

**Environmental Assessment of the
Implementation of Base Realignment and Closure
at Fort Buchanan, Bayamon, Puerto Rico**

FINAL



prepared for

1st Mission Support Command

by

U.S. Army Corps of Engineers, Mobile District

May 2008

**ENVIRONMENTAL ASSESSMENT
IMPLEMENTATION OF BASE REALIGNMENT AND CLOSURE AT
USAG FORT BUCHANAN, PUERTO RICO**

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY: Fort Buchanan, Puerto Rico

TITLE OF PROPOSED ACTION: Implementation of Base Realignment and Closure at Fort Buchanan, Bayamon, Puerto Rico

AFFECTED JURISDICTION: Bayamon and Guaynabo municipalities

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ABSTRACT: This Environmental Assessment (EA) considers the proposed implementation of the Base Realignment and Closure (BRAC) Commission recommendations at Fort Buchanan, Puerto Rico. The EA identifies, evaluates, and documents the environmental and socioeconomic effects of facility demolition, construction, renovation, maintenance, and operation proposed to accommodate the changes mandated by the BRAC Commission. A No Action Alternative is also evaluated. Implementation of the proposed action is not expected to result in significant environmental impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with the National Environmental Policy Act.

REVIEW COMMENT DEADLINE: The EA and FNSI were available for review and comment for 30 days, from August 12, 2008, through September 11, 2008. A Notice of Availability (NOA) of the documents was published in *El Nuevo Día* in English and Spanish on August 12, 2008. Copies of the EA and FNSI were available from Mr. Anibal Negron at 787-707-3575 (e-mail: anibal.negron1@us.army.mil). Copies of the EA and FNSI were available for review at the Carnegie Public Library, 7 Ponce de Leon Avenue, San Juan, PR 00901. Comments on the EA and FNSI were received from the Puerto Rico Environmental Quality Board. No other comments were received.

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment addresses the proposed action to implement the BRAC Commission recommendations at Fort Buchanan, Bayamon, Puerto Rico. It has been developed in accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the *Code of Federal Regulations* [CFR] Parts 1500–1508) and the Army (32 CFR Part 651). Its purpose is to inform decisionmakers and the public of the likely environmental and socioeconomic consequences of implementing the proposed action and alternatives.

An ***EXECUTIVE SUMMARY*** briefly describes the proposed action, environmental and socioeconomic consequences, and mitigation measures.

CONTENTS

- SECTION 1.0:*** ***PURPOSE, NEED, AND SCOPE*** summarizes the purpose of and need for the proposed action and describes the scope of the environmental impact analysis process.
- SECTION 2.0:*** ***PROPOSED ACTION*** describes the proposed action to implement the BRAC Commission recommendations at Fort Buchanan.
- SECTION 3.0:*** ***ALTERNATIVES*** examines alternatives to implementing the proposed action.
- SECTION 4.0:*** ***AFFECTED ENVIRONMENT AND CONSEQUENCES*** describes the existing environmental and socioeconomic setting at Fort Buchanan and identifies potential effects of implementing the proposed action.
- SECTION 5.0:*** ***FINDINGS AND CONCLUSIONS*** summarizes the environmental and socioeconomic effects of implementing the proposed action.
- SECTION 6.0:*** ***LIST OF PREPARERS*** identifies the persons who prepared the document.
- SECTION 7.0:*** ***DISTRIBUTION LIST*** indicates recipients of this Environmental Assessment.
- SECTION 8.0:*** ***REFERENCES*** provides bibliographical information for cited sources.
- SECTION 9.0:*** ***PERSONS CONSULTED*** provides a list of persons and agencies consulted during preparation of this Environmental Assessment.
- SECTION 10.0:*** ***ACRONYMS AND ABBREVIATIONS*** provides a list of acronyms and abbreviations used in the document.
- APPENDICES***
- A*** Defense Base Closure and Realignment Commission Recommendations
 - B*** Record of Non-Applicability and Air Emissions Calculations
 - C*** Agency Review and Comment



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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Environmental Assessment (EA) describes and analyzes the effects of implementing Base Realignment and Closure (BRAC) at Fort Buchanan, Bayamon, Puerto Rico, as well as associated actions, on the environment. Fort Buchanan is in the San Juan metropolitan area on the north coast of Puerto Rico. With respect to Fort Buchanan, the BRAC Commission recommended in relevant part:

Close the U.S. Army Reserve Center 1st Lieutenant Paul Lavergne, Bayamon, PR, and relocate the 973rd Combat Support (CS) Company into a new Armed Forces Reserve Center on United States Army Reserve property in Ceiba, Puerto Rico, and relocate all other units into a new Armed Forces Reserve Center (AFRC) on Fort Buchanan. Realign the U.S. Army Reserve Center Captain E. Rubio Junior, Puerto Nuevo, by relocating the 807th Signal Company into a new Armed Forces Reserve Center on Fort Buchanan. The new AFRC on Fort Buchanan shall have the capability to accommodate units from the Puerto Rico Army National Guard San Juan Readiness Center, San Juan, if Puerto Rico decides to relocate those National Guard units.

Relocation of units, equipment, and personnel from the Army Reserve Centers in Bayamon and Puerto Nuevo to Fort Buchanan would require the Army to construct and operate new facilities at Fort Buchanan. The EA identifies and describes the environmental effects associated with the proposed action at Fort Buchanan.

ES.2 PROPOSED ACTION AND ALTERNATIVES

ES.2.1 Preferred Alternative

The Army proposes to construct and operate an AFRC at Fort Buchanan, Puerto Rico, an Army Reserve Installation under the Installation Command Army Reserve Office. Primary facilities would include an AFRC building, Organizational Maintenance Shop (OMS), and unit storage building. Buildings would be of permanent construction with ventilation and air conditioning, plumbing, mechanical, security, and electrical systems. Work performed to support the facilities would include land clearing, paving, fencing, general site improvements, and extension of utilities to serve the project. The Army would incorporate force protection (physical security) measures into the design of the facility including consideration of standoff distance from roads, parking areas, and vehicle unloading areas. Walkways, curbs and gutters, and storm drainage for the buildings would be included in the project. The project would also provide adequate parking for all military and privately owned vehicles. The AFRC would provide about 85,000 square feet (sf) of space for administrative, educational, unit assembly, library, learning center, vault, weapons simulator, and physical fitness functions. The AFRC is conceived of as a two-story building with a gross footprint of about 55,000 sf on the first floor and about 30,000 sf on the second floor. The OMS would have about 11,000 sf of built space. Organizational unit storage would be provided in a third building having about 1,400 sf of unheated space.

The AFRC would be used Monday through Friday by full-time staff members and on weekends by Reserve Component units. Daily operations would include administrative, training, and maintenance support of unit missions and requirements, recruiting, and preparation for battle assembly weekends. Training activities conducted during drill weekends would include Military Occupational Specialties training in Soldiers' skills (such as maintenance and communications), required briefings, physical training, mentoring, and evaluations. On weekends, vehicular traffic would involve personal vehicles and military vehicles, such as high-mobility, multipurpose wheeled vehicles of various configurations.

Under the Preferred Alternative, the AFRC building would be on a 5.6-acre parcel in the 300 Area (the approximate center of Fort Buchanan) at the intersection of Crane Loop and Wilson Road. A Child Development Center (about 8,225 sf) fronting Crane Loop and a Dental Clinic (about 3,000 sf) along Wilson Road would be demolished, and their functions would be moved elsewhere on Fort Buchanan.

The OMS and unit storage building would be on a 6.6-acre parcel in the 600 Area (in the northern portion of Fort Buchanan). The parcel is bounded by North Terminal Road to the west, the installation boundary to the north, South Terminal Road to the south, and Buildings 607 and 613 and open space to the east. Building 612 is adjacent to the proposed parcel to the south on South Terminal Road.

ES.2.2 No Action Alternative

Inclusion of the No Action Alternative is prescribed by Council on Environmental Quality regulations and serves as the benchmark against which federal actions can be evaluated. No action assumes that the Army would continue its mission at Fort Buchanan as it existed in fall 2005, with no unit relocations and no new facilities constructed. Because the BRAC Commission's recommendations have the force of law, continuation of the fall 2005 Fort Buchanan mission is not possible without further congressional action; it serves only as a baseline alternative against which other alternatives can be evaluated. The No Action Alternative is evaluated in detail in this EA.

ES.3 ENVIRONMENTAL CONSEQUENCES

The consequences from the 300/600 Area Alternative, identified as the Army's Preferred Alternative, and the No Action Alternative are summarized below and in Table ES-1.

ES.3.1 300/600 Area Alternative (Preferred Alternative)

Short-term minor adverse effects on air quality, noise, soils, biological resources, quality of life, and traffic would be associated with construction activities. Short-term minor beneficial effects on the local economy would result from increased employment and income from construction jobs and the purchase of construction materials and supplies. Long-term minor adverse effects associated with operation of the new facilities would be expected on aesthetics, air quality, surface water and storm water, traffic, and utilities. Long-term minor adverse effects would occur from construction equipment air emissions and noise, development of a previously open area, increased imperviousness, and the generation of additional solid waste and construction debris. No effects on land use, groundwater resources, floodplains, the coastal zone, cultural resources, population, housing, environmental justice, protection of children, or hazardous and toxic substances would be expected.

ES.3.2 No Action Alternative

No effects on any of the resource areas considered in the EA would be expected to result from implementation of the No Action Alternative.

ES.4 CUMULATIVE EFFECTS

No cumulative effects would be expected under any of the alternatives.

ES.5 MITIGATION

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The EA did not identify the need for any mitigation measures.

Table ES-1
Summary of potential environmental and socioeconomic consequences

Resource area	Environmental and socioeconomic effects of alternatives	
	300/600 Area	No Action
Land use	No effects	No effects
Aesthetic and visual resources	Long-term minor adverse	No effects
Air quality	Short- and long-term minor adverse	No effects
Noise	Short-term minor adverse	No effects
Geology and soils	Short-term minor adverse	No effects
Water resources		
• Surface water	Long-term minor adverse	No effects
• Hydrogeology/groundwater	No effects	No effects
• Floodplains	No effects	No effects
• Coastal zone management	No effects	No effects
Biological resources	Short-term minor adverse	No effects
Cultural resources	No effects	No effects
Socioeconomics		
• Economic development	Short-term minor beneficial	No effects
• Population	No effects	No effects
• Housing	No effects	No effects
• Quality of life	Short-term minor adverse	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	No effects
Utilities	Long-term minor adverse and beneficial	No effects
Hazardous and toxic substances	No effects	No effects

ES.6 CONCLUSIONS

On the basis of the analyses performed in this EA, implementation of the 300/600 Area Alternative (Preferred Alternative) would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Issuance of a Finding of No Significant Impact would be appropriate.

