical range of Louisiana black bear in eastern Texas, inhabits bottomland hardwoods and large tracts of undeveloped forested areas; in remainder of Texas, inhabits desert lowlands and high elevation forests and woodlands; dens in tree hollows, rock piles, cliff overhangs, caves, or under brush piles	No	No
AMPHIBIANS					
Black Spotted Newt (<i>Notophthalmus meridionalis</i>)	--	T	Can be found in wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods; Gulf Coastal Plain south of the San Antonio River	No	No
Cascade Caverns Salamander (<i>Eurycea latitans</i> complex)	--	T	Endemic; subaquatic; springs and caves in Bexar, Comal, Kendall, and Kerr counties.	Yes ²	No
Comal Blind Salamander (<i>Eurycea tridentifera</i>)	--	T	Endemic; semi-troglobitic; found in springs and waters of caves in Bexar and Comal counties	Yes ²	Yes ²
San Marcos Salamander (<i>Eurycea nana</i>)	T	--	The San Marcos Salamander is found only in Hays and Blanco Counties of Texas. Strictly aquatic, this salamander may be seen among algae in the spring-fed pool at head of the San Marcos River.	No	No

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Common Name (Scientific Name)	Federal Status	State Status	General Habitat Description	Habitat Potentially Present on Camp Bullis?	Known Occurrence on Camp Bullis?
Texas Blind Salamander (<i>Typhlomolge rathbuni</i>)	E	--	The Texas Blind Salamander is found only in the Balcones Escarpment of the San Marcos, Texas area. This salamander is found in the subterranean streams of the Purgatory Creek system, and is only found above ground when water flow brings it to the surface.	No	No
ARACHNIDS					
Bracken Bat Cave Meshweaver (<i>Cicurina venii</i>)	E	--	Small, eyeless harvestman; karst features in north and northwest Bexar County	Yes ²	No
Cokendolpher Cave Harvestman (<i>Texella cokendolpheri</i>)	E	--	Small, eyeless harvestman; karst features in north and northwest Bexar County	Yes ²	No
Government Canyon Bat Cave Meshweaver (<i>Cicurina vespera</i>)	E	--	Small, eyeless, or essentially eyeless spider; karst features in northwestern Bexar County and northeastern Medina County	Yes ²	No
Government Canyon Bat Cave Spider (<i>Neoleptoneta microps</i>)	E	--	Small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Yes ²	No
Madla's Cave Meshweaver (<i>Cicurina madla</i>)	E	--	Small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Yes ²	Yes ²
Robber Baron Cave Meshweaver (<i>Cicurina baronia</i>)	E	--	Small, eyeless harvestman; karst features in north and northwest Bexar County	Yes ²	No
INSECTS					
Comal Springs Dryopid Beetle (<i>Stygoparnus comalensis</i>)	E	--	Dryopids usually cling to objects in stream; dryopids are sometimes found crawling on stream bottoms or along shores; adults may leave the stream and fly about, especially at night; most dryopid larvae are vermiform and live in soil or decaying wood. Restricted to two springs that are experiencing a decrease in water quantity and quality due to water withdrawal and other human activities within the Edwards Aquifer.	No	No
Comal Springs Riffle Beetle (<i>Heterelmis comalensis</i>)	E	--	Restricted to two springs that are experiencing a decrease in water quantity and quality due to water withdrawal and other human activities within the Edwards Aquifer.	No	No
Helotes Mold Beetle (<i>Batrisodes ventyivi</i>)	E	--	Small, eyeless mold beetle; karst features in north and northwest Bexar County.	Yes ²	No
Ground Beetle (<i>Rhadine exilis</i>)	E	--	Small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	Yes ²	Yes ²
Ground Beetle (<i>Rhadine infernalis</i>)	E	--	Small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	Yes ²	Yes ²
FISHES					
Fountain Darter (<i>Etheostoma fonticola</i>)	E	--	The Fountain darter is the smallest species of darter, usually reaching less than 25mm (1in.) at maturity. Based on studies of fountain darters from the San Marcos River, the species feeds on small invertebrates. The present distribution of fountain darter in the San Marcos River is from Spring Lake to an area between the San Marcos wastewater treatment plant outfall and the confluence with the Blanco River. The species is also found virtually throughout the Comal River to its confluence with the Guadalupe River.	No	No