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SECTION 1.0

PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

On September 8, 2005, the Defense Base Closure and Realignment Commission (BRAC Commission) recommended that certain realignment actions occur in the Commonwealth of Puerto Rico (Appendix A). The President approved these recommendations and forwarded them to Congress on September 15, 2005. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 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. This environmental assessment (EA) pertains to the BRAC Commission's recommendations affecting Fort Buchanan, Puerto Rico (Figure 1-1).

With respect to Fort Buchanan, the BRAC Commission recommended in relevant part:

Close the U.S. Army Reserve Center 1st Lieutenant Paul Lavergne, Bayamon, PR, and relocate the 973rd Combat Support (CS) Company into a new Armed Forces Reserve Center on United States Army Reserve property in Ceiba, Puerto Rico, and relocate all other units into a new Armed Forces Reserve Center (AFRC) on Fort Buchanan. Realign the U.S. Army Reserve Center Captain E. Rubio Junior, Puerto Nuevo, by relocating the 807th Signal Company into a new Armed Forces Reserve Center on Fort Buchanan. The new AFRC on Fort Buchanan shall have the capability to accommodate units from the Puerto Rico Army National Guard San Juan Readiness Center, San Juan, if Puerto Rico decides to relocate those National Guard units.

Relocation of units, equipment, and personnel from the Army Reserve Centers in Bayamon and Puerto Nuevo to Fort Buchanan would require the Army to construct and operate new facilities at Fort Buchanan. In this EA the Army identifies and describes the environmental effects associated with its proposed action at Fort Buchanan. Details on the proposed action are set forth in Section 2.2. Appendix A contains the language of the BRAC Commission's recommendations.

1.2 PURPOSE AND NEED

The purpose of the proposed action is to provide the necessary facilities to support the BRAC Commission's recommendation pertaining to Fort Buchanan.

The need for the proposed action is to improve the nation's ability to respond rapidly to challenges of the 21st century by implementing the 2005 BRAC Commission recommendations. The Army is legally bound to defend the United States and its territories, to support national policies and objectives, and to defeat nations responsible for aggression that endangers the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations.

In previous rounds of BRAC, the explicit goal was to save money and downsize the military to reap a *peace dividend*. In the 2005 BRAC round, the Department of Defense (DoD) sought to reorganize its installation infrastructure to most efficiently support its forces, increase operational readiness, and facilitate new ways of doing business. Thus, BRAC represents more than cost savings; it supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The Army needs to carry out the BRAC recommendations at Fort Buchanan to achieve the objectives of the BRAC process.



1.3 SCOPE

The 1990 Defense Base Closure and Realignment Act specifies that the National Environmental Policy Act (NEPA) of 1969 does not apply to actions of the President, the Commission, or the 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” (Section 2905[c][2][A], Public Law 101-510, as amended). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider “(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected” (Section 2905[c][2][B]). Because the BRAC Commission’s deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA, this EA does not address the need for realignment. NEPA does apply to the activities proposed to support unit realignment, and the Army addresses those actions in this document.

1.4 PUBLIC INVOLVEMENT

The Army invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision making process.

Public participation opportunities with respect to this EA and decision making on the proposed action are guided by Title 32 of the *Code of Federal Regulations* (CFR) Part 651. On its completion, the EA will be made available to the public for 30 days, along with a Finding of No Significant Impact (FNSI). At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the EA, or the FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementing the proposed action. If it is determined that implementing the proposed action would result in significant impacts, the Army will publish in the *Federal Register* a notice of intent to prepare an Environmental Impact Statement, will commit to mitigation actions sufficient to reduce impacts below significance levels, or will take no action. The point of contact for information on the status and progress of the proposed action and the EA is Mr. Anibal Negron, 787-707-3576.

1.5 IMPACT ANALYSIS PERFORMED

This EA has been developed in accordance with NEPA and its implementing regulations, issued by the President’s Council on Environmental Quality and the Army.¹ Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action is described in Section 2.0; alternatives,

¹ Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500–1508, and Environmental Analysis of Army Actions, 32 CFR Part 651.

including the No Action Alternative, are described in Section 3.0. Conditions existing as of November 2005, considered the baseline conditions, are described in Section 4.0, Affected Environment and Environmental Consequences. The expected effects of the proposed action, also described in Section 4.0, are presented immediately following the description of baseline conditions for each environmental resource addressed in the EA. The potential for cumulative effects is addressed in Section 4.0, and mitigation measures are identified where appropriate.

1.6 FRAMEWORK FOR DECISION MAKING

A decision on whether to proceed with the proposed action rests on numerous factors, such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the Army is guided by relevant statutes and their implementing regulations and by Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include the following: Clean Air Act, Clean Water Act, Noise Control Act, Endangered Species Act, National Historic Preservation Act, Archaeological Resources Protection Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. EOs bearing on the proposed action include the following: EO 11988 (*Floodplain Management*); EO 11990 (*Protection of Wetlands*); EO 12088 (*Federal Compliance with Pollution Control Standards*); EO 12580 (*Superfund Implementation*); EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*); EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*); EO 13175 (*Consultation and Coordination with Indian Tribal Governments*); EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*); and EO 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*). These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site, at <http://www.denix.osd.mil>.

SECTION 2.0

DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's Preferred Alternative for carrying out the BRAC Commission's recommendation to close and realign two existing reserve centers and move units to a new AFRC to be constructed and operated at Fort Buchanan.

2.2 PROPOSED ACTION

Construction. The Army proposes to construct and operate an AFRC at Fort Buchanan, Puerto Rico. Primary facilities would include an AFRC building, an Organizational Maintenance Shop (OMS), and a unit storage building. Buildings would be of permanent construction with ventilation and air conditioning, plumbing, mechanical, security, and electrical systems. Work performed to support the facilities would include land clearing, paving, fencing, general site improvements, and extension of utilities to serve the project. The Army would incorporate force protection (physical security) measures into the design of the facility, including consideration of standoff distance from roads, parking areas, and vehicle unloading areas.

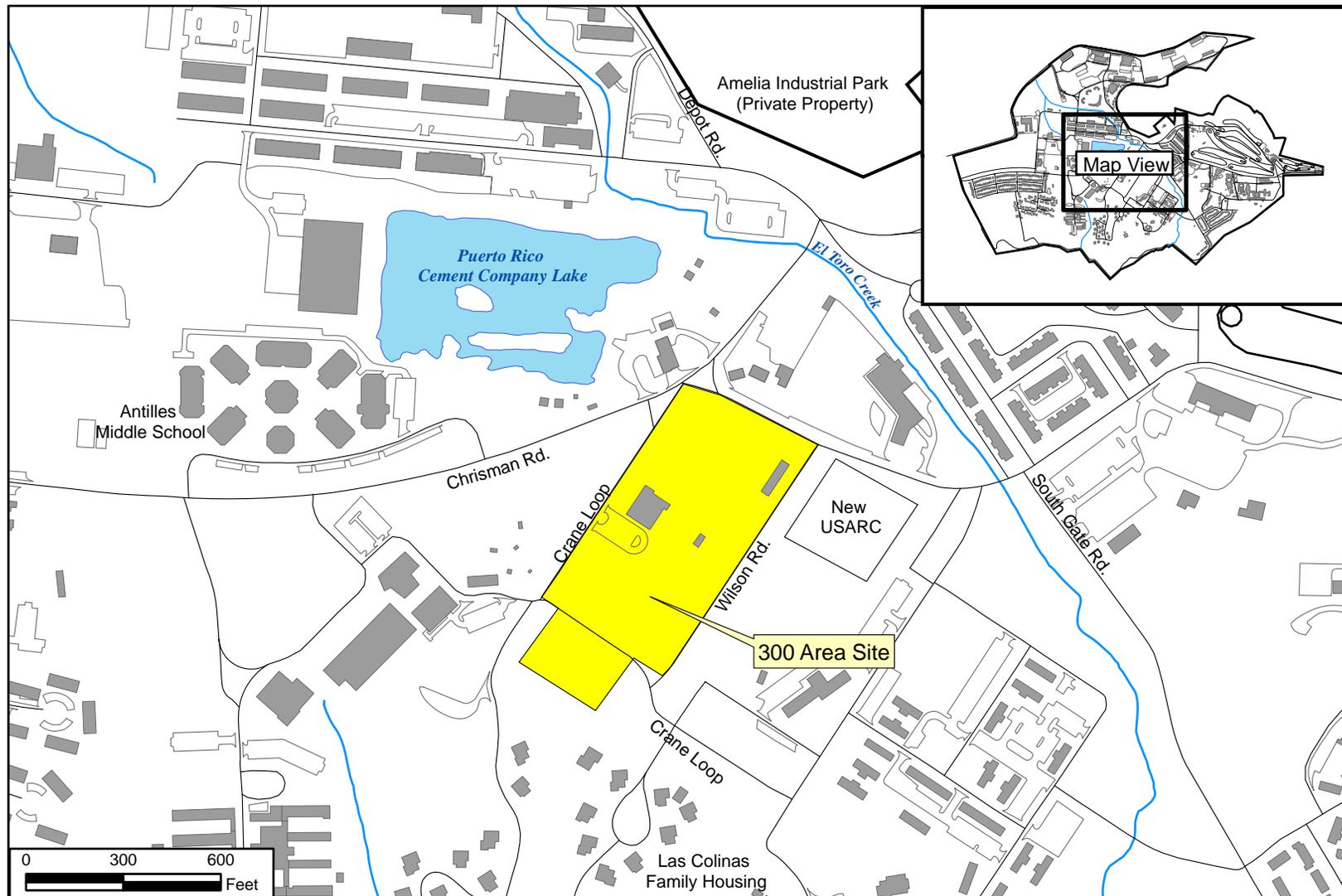
The AFRC would provide about 85,000 square feet (sf) of space for administrative, educational, unit assembly, library, learning center, vault, weapons simulator, and physical fitness functions. The AFRC would be a two-story building with a gross footprint from 50,000 to 55,000 sf on the first floor and up to 30,000 sf on the second floor. The OMS would consist of about 11,000 sf of built space. Organizational unit storage would be provided in a third building having about 1,400 sf of unheated space. Walkways, curbs and gutters, and storm drainage for the buildings would be included in the project. The project would also provide adequate parking for all military and privately owned vehicles. Construction would be completed by not later than September 2011.²

Location. The AFRC would be on a 5.6-acre parcel in the 300 Area, at the approximate center of Fort Buchanan (Figure 2-1). The proposed location is a parcel of land north of the intersection of Crane Loop and Wilson Road. That parcel would contain the AFRC and up to one-half acre of parking area. An additional acre of parking would be across from the AFRC on the land parcel south of Crane Loop. A Child Development Center (about 8,225 sf) fronting Crane Loop and a Dental Clinic (about 3,000 sf) would be demolished, and their functions would be moved elsewhere on Fort Buchanan.

The OMS and storage facility would be on a 6.6-acre parcel in the 600 Area (the northern portion of Fort Buchanan) (Figure 2-2). The parcel is bounded by North Terminal Road to the west, the installation boundary to the north, South Terminal Road to the south, and Buildings 607 and 613 and open space to the east. No buildings are on the proposed parcel. Building 612 is on South Terminal Road and adjacent to the proposed parcel to the south.

Figures 2-1 and 2-2 show the locations of the proposed facilities. Figures 2-3 and 2-4 are photos of the 300 Area and 600 Area.

² Section 2904(a), Public Law 101-510, as amended, provides that the Army must "...initiate all closures and realignments no later than two years after the date on which the President transmits a report [by the BRAC Commission] to the Congress...containing the recommendations for such closures or realignments; and...complete all such closures and realignments no later than the end of the six year period beginning on the date on which the President transmits the report...." The President took the specified action on September 15, 2005.



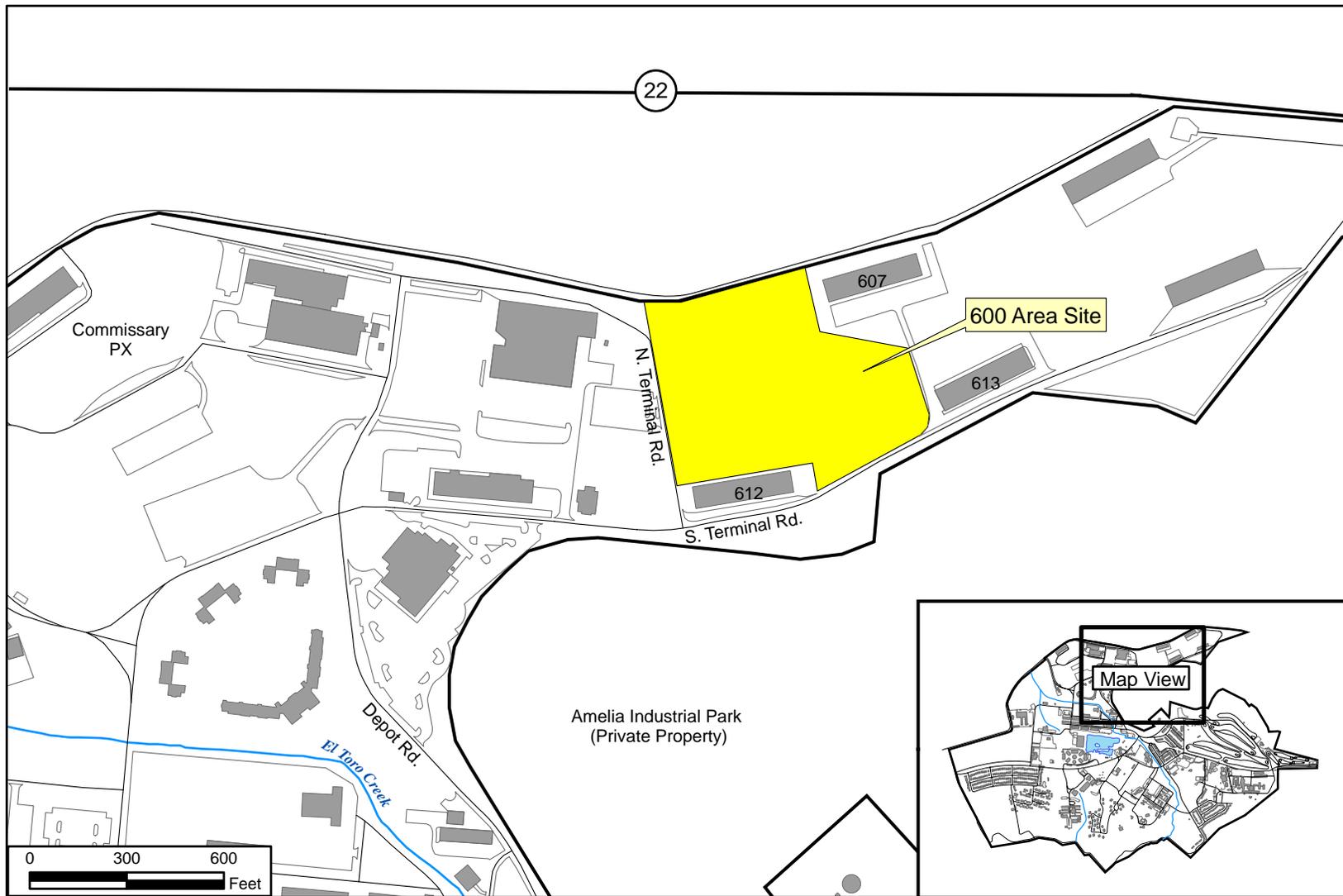
- LEGEND**
- BRAC Footprint
 - Installation Boundary
 - Building
 - Road
 - Stream/Creek
 - Lake



Preferred Alternative Site Map, 300 Area

Figure 2-1

Source: Fort Buchanan GIS, 2006.



- LEGEND**
- BRAC Footprint
 - Installation Boundary
 - Building
 - Road
 - Stream/Creek
 - Lake



**Preferred Alternative Site Map,
600 Area**
Figure 2-2

Source: Fort Buchanan GIS, 2006.



Figure 2-3.
Looking northeast across the 300 Area site



Figure 2-4.
Looking east across the 600 Area site

Operations. The proposed AFRC at Fort Buchanan would support the operations of Army Reserve units, two Puerto Rico Army National Guard units that are now at facilities in Bayamon and Puerto Nuevo, and U.S. Marine Corps Reserve units (4th Landing Support Battalion Detachment 2 Beach and Terminal/Detachment A Landing Support Equipment Company). There are approximately 750 personnel in these units.

The AFRC would be used Monday through Friday by full-time staff members and on weekends by Reserve Component and National Guard units. Daily operations would include administrative, training, and maintenance support of unit missions and requirements; recruiting; and preparation for drill weekends. Training activities conducted during battle assembly weekends would include Military Occupational Specialties training in Soldiers' skills (such as maintenance and communications), required briefings, physical training, mentoring, and evaluations. On weekends, vehicular traffic would involve personal vehicles and military vehicles, such as high-mobility, multipurpose wheeled vehicles of various configurations.

SECTION 3.0 ALTERNATIVES

3.1 INTRODUCTION

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 ready for decisionmaking (any necessary preceding events having taken place), it must be affordable and capable of being implemented, and it must meet the purpose of and need for the action. The following discussion identifies the alternatives that the Army considered and explains whether they are feasible and, hence, subject to detailed evaluation in this EA.

Alternatives to the proposed action were assessed on the basis of three criteria: whether the alternative could physically accommodate realigned units, whether the alternative site was suitable for construction, and whether the alternative could accommodate the schedule. In this section, the Army presents its development of alternatives, addresses alternatives to the proposed action, and describes the No Action Alternative.

3.2 NO ACTION ALTERNATIVE

Council on Environmental Quality regulations prescribe inclusion of the No Action Alternative, which serves as the benchmark against which federal actions can be evaluated. No action assumes that the Army would continue its mission at Fort Buchanan as it existed in fall 2005, with no unit relocations and no new facilities constructed. Because the BRAC Commission's recommendations now have the force of law, continuation of the fall 2005 Fort Buchanan mission is not possible without further congressional action; it serves only as a baseline alternative against which other alternatives can be evaluated. The No Action Alternative is evaluated in detail in this EA.

3.3 300/600 AREA ALTERNATIVE (PREFERRED ALTERNATIVE)