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Common Name (<i>Scientific Name</i>)	Federal Status	State Status	General Habitat Description	Habitat Potentially Present on Camp Bullis?	Known Occurrence on Camp Bullis?
San Marcos Gambusia (<i>Gambusia georgei</i>)	E	--	San Marcos gambusia apparently is restricted to the approximately 1km portion of the San Marcos River between Interstate Highway 35 and the USGS gauging station immediately downstream from Thompson's Island.	No	No
Toothless Blindcat (<i>Trogloglanis pattersoni</i>)	--	T	Troglobitic, blind catfish endemic to the San Antonio pool of the Edwards Aquifer	Yes	No
Widemouth Blindcat (<i>Satan eurystomus</i>)	--	T	Troglobitic, blind catfish endemic to the San Antonio pool of the Edwards Aquifer	Yes	No
CRUSTACEANS					
Peck's Cave Amphipod (<i>Stygobromus pecki</i>)	E	--	Restricted to two subterranean springs that are experiencing a decrease in water quantity and quality due to water withdrawal and other human activities within the Edwards Aquifer.	Yes ²	No
VASCULAR PLANTS					
Texas wild-rice (<i>Zizania texana</i>)	E	--	Endemic to the upper few km of the San Marcos River, where it was locally abundant as recently as the 1950s. This remnant population rarely flowers or produces seed in the wild. The decline of this grass, which is narrowly adapted to high quality, aquifer-fed waters, is the result of drastic draw-downs in the aquifer level to support human population growth in the area, combined with past dredging and vegetation removal, damming, increased siltation and sewage loads, trampling and removal by recreationists, and herbivory by native and introduced waterfowl and by the non-native nutria.	No	No

1 = Occurrence on Fort Sam Houston

2 = Occurrence of Camp Bullis

C1 = Federal candidate, category 1

E = Endangered

DL = De-listed

PT = Federally proposed endangered/threatened

T = Threatened

-- = Rare, but with no regulatory listing status

Source: TPWD 2005; USFWS 2006

Camp Bullis, Texas, Reserve Center Environmental Assessment (EA)

Table A-2 Objectives and Actions of the ESMP

Objective Type	Objective Description	Action
All Federally Protected Species		
Compliance	The Army will continue to comply with all applicable sections of the Endangered Species Act (ESA) for all training, operations, maintenance, and construction activities conducted on Camp Bullis; regardless of habitat designation on the Training Area map	Camp Bullis conducted a biological assessment and received a BO from USFWS. Camp Bullis will continue to monitor its training activities to ensure compliance with the ESA.
Compliance	Camp Bullis will conduct an annual review/update of the ESMP, as necessary	Review annual monitoring data to ensure that current management practices meet the endangered species management goals.
Protection	Continue and increase internal environmental awareness with Integrated Training Area Management to foster protection of T&E species and habitat	Camp Bullis will continue to maintain, update, and distribute Training Area maps that clearly indicate conservation area which may or may not require training activity adjustment.
Protection	Develop external partnerships to enhance the management of T&E species	Camp Bullis will evaluate partnering with various local, state, and federal agencies. Camp Bullis is currently a partner in a feasibility research study for augmentation of groundwater recharge.
Protection	Implement ESMP enforcement measures	Training restrictions, habitat boundaries, and other requirements of the ESMP, upon approval of the FSH commander, will be incorporated into the Camp Bullis Training Regulations.
GCW		
Monitoring	Continue to document GCW population trends and monitor population status	conduct annual point count censuses record the presence/absence of female on each male territory for all nests, record the number of nestlings, fledglings, and nest fate
Mapping	Produce an annual habitat map, based on prior field season results, delineating "core" vs. "non-core" habitat	Updating these habitat designations will allow for training activity restrictions to remain current.
Population	Maintain sufficient habitat to support a minimum carrying capacity equal to the historic average installation-wide density of 7 singing male per 100 hectares of habitat and strive to continue the trend of increasing GCWs on Camp Bullis	Camp Bullis will implement designation of existing GCW habitat into "core" and "non-core" habitat areas. The goal of the designation is to create noise buffers and provide contiguous habitat for GCW.
Protection	Implement training restrictions in "core" GCW habitat and noise buffer areas in accordance with Camp Bullis Endangered Species Training Guidelines	Certain restrictions to non-compatible military training practices described in the ESMP will be implemented to ensure the continued survival of GCW within "core" habitat.
Protection	Continue training without restrictions consistent with essential mission requirements in designated "non-core" habitats while providing no habitat loss	All training activities, subject to the Camp Bullis range regulations, will be allowed in "non-core" areas.
Protection	Minimize incidental take for the 5-year term of this ESMP	Camp Bullis will implement the requirements of the USFWS 2005 BO
Management	Maintain and proactively manage GCW habitat consistent with carrying capacity goal and essential mission requirements	Camp Bullis will maintain currently available habitat by implementing the Endangered Species Training Guidelines.
Research	Evaluate correlation of habitat quality with GCW abundance and productivity	Camp Bullis will continue to evaluate the correlation of habitat quality with GCW abundance and productivity based on data collected in the annual surveys
Research	Continue to study the potential impacts of military training on GCW and measures to reduce potential impacts	Camp Bullis shall continue the study and implementation of the Tactical Concealment Areas (TCA) program
BCV		
Monitoring	Continue to document BCV population trends and monitor population status	determine numbers of singing males within habitat annually and record dominant vegetation characteristics within the breeding territories. annually visit and inspect all suspected sites of BCV occupation to document status and physical location of BCV on Camp Bullis ensure complete access to impact areas to adequately survey BCV status and physical location