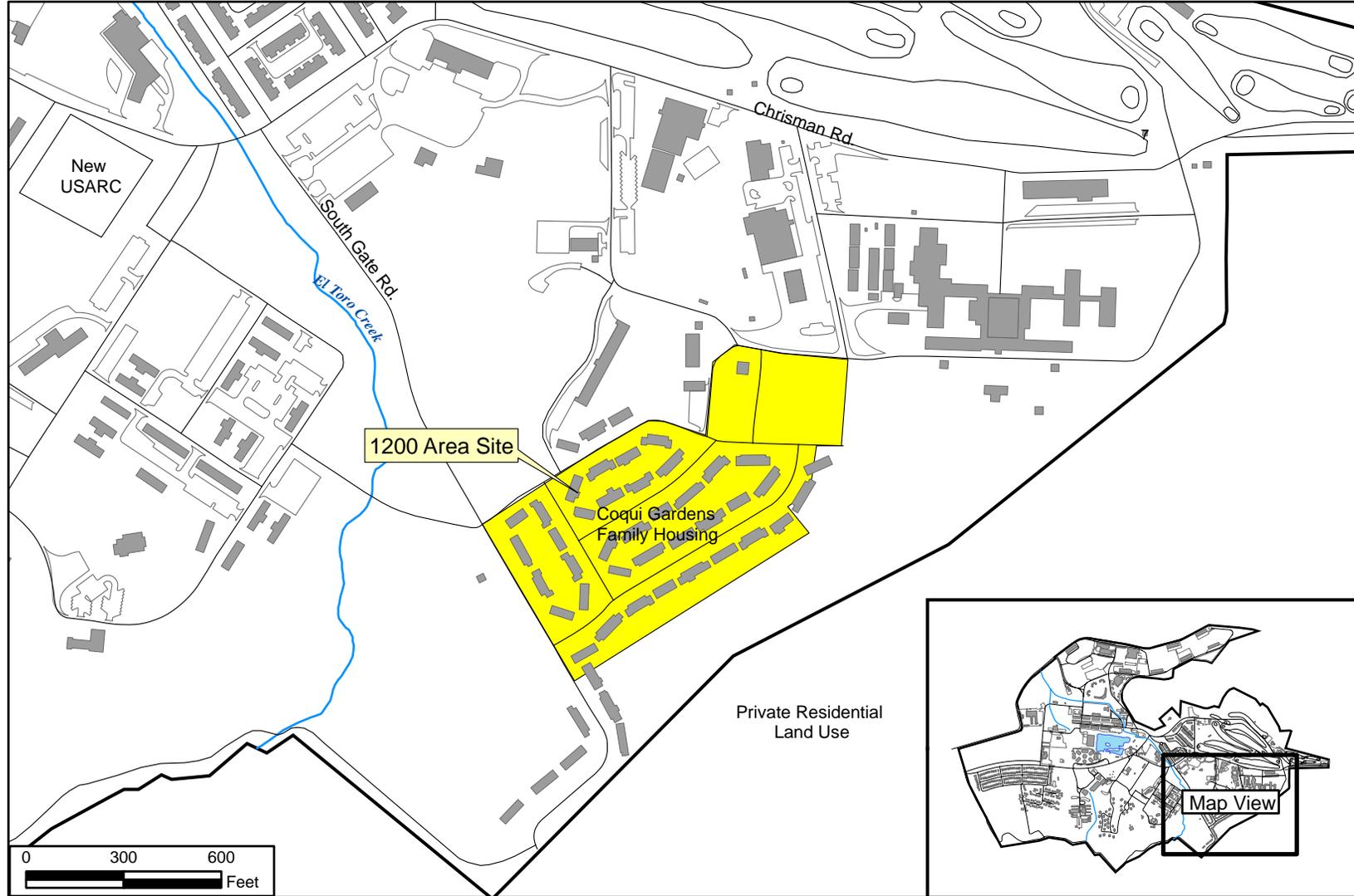
The Army proposes to construct and operate an AFRC at Fort Buchanan, Puerto Rico. Primary facilities would include an AFRC building, an OMS, and a unit storage building. The Preferred Alternative is further described in Section 2.2.

The 300/600 Area Alternative (the Preferred Alternative) and the No Action Alternative are evaluated in detail in Section 4 of the EA.

3.4 ALTERNATIVES NOT CARRIED FORWARD FOR DETAILED ANALYSIS

Because the BRAC Commission's recommendation, which is legally binding, specified that the AFRC be constructed on Fort Buchanan, no alternate locations outside the Fort Buchanan installation could be considered.

Review of sites on Fort Buchanan for construction and operation of the AFRC revealed one other potential site for construction of the AFRC. Under this alternative, referred to as the 1200 Area Alternative, the AFRC would be constructed on a 13-acre parcel in the 1200 Area, which is in the southern portion of the installation near the South Gate Road access gate (currently closed). The parcel is east of South Gate Road and south of Reinita Street, and is occupied by the Coqui Gardens family housing area (Figure 3-1). Implementation of this alternative would necessitate demolition of housing units on the parcel.



LEGEND

- BRAC Footprint
- Installation Boundary
- Building
- Road
- Stream/Creek
- Lake



1200 Area Alternative

Figure 3-1

Source: Fort Buchanan GIS, 2006.

Although the area provided by the 1200 Area alternative was sufficient to meet the need for a contiguous AFRC—one placing the AFRC building, OMS, and unit storage building on a contiguous parcel of property—a preliminary comparison of costs for developing on the single site (the 1200 Area) and developing on the other two sites (the 300 Area and 600 Area) was conducted, and it was determined that the additional demolition of family housing units, utilities infrastructure, and site preparation would add about 3 percent to the project cost (RSP 2008). Therefore, the 1200 Area alternative was eliminated from further consideration and only the 300/600 Area Alternative, as described in Section 2.2, was carried forward for detailed planning purposes. The 1200 Area Alternative is not evaluated in this EA.

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SECTION 4.0

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Sections 4.2 through 4.13 describe the affected environment for each resource area at Fort Buchanan and the consequences that would occur on those resource areas from implementing the 300/600 Area Alternative and the No Action Alternative. Sections 4.14 and 4.15 describe cumulative effects and mitigation measures, respectively.

4.2 LAND USE

4.2.1 Affected Environment

Fort Buchanan is in a heavily developed district within the greater San Juan, Puerto Rico, metropolitan area. The installation is contained within two municipalities, Bayamon and Guaynabo. The southern half of the installation is bounded primarily by residential areas that are a mixture of single-family detached homes, apartment buildings, and high-rise buildings. Wooded buffer areas on the installation separate facilities on the installation from the residential areas.

Commercial land uses, including an office park and an industrial park, lie to the east of the installation. The industrial park is surrounded on three sides by the northeast portion of the installation, and open space lies to the northwest. A mixture of government and industrial land uses are to the west. The following sections describe the land use of the 300 Area and 600 Area sites.

Land use of the 300 Area is designated as Community Facilities. The site has historically contained buildings used primarily for administrative and garrison support purposes. Undeveloped areas of the project site are maintained as open space. All areas surrounding the proposed site for the AFRC building in the 300 Area (see Figure 2-1) are within the boundaries of Fort Buchanan. North of the proposed parcel are a former Army & Air Force Exchange Service (AAFES) service station, a fire station, and community facilities and associated parking. A new U.S. Army Reserve Center is to the east, undeveloped land with open space and wooded areas is to the south, and the recreational fields of the Antilles Middle School are to the west.

Surrounding the proposed 600 Area OMS parcel are the following land uses and features: The Malaria Control Canal and Route 28 (along the Fort Buchanan northern boundary) lie north of the parcel; Supply/Storage land use with warehouse buildings is to the east; South Terminal Road lies to the south, beyond which is the installation boundary and a private industrial complex; and to the west is Community Facilities land use with a new Commissary and Post Exchange (PX) about 1,100 feet (0.2 mile) from the proposed parcel. Three buildings are in the immediate vicinity of the proposed OMS location: Building 612 (used by AAFES for supply/storage) is adjacent to the parcel to the south and it fronts South Terminal Road, Building 607 (supply/storage) is to the northeast along the installation boundary, and Building 613 (a warehouse building now used by the Directorate of Logistics as a central receiving point) is to the east along South Terminal Road.

4.2.2 Environmental Consequences

4.2.2.1 300/600 Area Alternative (Preferred Alternative)

No effects on installation land use or surrounding land uses would be expected. The proposed location is in the administrative center of Fort Buchanan, and this factor was weighed when considering where to construct the new administrative center for the AFRC. A new U.S. Army Reserve Center is across Wilson Road from the proposed location. Use of the 300 Area parcel would require demolition of the Child Development Center and Dental Clinic and construction of

replacement facilities elsewhere. Part of the proposed 300 Area parcel is now undeveloped and would be converted to developed land with buildings and parking areas. The proposed AFRC would be compatible with surrounding administrative land uses.

The proposed parcel in the 600 Area would be converted from open space to developed land with a maintenance facility and parking areas, and the entire parcel would be fenced. The proposed use as a maintenance facility and training center would be compatible with surrounding maintenance, supply/storage, transportation (Route 28), and industrial land uses.

4.2.2.2 No Action Alternative

No adverse land use effects would be expected under the No Action Alternative. There would be no conflicts with surrounding land use because there would be no change in land use on the project sites.

4.3 AESTHETIC AND VISUAL RESOURCES

4.3.1 Affected Environment

The proposed parcel in the 300 Area is centrally located on the installation, adjacent to a traffic circle where Chrisman Avenue—a main east-west road on the installation—joins Howard Drive and Crane Loop. A U.S. Army Reserve Center building, recreational fields of the on-post secondary schools, a privately owned lake, administrative buildings, and family housing surround the parcel. The surrounding buildings and facilities are most active on weekdays, but weekend activity in the central area of the post can be high because of the presence of a water park and because residents of the Buchanan Heights and Coconut Grove family housing areas who leave or enter the installation at the Main Gate travel past the proposed parcel on Chrisman Avenue. The parcel has a Child Development Center with a fenced outdoor playground area in the central part of the parcel and a small Dental Clinic in the northeast corner of the parcel. The rest of the parcel is maintained lawn.

The proposed parcel in the 600 Area is a maintained lawn with some trees and a drainage ditch. Supply/storage facilities, open areas, a Commissary and PX and associated parking lots, and industrial and transportation areas off the installation surround the site. The only on-post traffic that passes the proposed parcel is maintenance and supply vehicles with business in that portion of the installation. The aesthetics of the area are dominated by the traffic on Route 28 and the activities in the nearby industrial complex. The parcel proposed for the OMS and unit storage building has no facilities and is kept as maintained lawn.

4.3.2 Environmental Consequences

4.3.2.1 300/600 Area Alternative (Preferred Alternative)

Long-term minor adverse effects on aesthetics and visual resources in the 600 Area would be expected. Construction of an AFRC building and associated facilities in the 300 Area would not change the character of the area, which is already an area of military administrative use. Construction of the OMS and storage facility in the 600 Area would not change the use of the area as military maintenance and supply/storage, but it would change the visual character of the parcel from open space to developed land with large, open parking areas and a vehicle maintenance building. Because the 600 Area where the OMS is proposed to be located is bordered by an off-post industrial complex and Puerto Rico Highway 28, and the area itself is used primarily for storage and receives few visitors, the visual alteration created by the OMS would not diminish the aesthetics of the area appreciably.

4.3.2.2 No Action Alternative

No effects on aesthetics or visual resources would be expected under the No Action Alternative because no changes to the proposed project site areas would occur.

4.4 AIR QUALITY

This section describes the existing air-quality environment, the effects associated with each alternative, and potential mitigation measures, if required.

4.4.1 Affected Environment

4.4.1.1 National Ambient Air Quality Standards and Attainment Status

Puerto Rico is a U.S. territory with commonwealth status. The U.S. Environmental Protection Agency (EPA) Region 2 and the Puerto Rico Environmental Quality Board regulate air quality in Puerto Rico. The Clean Air Act (Title 42 of the *United States Code* [U.S.C.], sections 7401-7671q), as amended, gives EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS; see 40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: particulate matter, fine particulate matter, sulfur dioxide, carbon monoxide, nitrous oxides, ozone, and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term standards (annual averages) have been established for pollutants contributing to chronic health effects. On the basis of the severity of the pollution problem, nonattainment areas are categorized as marginal, moderate, serious, severe, or extreme. Each state has the authority to adopt standards stricter than those established under the federal program; however, the Commonwealth of Puerto Rico has accepted the U.S. federal standards.

EPA regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as *nonattainment* areas. EPA regulations designate AQCRs with levels below the NAAQS as *attainment* areas. *Maintenance* AQCRs are areas previously designated nonattainment areas that have subsequently been redesignated attainment areas for a probationary period through implementation of maintenance plans. The Commonwealth of Puerto Rico is in the Puerto Rico AQCR (AQCR 244), which also includes the U.S. Virgin Islands. Guaynabo municipality, in which Fort Buchanan is partially located, is designated as a moderate nonattainment area for particulate matter, while the rest of AQCR 244 is designated as an attainment area for particulate matter (40 CFR 81.355). EPA has designated the entire AQCR 244 as an attainment area for all other criteria pollutants. All areas associated with all alternatives are within Guaynabo municipality. Therefore, an applicability analysis under the General Conformity Rules is required.

4.4.1.2 Local Ambient Air Quality

Existing ambient air quality conditions near Fort Buchanan can be estimated from measurements conducted at air quality monitoring stations close to the installation. The most recent available data from nearby monitoring stations are used to describe the existing ambient air quality conditions at Fort Buchanan. The most recent air quality measurements, including particulate matter measurements, are below the NAAQS (USEPA 2006). However, Guaynabo will maintain its nonattainment designation until the Commonwealth of Puerto Rico develops a maintenance plan for the region and EPA approves it.

4.4.2 Environmental Consequences

Implementation of the alternatives could affect air quality in three ways: through airborne dust and other pollutants generated during construction; by the introduction of new stationary sources of pollutants, such as cooling systems; and through increased vehicular traffic that would raise vehicle emission levels locally and possibly regionally. Air quality impacts would be considered

minor unless the anticipated emissions exceeded *de minimis* thresholds, were *regionally significant*, or contributed to a violation of any federal, state, or local air regulation.

4.4.2.1 300/600 Area Alternative (Preferred Alternative)

Short- and long-term minor adverse effects on air quality would be expected. Minor increases in emissions would not exceed *de minimis* thresholds, be regionally significant, or contribute to a violation of any federal, state, or local air regulation. The Clean Air Act contains the legislation that mandates the General Conformity Rule to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state’s timely attainment of the NAAQS.

To determine the applicability of the General Conformity Rule, estimated air emissions from proposed construction activities and stationary and mobile sources were compared to the *de minimis* rates (Table 4-1). In addition, due to the very limited size and scope of the 300/600 Area Alternative, emissions of particulate matter would not make up 10 percent of the AQCR 244 regional emissions.

**Table 4-1
Air emissions (tons per year) compared to applicability thresholds**

Year	Particulate matter emissions (tpy)	Particulate matter <i>de minimis</i> threshold	Would emissions equal/exceed <i>de minimis</i> ? (yes/no)
2009 construction emissions	1.0	100.0	No
2010 construction emissions	0.1	100.0	No
Operational emissions	0.1	100.0	No

Note: TPY = tons per year.

The estimated emissions from the 300/600 Area Alternative would be *de minimis* and would not be regionally significant. Therefore, the general conformity rule does not apply, and no conformity determination is required. Detailed air emission estimations and a Record of Non-Applicability of the General Conformity Rule are provided in Appendix B.

The AFRC building, OMS, and associated facilities would be equipped with independent ventilation and air-conditioning systems. These stationary sources of air emissions might be subject to federal and state air permitting regulations, including new source review for sources in nonattainment areas, prevention of significant deterioration for sources in attainment areas, and new source performance standards for selected categories of industrial sources. In addition, under the National Emission Standards for Hazardous Air Pollutants, new and modified stationary sources of air emissions may be subject to Maximum Achievable Control Technology requirements if their potential to emit hazardous air pollutants exceeds either 10 tons per year of a single hazardous air pollutant or 25 tons per year of all regulated hazardous air pollutants.

Fort Buchanan’s air operating permit does not outline specific installation-wide limitations on construction-phase emissions of criteria pollutants. During the construction of the new facilities, however, the Army would implement best management practices to prevent particulate matter from becoming airborne. Such precautions might include, but would not be limited to, the use of water or chemicals to control dust in the demolition of existing buildings or structures and construction operations.

4.4.2.2 No Action Alternative

No effects on existing air quality would be expected. No construction, changes in traffic, or changes in military operations at Fort Buchanan would be expected. Ambient air quality conditions would remain as described in Section 4.4.1.

4.5 NOISE

4.5.1 Affected Environment

Generally, noise on Fort Buchanan can be characterized as occurring at very low levels. The noise is generated by traffic, the use of heavy equipment (e.g., backhoes, tractors, and generators), and occasional helicopter operations. There are no bunkers for explosives or ammunition at the installation. There are no training ranges or maneuver areas for firing exercises at the installation. Surrounding Fort Buchanan are industrial operations, residential and commercial areas, and open space. Noise generated in these areas is at levels compatible with operations at the installation.

4.5.2 Environmental Consequences

4.5.2.1 300/600 Area Alternative (Preferred Alternative)

Short-term minor adverse effects on the noise environment would be expected. These minor increases in noise would primarily be from heavy equipment used during construction. These minor increases would be temporary, ending upon completion of construction.

The 300/600 Area Alternative would require the construction of several new facilities at Fort Buchanan. Individual pieces of construction equipment typically generate noise levels of 80 to 90 A-weighted decibels at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience significant levels of construction noise. Given the temporary nature of proposed construction activities and the limited amount of noise that construction equipment would generate, this effect would be considered minor. Because construction activities are specifically exempted in the Puerto Rico noise regulations, the construction activities would not be in violation during the daytime hours. The use of heavy construction equipment would normally not occur during the night.

No changes in training activities, the use of weaponry, demolitions, or aircraft operations would occur with the implementation of this alternative. Therefore, no changes in the existing noise environment associated with these sources would be expected.

4.5.2.2 No Action Alternative

No effects on the ambient noise environment would be expected. No construction, changes in traffic, or changes in military operations at Fort Buchanan would be expected. Ambient noise conditions would remain as described in Section 4.5.1.

4.6 GEOLOGY AND SOILS

4.6.1 Affected Environment

The 300 Area project site is generally flat, with a slight downward gradient to the northeast toward El Toro Creek. The 600 Area project site is slightly sloped to the north toward the Malaria Control Canal. The elevation at the installation ranges from 20 feet to 250 feet above mean sea

level, and most of the installation has an elevation of between 20 feet and 80 feet above mean sea level (Fort Buchanan 1999).

The geology of Fort Buchanan is characterized by volcanic and sedimentary formations (Rodríguez-Martínez 1995). The surficial geology is characterized by unconsolidated deposits of Coastal Plain alluvium consisting of sands, silts, and clays. The Coastal Plain alluvium forms a relatively level valley in the central portion of the installation. A range of limestone outcrops, the haystack hills, occurs along the boundary of Fort Buchanan north of the golf course, and a second ridge, which is part of the same formation, forms the southern boundary.

The Great Northern and Great Southern Puerto Rico faults—major left-lateral, strike-slip systems active on Puerto Rico from the early Cretaceous to the early Miocene—are now considered largely quiescent, although they seem to be associated with very small earthquakes and could represent inherited zones of weakness. One fault located onshore in southwestern Puerto Rico is considered active. Several other candidate faults have been identified in western Puerto Rico. Puerto Rico has a history of seismic activity of varying magnitude that continues to date. The site is at risk for seismic events.

The soils in the 300 Area footprint are classified as the Urban land-Vega Alta complex (USDA SCS 1978). This complex consists of about 60 percent urban land, 25 percent Vega Alta soils, and 15 percent Aceitunas and Humata soils. Most of the 600 Area footprint is Vega Alta soil, with Tanama-Rock outcrop complex along the southern border of the site. Urban land consists mainly of developed sites, where landscapes have been altered. Vega Alta soils are characterized as well-drained, clayey soils on coastal plains and terraces with moderate permeability. The soil is moderately limited for development because of its clayey nature and low strength. Controlling soil erosion is a concern, so temporary plant cover should be established quickly on construction sites. The Aceitunas and Humata soils, like the Vega Alta, also are characterized as deep, well-drained, and clayey. Tanama-Rock outcrop complex consists of steep to very steep, shallow, well-drained Tanama soils and Rock outcrop, formed in karst topography characterized by haystack hills. The soil permeability is moderate and runoff is rapid, so erosion is a hazard. Building site development is limited for most urban uses because of slope, rock outcrops, and shallow depth to rock.

Under Puerto Rico's Regulation for the Control of Erosion and the Prevention of Sedimentation (PR Regulation 5754), construction or other activities in Puerto Rico that could cause soil erosion must be permitted.

4.6.2 Environmental Consequences

4.6.2.1 300/600 Area Alternative (Preferred Alternative)

Short-term minor adverse effects on soils would be expected. Because of the slight slope of the 300 and 600 Area project sites, as well as the characteristics of the underlying soils, effects from demolition and construction-related erosion could occur. In the short term, increased runoff and erosion would likely occur during construction due to removal of vegetation, exposure of soil, and increased susceptibility to wind and water erosion. However, these effects would be minimized by the use of appropriate best management practices for controlling runoff, erosion, and sedimentation. Recommended best management practices to reduce soil erosion and sedimentation include, but are not limited to, silt fences, straw bale dikes, and revegetation. The Army would be required to develop an Erosion and Sedimentation Control Plan and have it approved by the Puerto Rico Environmental Quality Board before ground disturbance. After review of the EA and upon submission of all appropriate application forms and fees and an Erosion and Sedimentation Control Plan, the Puerto Rico Environmental Quality Board would issue an Erosion and Sedimentation Control permit for the proposed project.

Should an earthquake occur, effects from seismic activity could be adverse, but the facilities would be constructed to current building codes.

No other geologic effects would be expected.

4.6.2.2 No Action Alternative

No adverse geological or soil effects would be expected under the No Action Alternative because no construction or demolition would occur under the alternative.

4.7 WATER RESOURCES

4.7.1 Affected Environment

4.7.1.1 Surface Water

The surface water system of Fort Buchanan is composed of several streams. In addition, a man-made lake, which is on private property owned by the Puerto Rico Cement Company and surrounded by Fort Buchanan, is centrally located on the installation (Figure 4-1).