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Objective Type	Objective Description	Action
Monitoring	Continue to monitor and assess population status by monitoring demographic parameters	document territory size. document number of young with each adult for all nests located, record number of host and parasite eggs, nestlings, fledglings, and nest fate
Population	Maintain sufficient habitat to maintain carrying capacity of 11 BCV territories	Camp Bullis will designate and maintain designation of all BCV habitat
Protection	Implement training restrictions in all current BCV habitat in accordance with Camp Bullis Endangered Species Training Guidelines to prevent habitat loss	Certain restrictions to non-compatible military training practices described in the ESMP will be implement to ensure the continued survival of BCV
Protection	Minimize incidental take for the 5-year term of this ESMP	Camp Bullis will implement the requirements of the USFWS 2005 BO
Protection	Continue training without restrictions consistent with essential mission requirements in areas outside of BCV habitats while providing no habitat loss	All training activities, subject to the Camp Bullis range regulations, will be allowed in non-designated areas.
Mapping	Correlate annual population surveys, where accessible, in occupied and potential habitat with environmental factors to better define habitat for BCV	Camp Bullis will continue to evaluate the correlation of vegetation communities and other factors with BCV abundance and productivity based on data collected in the annual surveys
Cave-Adapted Species		
	Maintain the Karst Management Plan recommendations	
Other Species		
Monitoring	Continue to monitor and document the presence/absence of other listed rare and sensitive species	monitor any whooping cranes, bald eagles, or other listed species that appear on Camp Bullis for potential disturbance from human activity and notify USFWS conduct additional surveys to determine presence/absence and status of other listed rare and sensitive species revise ESMP if repeated sightings of any additional species occur
Protection	Provide and implement protection measures to minimize potential disturbance, harassment, or other impacts to species of concern from military training and other land use activities	notify range control and other appropriate organizational elements of any potential training conflicts with the location of the observed listed species suspend training activities in proximity to these species until they have departed installation lands

Source: U.S. Army 2005b

APPENDIX B
ECONOMIC IMPACT FORECAST SYSTEM REPORT

Economic Impact Forecast System

US Army Corps of Engineers
Mobile District

EIFS REPORT

PROJECT NAME

Camp Bullis EA

STUDY AREA

48013 Atascosa, TX
 48019 Bandera, TX
 48029 Bexar, TX
 48091 Comal, TX
 48187 Guadalupe, TX
 48259 Kendall, TX
 48325 Medina, TX
 48493 Wilson, TX

FORECAST INPUT

Change In Local Expenditures	\$52,000,000
Change In Civilian Employment	0
Average Income of Affected Civilian	\$0
Percent Expected to Relocate	0
Change In Military Employment	0
Average Income of Affected Military	\$0
Percent of Militart Living On-post	0