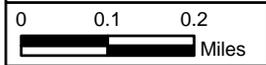
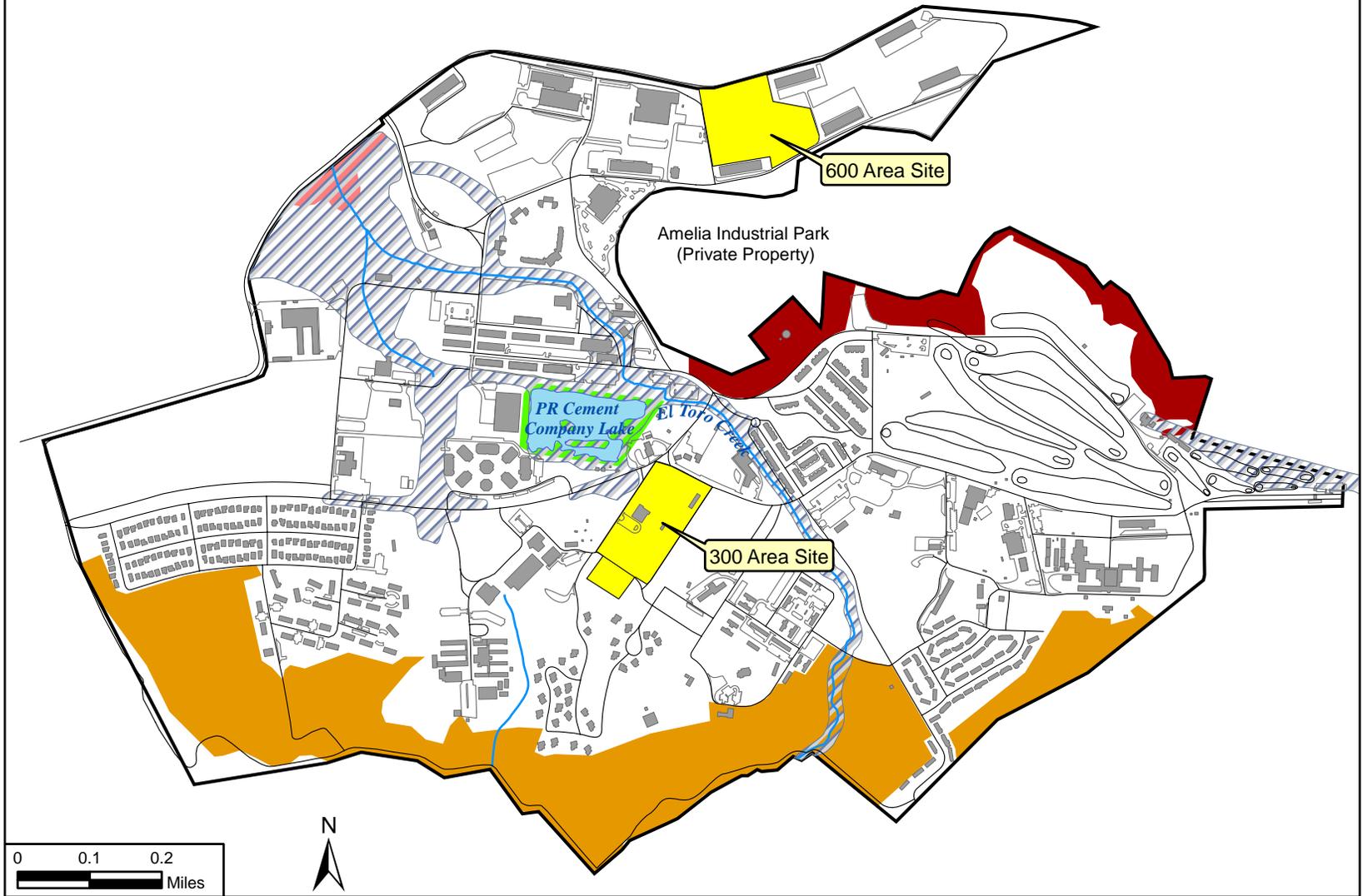
The largest creek that carries storm water flows from the installation is El Toro Creek. El Toro Creek is east of the proposed 300 Area footprint, where the creek parallels South Gate Road and flows northwest through the 1300 Area. The creek carries storm water flow from the 300 Area. El Toro Creek is a rectangular, concrete-lined ditch along much of its length on Fort Buchanan (Harland Bartholomew & Associates, Inc. 1994). It joins the Malaria Control Canal north of the installation, and the canal ultimately drains to San Juan Bay. The proposed footprint in the 600 Area is drained by interceptor ditches that have been placed in low-lying areas to carry storm water to a drainage canal north of the installation. These also ultimately discharge to San Juan Bay (Harland Bartholomew and Associates, Inc. 1994; USACE 1991). The Puerto Rico Cement Company lake receives minor discharges from the natural and man-made storm water systems on the installation.

4.7.1.2 Hydrogeology/Groundwater

Ground water recharge can occur in two principal areas on the installation. One source of recharge is the Puerto Rico Cement Company lake, which is in direct contact with groundwater, but the lake receives little runoff from Fort Buchanan. The second and most predominant aquifer recharge area is the haystack hill area that lies south of the Amelia industrial park and north of the Fort Buchanan golf course and Depot Road, about one-quarter mile northeast of the proposed 300 Area footprint. The haystack hills are remnants of karst formations, the weathering of which causes sinkholes to appear and thereby provides areas of groundwater recharge (Harland Bartholomew & Associates, Inc. 1994; Woodward-Clyde 1997). Groundwater generally flows from southwest to northeast on Fort Buchanan, toward the Bay of San Juan.

4.7.1.3 Floodplains

Floodplain areas in the vicinity of the 300 Area are along the banks of El Toro Creek and surrounding the Puerto Rico Cement Company lake (Figure 4-1). The floodplain that surrounds the lake extends south of the lake to the north side of Crane Loop, but it does not extend into the proposed footprint. There are no floodplain areas in the vicinity of the proposed 600 Area footprint. Fort Buchanan has historically experienced flooding conditions during local storm events. Flooding can occur along the banks of the El Toro Creek, in the vicinity of the Puerto Rico Cement Company lake, and within the 600 Area. Within the 600 Area, water from small and large storm events can flood the parking lots of buildings. Flooding problems are mostly from a lack of adequate upstream storage and the inadequate conveyance capacity of El Toro Creek and its tributaries and Malaria Control Canal (URS Greiner, Inc. 1998).



LEGEND

BRAC Footprint	Lake
Installation Boundary	Wetland
Building	Floodplain
Road	Haystack Hills
Stream/Creek	Rudy Duck Habitat
	Boa Habitat

Surface Waters, Floodplains, and Sensitive Habitats of Fort Buchanan

Figure 4-1

Source: Fort Buchanan GIS, 2006.

4.7.1.4 Coastal Zone

The U.S. Department of Commerce approved the Coastal Zone Management Program for Puerto Rico in 1978. The program was prepared by the Commonwealth of Puerto Rico under the auspices of the Coastal Zone Management Act (CZMA) of 1972 (USACE, Mobile District 1998).

The program outlines the entire coastal zone, areas of special importance, delicate ecosystems, potential threats by pressures or effects of development, and proposed programs to manage this crucial part of the environment. Land areas owned by the federal government are exempt from the act; however, as required by Section 307 of the CZMA, any federal activity that directly or indirectly affects land or water use or natural resources of the coastal zone must be consistent with the Coastal Zone Management Program to the maximum extent practicable. The coastal zone generally is 1,000 meters inland and 3 marine leagues seaward, but it extends farther for important coastal resources. The locations of projects on Fort Buchanan are outside this distance requirement; however, coastal zone certification might be needed, depending on the presence of sensitive areas and important coastal resources. An application for certification of consistency with the Puerto Rico Coastal Management Program was submitted to the Commonwealth of Puerto Rico Planning Board. The Puerto Rico Planning Board will determine the need for coastal zone certification and consistency during its review of the final EA.

4.7.2 Environmental Consequences

4.7.2.1 300/600 Area Alternative (Preferred Alternative)

Surface Water. Long-term minor adverse effects on surface water quality and storm water quantity would be expected. Land clearing and construction activities would cause localized soil erosion. Small quantities of dissolved solids, sediment, and petroleum hydrocarbons from construction equipment would be present in storm water runoff. The Army's selected contractor would be required to develop an Erosion and Sedimentation Control Plan and to implement best management practices to control surface erosion and runoff and to minimize adverse effects on water quality. Best management practices that might be used include silt fencing and hay bales to trap waterborne sediment, as well as seeding and revegetation of disturbed areas following construction. Development on the 300 Area would increase surface imperviousness and the quantity of storm water runoff. El Toro Creek, which conveys storm water from the 300 Area, has inadequate capacity, and the additional storm water flow from development in the 300 Area would further reduce the ability of the creek to handle storm water runoff from the area. If the AFRC building is constructed on the 300 Area, an engineered storm water solution, such as onsite storm water detention/retention ponds or a mechanical holding system to minimize offsite flows. The goal would be to minimize offsite flows and to achieve pre-development storm water flow conditions to avoid exacerbating the capacity problem in El Toro Creek.

Use of the 600 Area as a maintenance and vehicle parking area would be expected to lead to small, non-reportable quantities of spills of petroleum hydrocarbons and other fluids used for vehicle maintenance, but the installation would follow its protocols for spill prevention and containment to minimize any adverse effects of spills. Development in the 600 Area would increase imperviousness in the area, leading to increased storm water flows. However, the area does experience localized flooding during storms, and additional development could worsen the flooding. Before development occurs, the potential for flooding should be evaluated and, if necessary, onsite storm water detention should be considered as part of site planning.

Hydrogeology/Groundwater. No adverse effects on groundwater would be expected. Fort Buchanan would follow typical storm water management practices, Puerto Rico erosion and sediment control guidelines, and installation requirements regarding spill prevention to minimize

potential effects. Any effects on groundwater from construction and operation of the AFRC would be expected to be negligible.

Floodplains. No adverse effects on floodplains would be expected. The project is proposed to be located outside the 100-year floodplain.

Coastal Zone Management. No effects on the coastal zone would be expected. The project is outside the coastal zone, and no sensitive coastal areas are known to be present in the immediate project area.

4.7.2.2 No Action Alternative

No effects on surface water, hydrogeology/groundwater, floodplains, or coastal zone management would be expected from the No Action Alternative. No construction would occur and no new operations would be introduced to the installation under the No Action Alternative.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

The biological resources discussed in this section are vegetation, wildlife, sensitive habitats, and special status species. A biologist from Tetra Tech, Inc. (the consulting company that helped to prepare the EA) conducted a site visit of the proposed footprint areas and noted observed species and habitat quality. Copies of the EA were submitted to the Puerto Rico Department of Natural and Environmental Resources and the U.S. Fish and Wildlife Service Boquerón Ecological Services Field Office in Puerto Rico for review and comment.

4.8.1.1 Vegetation

The footprint areas and their surroundings are generally maintained lawn areas surrounded by developed property. Open spaces are covered with grass and dispersed trees of various species. Two species of trees are on the proposed 600 Area footprint and its surroundings: Indian laurel fig (*Ficus retusa*) and Australian pine (*Casuarina equisetifolia*). The proposed 300 Area footprint and its surroundings also have specimens of Australian pine, as well as the following species: Royal poinciana (*Delonix regia*), coconut (*Cocos nucifera*), tropical almond (*Terminalia catappa*), goldenshower senna (*Cassia fistula*), Calaba beautyleaf (*Calophyllum antillanum*), tall albizzia (*Albizia procera*), Burmacoast padguk (*Pterocarpus indicus*), and common mango (*Mangifera indica*) (USACE, Mobile District 1999b).

4.8.1.2 Sensitive Habitats

Sensitive habitats on Fort Buchanan include wooded areas along the southern boundary that provide habitat for the Puerto Rican boa (*Epicrates inornatus*); the haystack hills that border the golf course along its northern edge, which provide habitat for the Puerto Rican boa, the Palo de Rosa (*Ottoschultzia rhodoxylon*, a federally listed endangered plant), and several commonwealth plant species of concern; the Puerto Rico Cement Company lake, which is habitat for the ruddy duck (*Oxyura jamaicensis*, a commonwealth species of concern that has bred on the lake) (U.S. Army Southeastern Region 2005); and a small area of wetlands along the northern border of the installation west of the Main Entrance (Figure 4-1). None of these habitats are within or in the vicinity of the proposed footprint areas.

4.8.1.3 Wildlife

Mammals observed or documented to occur on Fort Buchanan include the house mouse (*Mus musculus*), black rat (*Rattus rattus alexandrinus*), Indian mongoose (*Herpestes auropunctatus*), and bats (unknown spp.). Feral dogs (*Canis familiaris*) and cats (*Felis*

domesticus) also occur on the installation. Bats are the only native mammals on the island of Puerto Rico.

Various species of birds have been identified on Fort Buchanan, including the Puerto Rican lizard cuckoo (*Saurotheca vieilloti*), red-legged thrush (*Turdus plumbeus*), bananaquit (*Coereba flaveola*), stripe-headed tanager (*Spindalis zena*), black-faced grassquit (*Tiaris bicolor*), Puerto Rican bullfinch (*Loxigilla portoricensis*), zenaida dove (*Zenaida aurita*), Adelaide's warbler (*Dendroica adelaidae*), Puerto Rican woodpecker (*Melanerpes portoricensis*), loggerhead kingbird (*Tyrannus caudifasciatus*), and red-tailed hawk (*Buteo jamaicensis*).

At least eight species of reptiles and four amphibian species are known to occur on Fort Buchanan. Reptiles include the common Puerto Rican anole (*Anolis cristatellus*), pasture anole (*Anolis pulchellus*), saddled anole (*Anolis stratulus*), siguana or Puerto Rican giant ameiva (*Ameiva exsul*), common salamanquita (*Sphaerodactylus macrolepis*), salamanca (*Hemidactylus mabouia*), Puerto Rican boa (*Epicrates inornatus*), Puerto Rican slider turtle (*Trachemys stejnegeri*), and Puerto Rican racer snake (*Alsophis portoricensis*). Turtles (unknown species, probably *Trachemys stejnegeri*) inhabit the Puerto Rico Cement Company lake. Amphibian species include the marine toad (*Bufo marinus*), white-lipped frog (*Leptodactylus albilabris*), pasture coquí (*Eleutherodactylus antillensis*), and common coquí (*Eleutherodactylus coqui*).

4.8.1.4 Sensitive Species

The Puerto Rican boa (*Epicrates inornatus*) is a federally listed endangered species that has been identified on Fort Buchanan. The ruddy duck, a species protected as vulnerable in the commonwealth under the Regulation for the Management of Vulnerable and Endangered Species (PREQB 1987), is known to use the Puerto Rico Cement Company lake.

Several species of protected flora are known to exist within the haystack hill area north of the golf course, but the species are not found on developed areas like those being considered for the proposed action.

4.8.2 Environmental Consequences

4.8.2.1 300/600 Area Alternative (Preferred Alternative)

Short-term minor adverse effects on biological resources would be expected. Building demolition and construction would remove some trees from the footprint areas and deter wildlife from using the areas. Trees on the proposed footprint areas could provide roosting and nesting habitat for birds and bats, and those sites would be lost.

No long-term effects on biological resources would be expected from operational activities of the AFRC.

4.8.2.2 No Action Alternative

No effects on biological resources would be expected. Under the No Action Alternative, there would be no changes to the existing condition of biological resources within the installation.

4.9 CULTURAL RESOURCES

4.9.1 Affected Environment

4.9.1.1 Prehistoric and Historic Background of Fort Buchanan

For a discussion of the cultural background of the region and project area, consult the *Integrated Cultural Resources Management Plan (ICRMP) for Fort Buchanan, Puerto Rico 2001–2005* (USACE, Mobile District 2001).

4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations

Cultural resources management procedures for Fort Buchanan are defined in Army Regulation (AR) 200-4, *Cultural Resources Management*, Headquarters, Department of the Army. Cultural resources include historic properties (buildings, structures, districts, and so on, as defined by AR 200-4 and the National Historic Preservation Act [NHPA]), archaeological sites (as defined and governed by the Archaeological Resources Protection Act, AR 200-4 and the NHPA), Native American sacred sites (as identified in EO 13007 and the American Indian Religious Freedom Act), Traditional Cultural Properties (as defined in the NHPA and as described in *National Register Bulletin 38*), and sites and artifacts associated with Native American graves (as defined and governed by the Native American Graves Protection and Repatriation Act).

Fort Buchanan adopted an ICRMP in 2001 that contains the inventory of cultural resources at Fort Buchanan and procedures for their management.

For the purposes of this EA, the cultural resources Area of Potential Effect (APE) is defined as the footprint of the 300 and 600 Areas and an immediate buffer around each. (The footprints are shown in Figures 2-1 and 2-2.)

Ten previously recorded archaeological sites exist on Fort Buchanan (Southerlin et al. 2001). Table 4-2 presents data on the sites. There are no previously recorded archaeological sites in the APEs for the 300 or 600 areas. Archaeological site FB-7 is partially within the 600 Area. Site FB-7, a portion of the former railroad system, has been deemed not eligible for the National Register of Historic Places (NRHP).

**Table 4-2
Known archaeological sites on Fort Buchanan**

Site	Description	Relation to undertaking
FB-1	Rock shelter complex, potentially eligible for the NRHP	Beyond APE
FB-2	PreColumbian scatter, not eligible for the NRHP	Beyond APE
FB-3	20th century scatter and possible sixteenth century foundation, indeterminate eligibility	Beyond APE
FB-4	Historic rail bed, not eligible for the NRHP	Beyond APE
FB-5	Historic rail bed, not eligible for the NRHP	Beyond APE
FB-6	Historic rail bed, not eligible for the NRHP	Beyond APE
FB-7	Historic rail bed, not eligible for the NRHP	Beyond APE
FB-8	Cement slabs from circa 1944 structure, not eligible for the NRHP	Beyond APE
FB-9	Surface scatter of historic and PreColumbian artifacts, not eligible for the NRHP	Beyond APE
FB-10	Surface scatter of PreColumbian ceramics, not eligible for the NRHP	Beyond APE

Note: APE = Area of Potential Effect; NRHP = National Register of Historic Places.

An architectural survey of Fort Buchanan was completed in 1997 (Reed et al. 1998). None of the buildings on Fort Buchanan were found to be eligible for the NRHP. Subsequently, the Puerto Rico State Historic Preservation Officer (SHPO) requested that four Cold War-era housing areas be evaluated, and three of them—Las Colinas, Coconut Grove, and Coqui Gardens—were determined eligible under Criterion A and Criterion Consideration G (Pabón et al. 1999). The

ICRMP (USACE, Mobile District 2001) lists these three housing areas as the only eligible architectural resources on Fort Buchanan. None of the eligible resources are in or near the APE.

Consultation continues between the U.S. Army and the Puerto Rico SHPO regarding the potential eligibility of Fort Buchanan, in its entirety, as an NRHP district. The Puerto Rico SHPO believes that Fort Buchanan is eligible for the NRHP because of its importance in the social historical development of this area of the island. The U.S. Army has not concurred. The issue has been taken to the Keeper of the NRHP, who has stated that more information is needed before a determination can be made. In April 2008, the U.S. Army Corp of Engineers, Jacksonville District, initiated additional studies as requested by the Keeper of the NRHP (Negron, personal communication, 2008).

4.9.1.3 Native American Resources

No federally recognized tribes with historical links to Puerto Rico have been identified.

4.9.2 Environmental Consequences

4.9.2.1 300/600 Area Alternative (Preferred Alternative)

No effects on cultural resources would be expected. For the 300/600 Area Alternative, the proposed action would have no effect on NRHP-eligible or potentially eligible archaeological sites because none have been found within the APE.

The proposed action would have no construction impact on the three NRHP-eligible housing areas and would not affect the attributes that make the three areas eligible for the NRHP. There would be no effect on Las Colinas, Coconut Grove, and Coqui Gardens.

The proposed action would have no effect on the attributes of Fort Buchanan that might make the base eligible under the theme of social history. The proposed action would cause no change in the historic land use linked to the assessment of eligibility. The proposed action would be consistent with the past use of the resource as a military facility.

During implementation of activities associated with the proposed action, there would be a potential that previously unknown archaeological resources could be discovered. If such resources were discovered, the standard operating procedures outlined in the ICRMP would be followed. Any intact archaeological resources discovered would be recorded and evaluated for eligibility to the NRHP, in consultation with the Puerto Rico SHPO. The installation would determine treatment of the discovery, again in consultation with the Puerto Rico SHPO.