FORECAST OUTPUT

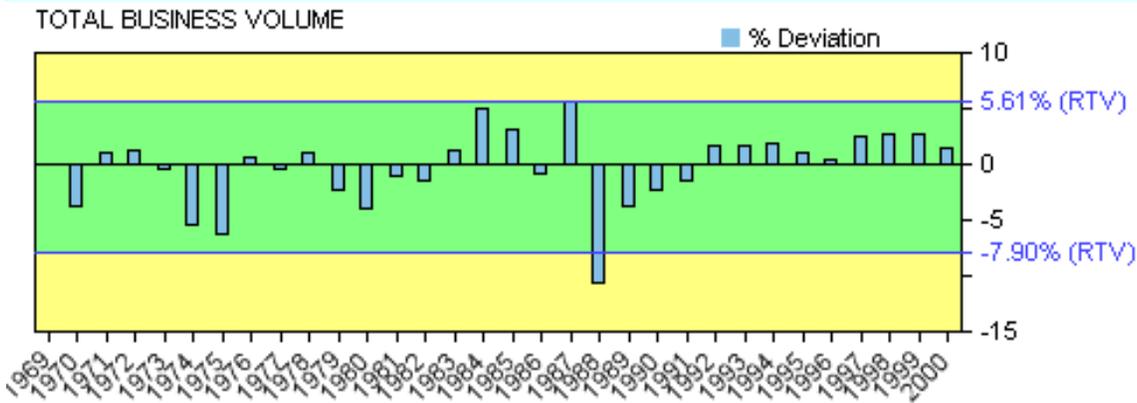
Employment Multiplier	4.46
Income Multiplier	4.46
Sales Volume - Direct	\$52,000,000
Sales Volume - Induced	\$179,920,000
Sales Volume - Total	\$231,920,000 0.33%
Income - Direct	\$9,770,911
Income - Induced)	\$33,807,350
Income - Total(place of work)	\$43,578,260 0.12%
Employment - Direct	237
Employment - Induced	819
Employment - Total	1056 0.11%
Local Population	0
Local Off-base Population	0 0%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	5.61 %	5.82 %	2.81 %	1.1 %
Negative RTV	-7.9 %	-7.18 %	-3.44 %	-0.7 %

RTV DETAILED

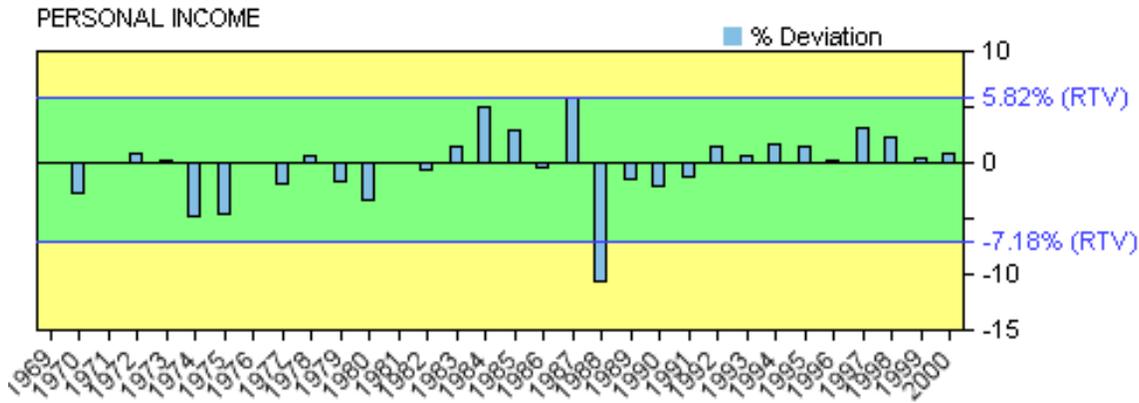
SALES VOLUME



created with ChartDirector from www.advsofteng.com

Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	2415193	10554393	0	0	0
1970	2605498	10760707	206314	-407965	-3.79
1971	2905343	11505158	744451	130172	1.13
1972	3203642	12269949	764790	150511	1.23
1973	3553990	12829904	559955	-54324	-0.42
1974	3925891	12759146	-70758	-685037	-5.37
1975	4227508	12597974	-161172	-775451	-6.16
1976	4713811	13292947	694973	80694	0.61
1977	5240744	13835565	542618	-71661	-0.52
1978	5936447	14603660	768095	153816	1.05
1979	6733990	14882118	278458	-335821	-2.26
1980	7689902	14918410	36292	-577987	-3.87
1981	8742861	15387435	469025	-145254	-0.94
1982	9509752	15786188	398753	-215526	-1.37
1983	10320165	16615466	829278	214999	1.29
1984	11783222	18146161	1530696	916417	5.05
1985	12997565	19366372	1220211	605932	3.13
1986	13578600	19824757	458385	-155894	-0.79
1987	13969843	21653256	1828499	1214220	5.61
1988	14813841	20146824	-1506432	-2120711	-10.53
1989	15524967	20027207	-119617	-733896	-3.66
1990	16404698	20177779	150572	-463707	-2.3
1991	17376844	20504675	326896	-287383	-1.4
1992	18843847	21481985	977310	363031	1.69
1993	20265623	22494842	1012857	398578	1.77
1994	21824126	23570057	1075215	460936	1.96
1995	23256475	24419298	849241	234962	0.96
1996	24669634	25163026	743729	129450	0.51
1997	26418845	26418845	1255819	641540	2.43
1998	28373516	27806046	1387201	772922	2.78
1999	30396663	29180796	1374750	760471	2.61
2000	32485302	30211331	1030535	416256	1.38

INCOME

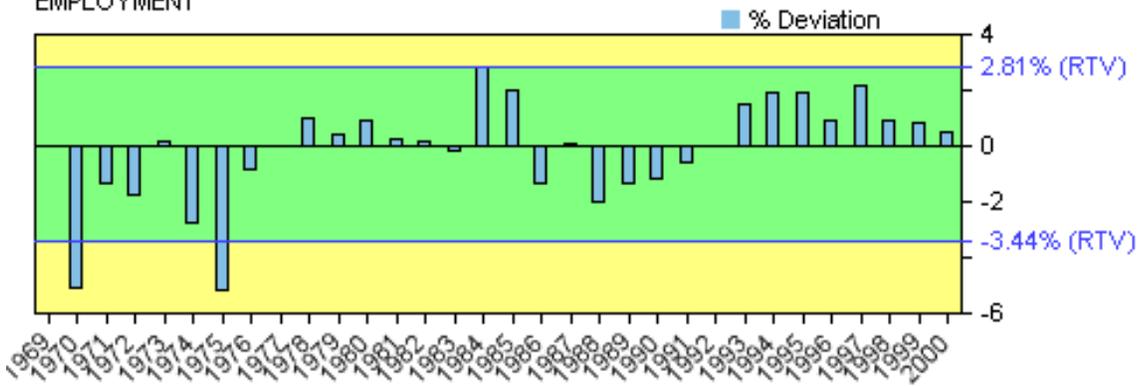


created with ChartDirector from www.advsofteng.com

Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	2970380	12980560	0	0	0
1970	3266394	13490208	509647	-354897	-2.63
1971	3628228	14367783	877575	13031	0.09
1972	4012516	15367936	1000153	135609	0.88
1973	4507893	16273493	905557	41013	0.25
1974	5036967	16370143	96649	-767895	-4.69
1975	5526128	16467862	97719	-766825	-4.66
1976	6142176	17320936	853074	-11470	-0.07
1977	6766676	17864025	543089	-321455	-1.8
1978	7662111	18848793	984768	120224	0.64
1979	8776525	19396121	547327	-317217	-1.64
1980	10106123	19605879	209759	-654785	-3.34
1981	11634050	20475928	870049	5505	0.03
1982	12777741	21211050	735122	-129422	-0.61
1983	13912541	22399191	1188142	323598	1.44
1984	15913377	24506600	2107409	1242865	5.07
1985	17549297	26148453	1641853	777309	2.97
1986	18433298	26912616	764163	-100381	-0.37
1987	19028939	29494855	2582239	1717695	5.82
1988	20163460	27422306	-2072549	-2937093	-10.71
1989	21593104	27855103	432797	-431747	-1.55
1990	22867870	28127481	272377	-592167	-2.11
1991	24263563	28631003	503523	-361021	-1.26
1992	26269556	29947293	1316290	451746	1.51
1993	27931269	31003709	1056416	191872	0.62
1994	30020304	32421930	1418221	553677	1.71
1995	32141769	33748856	1326926	462382	1.37
1996	33987005	34666744	917889	53345	0.15
1997	36642667	36642667	1975923	1111379	3.03
1998	39181900	38398263	1755596	891052	2.32
1999	41054762	39412571	1014308	149764	0.38
2000	43705339	40645966	1233395	368851	0.91

EMPLOYMENT

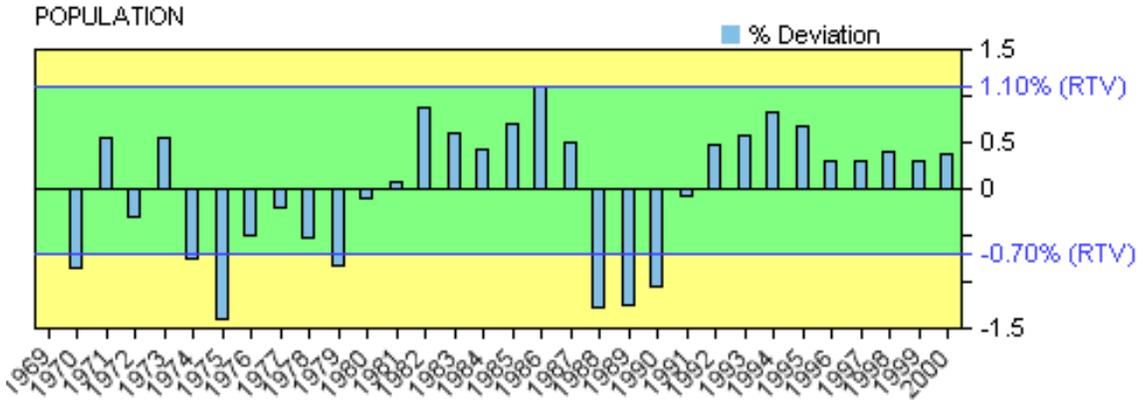
EMPLOYMENT



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Year	Value	Change	Deviation	%Deviation
1969	425201	0	0	0
1970	421651	-3550	-21348	-5.06
1971	433672	12021	-5777	-1.33
1972	443580	9908	-7890	-1.78
1973	462281	18701	903	0.2
1974	467397	5116	-12682	-2.71
1975	461539	-5858	-23656	-5.13
1976	475282	13743	-4055	-0.85
1977	493060	17778	-20	0
1978	515853	22793	4995	0.97
1979	535886	20033	2235	0.42
1980	558635	22749	4951	0.89
1981	577739	19104	1306	0.23
1982	596332	18593	795	0.13
1983	613220	16888	-910	-0.15
1984	649256	36036	18238	2.81
1985	680470	31214	13416	1.97
1986	689130	8660	-9138	-1.33
1987	707328	18198	400	0.06
1988	710830	3502	-14296	-2.01
1989	718992	8162	-9636	-1.34
1990	728541	9549	-8249	-1.13
1991	741827	13286	-4512	-0.61
1992	759401	17574	-224	-0.03
1993	788779	29378	11580	1.47
1994	822088	33309	15511	1.89
1995	856422	34334	16536	1.93
1996	882254	25832	8034	0.91
1997	919710	37456	19658	2.14
1998	946081	26371	8573	0.91
1999	972052	25971	8173	0.84
2000	994748	22696	4898	0.49

POPULATION



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Year	Value	Change	Deviation	%Deviation
1969	941515	0	0	0
1970	957715	16200	-8116	-0.85
1971	987523	29808	5492	0.56
1972	1008844	21321	-2995	-0.3
1973	1038887	30043	5727	0.55
1974	1055225	16338	-7978	-0.76
1975	1064486	9261	-15055	-1.41
1976	1083489	19003	-5313	-0.49
1977	1105551	22062	-2254	-0.2
1978	1123898	18347	-5969	-0.53
1979	1138722	14824	-9492	-0.83
1980	1161968	23246	-1070	-0.09
1981	1187117	25149	833	0.07
1982	1222136	35019	10703	0.88
1983	1254044	31908	7592	0.61
1984	1283925	29881	5565	0.43
1985	1317439	33514	9198	0.7
1986	1356676	39237	14921	1.1
1987	1387997	31321	7005	0.5
1988	1394458	6461	-17855	-1.28
1989	1401286	6828	-17488	-1.25
1990	1410902	9616	-14700	-1.04
1991	1434060	23158	-1158	-0.08
1992	1465365	31305	6989	0.48
1993	1498269	32904	8588	0.57
1994	1535185	36916	12600	0.82
1995	1570083	34898	10582	0.67
1996	1599427	29344	5028	0.31
1997	1628676	29249	4933	0.3
1998	1659847	31171	6855	0.41
1999	1689009	29162	4846	0.29
2000	1719641	30632	6316	0.37

***** End of Report *****