4.9.2.2 No Action Alternative

No effects on cultural resources would be expected under the No Action Alternative.

4.10 SOCIOECONOMICS

4.10.1 Affected Environment

This section is a description of the socioeconomic conditions of the region of influence (ROI)—economic development, population, housing, quality of life, environmental justice, and protection of children. The geographic area in which the predominant social and economic effects of the project alternatives would occur defines the ROI for this study. The major factors used to determine the ROI are the residency distribution of the site's employees and training Soldiers, commuting distances and times, and the location of businesses providing goods and services to the project site and personnel. On the basis of these criteria, the ROI for the Fort Buchanan realignment action is the Bayamon and Guaynabo municipalities. For comparative purposes, additional data are presented for Puerto Rico.

The baseline year for socioeconomic data is 2005, the date of the BRAC Commission's announcement of the Fort Buchanan realignment. Where 2005 data were not available, the most recent data available are presented.

4.10.1.1 Economic Development

Industry and Employment. Fort Buchanan is in the San Juan metropolitan area, a major economic and tourism center. The 2005 total civilian labor force for the two municipalities was 134,638, with 124,109 persons employed. The annual unemployment rate was 7.8 percent, up from 6.9 percent in 2000 (BLS 2006). Puerto Rico's 2005 annual unemployment rate was 11.3 percent, up from 10.1 percent in 2000. The civilian labor force was about 1.4 million persons.

Fort Buchanan serves a population of more than 104,000 military and civilian personnel, veterans, retirees, and their family members. The installation's economic impact on the local community is estimated at more than \$160 million annually (U.S. Army IMA, Southeast Region 2007).

Income. In 2005 Puerto Rico's per capita income was \$9,693, up 18 percent from the 2000 per capita income of \$8,185. Puerto Rico's median household income was \$17,184, up 19 percent from the 2000 median household income of \$14,412 (U.S. Census Bureau 2000, 2005). Income in the Bayamon and Guaynabo municipalities was notably higher than that of Puerto Rico. The per capita incomes in Bayamon and Guaynabo municipalities were \$11,525 and \$18,664, respectively. Bayamon's median household income was \$24,288, and Guaynabo's was \$30,501 (U.S. Census Bureau 2005).

4.10.1.2 Population

In 2005 Puerto Rico's population was 3,865,280, an increase of 2 percent from the 2000 population of 3,808,610 (U.S. Census Bureau 2000, 2005). Fort Buchanan is in both the Bayamon and Guaynabo municipalities. Census 2005 data show that the total population of Bayamon and Guaynabo municipalities was about 316,200, or 8 percent of Puerto Rico's total population. The municipalities' population is projected to increase by 15 percent between 2005 and 2010 (Fort Buchanan 2005, U.S. Census Bureau 2005).

4.10.1.3 Housing

Fort Buchanan has 119 family housing units in three housing areas: Coconut Grove, Las Colinas, and Coqui Gardens. The installation has 3 buildings for unaccompanied personnel (bachelor's quarters) consisting of 8 apartments each, for a total of 24 bachelor's quarters (Fuentes, personal communication, January 2007).

In 2005 Puerto Rico had 1.4 million housing units, of which 87 percent were occupied and 13 percent were vacant. The median monthly housing cost for mortgaged owners was \$752, and that for renters was \$380 (U.S. Census Bureau 2005). Bayamon and Guaynabo municipalities had a total of 118,000 units. Bayamon and Guaynabo had lower vacancy rates and higher housing costs compared to the Puerto Rico average. Ninety-two percent of the units were occupied and 8 percent were vacant. The median monthly mortgage ranged from \$857 to \$1,278, and median gross rent ranged from \$449 to \$497.

4.10.1.4 Quality of Life

Law Enforcement, Fire Protection, and Medical Services. The Fort Buchanan Directorate of Emergency Services (DES) provides professional law enforcement and firefighting operations on the installation. The DES oversees physical security, crime prevention, criminal investigations, traffic control, and weapons registration; supports force protection; and operates a K-9 unit. The Fort Buchanan DES liaisons with U.S. federal agencies, the Commonwealth of Puerto Rico, and

local law enforcement agencies to gather criminal intelligence, share technology and training skills, and provide disaster assistance (U.S. Army IMA, Southeast Region 2007).

Fort Buchanan has one fire station staffed for a one-engine company, and one ambulance that is available 24 hours a day, 7 days a week. Fort Buchanan's Fire and Emergency Services has three branches. The Fire Protection Branch responds to fires, alarm activations, and other emergencies; the Fire Prevention Branch provides fire prevention inspections, code enforcement, and technical services; and the Emergency Medical Services Branch is managed through a contract to provide response and transportation of the sick and injured to an approved off-post hospital (U.S. Army IMA, Southeast Region 2007). Fort Buchanan does not have a hospital. Off-post hospitals in the vicinity of Fort Buchanan include San Pablo, which is about 5 miles from the installation, and Metropolitan, Veterans, and Central Medico hospitals, which are within 10 to 15 miles of the installation (Johnson, personal communication, January 2007).

The Rodriguez Army Health Clinic on Fort Buchanan is a TRICARE military treatment facility that provides outpatient primary health care services for adults and children. The Fort Buchanan Dental Clinic provides comprehensive dental care.

Schools. Fort Buchanan is served by the Department of Defense Domestic Dependent Military and Secondary Schools (DDESS). The five DDESS schools in Puerto Rico provide educational services to students across the island. Four DDESS schools are on Fort Buchanan: Antilles Elementary, Antilles Intermediate, Antilles Middle, and Antilles High School (U.S. Army IMA, Southeast Region 2007). The Puerto Rico Department of Public Education oversees the commonwealth's public school system of about 1,500 schools and more than 575,000 students. Bayamon and Guaynabo municipalities have a total of 91 public schools serving children in pre-kindergarten through 12th grade (NCES 2006).

Family Support, Shops and Services, and Recreation. Fort Buchanan provides a full range of family support services through the Morale, Welfare and Recreation program, including Army Family Team Building, Army Family Action Plan, Financial Readiness Program, and child and youth service facilities and programs, such as day care and before- and after-school care (U.S. Army IMA, Southeast Region 2007).

Fort Buchanan has a PX, Commissary, Class VI (alcoholic beverages) store, gas station, post office, bank, credit union, and travel agency. The San Patricio Plaza, within 1 mile of the installation, has several restaurants and small stores. The Plaza Las Americas Shopping Mall, 3 miles from Fort Buchanan, has several major chain stores, restaurants, a movie theater, banks, and salons. The Old San Juan area has an abundance of shops, restaurants, and specialty stores.

On-post athletic and recreation facilities include a community club, bowling center, ball field, physical fitness center, youth activities center, automotive skills center, picnic areas, and water-spout-aquatic center. Fort Buchanan also has a golf course on the eastern part of the installation (USACE, Mobile District 1999a; U.S. Army IMA, Southeast Region 2007).

4.10.1.5 Environmental Justice

Environmental justice addresses race, ethnicity, and the poverty status of populations within the ROI. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse effects from proposed actions and to identify alternatives that might mitigate these effects.

Minority populations are identified as Black or African American and not of Hispanic origin; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; Hispanic; persons of some other race; and persons of two or more races. Minority populations should be identified where either the minority population of the affected area exceeds 50 percent or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). As of 2005, 99 percent of the people in Puerto Rico were Hispanic. One percent of the people were white non-Hispanic. In the Bayamon and Guaynabo municipalities, 98 percent and 99 percent of the population, respectively, was Hispanic (U.S. Census Bureau 2005).

Poverty thresholds as established by the Census Bureau are used to identify low-income populations (CEQ 1997). Poverty status is reported as the number of persons or families with income below a defined threshold level. The 2000 Census defines the poverty level as \$8,794 of annual income, or less, for an individual and \$17,603 of annual income, or less, for a family of four. As of 2005, 45 percent of the Puerto Rico residents were classified by the U.S. Census Bureau as living in poverty. In the Bayamon Municipality, 28 percent of the population was living in poverty. In the Guaynabo Municipality, 27 percent of the population was below the poverty level (U.S. Census Bureau 2005).

4.10.1.6 Protection of Children

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), protects children from disproportionately incurring environmental health risks or safety risks. Children have been present at Fort Buchanan as dependents living in family housing or as occasional visitors. The Army has taken precautions for their safety by a number of means, including using fencing, limiting access to certain areas, and providing adult supervision.

4.10.2 Environmental Consequences

4.10.2.1 300/600 Area Alternative (Preferred Alternative)

Economic Development. Short-term minor beneficial effects on economic development would be expected. In the short term, the expenditures and employment associated with demolition of existing buildings and construction of the AFRC, OMS, and unit storage building on Fort Buchanan would increase ROI sales volume, employment, and income. A benefit of any type of development is the construction expenditures, especially if local labor and materials are used. The economic benefits would be for a short term, lasting only for the duration of the construction period. Given the available labor force and the unemployment rate in the ROI and Puerto Rico as a whole, there would be a sufficient number of people to fill the construction jobs. The money spent during the construction phase would be cycled through the local economy through subsequent business spending and wages earned locally, creating further indirect and induced economic benefits.

Population. No effects would be expected. The 300/600 Area Alternative would not change the ROI's or Puerto Rico's population. The affected population already resides within the ROI. Full-time employees and the reservists would commute from their homes to the AFRC.

Housing. No effects would be expected. The 300/600 Area Alternative would not change the ROI's population and would not affect the housing market. Full-time employees and the reservists would commute from their homes to the AFRC.

Quality of Life. The following paragraphs identify the anticipated effects for each of the key components of quality of life.

Law Enforcement, Fire Protection, and Medical Services. Short-term minor adverse effects would be expected. Implementation of the Preferred Alternative would result in 25–50 additional permanent on-post personnel who would work at the proposed AFRC during normal weekday business hours and about 750 reservists who would train at the installation on the weekends. Additional DES personnel could be needed during annual trainings and weekend drills for such things as physical security or traffic control. The additional personnel also would be expected to generate patient visits to the Rodriguez Army Health Clinic. Short-term minor adverse effects could occur in terms of decreased levels of service until any necessary additional DES or medical clinic personnel are hired.

Short-term minor adverse effects could occur on fire department resources. The 300/600 Area Alternative would result in the construction of three buildings on Fort Buchanan. The effect on firefighting and fire-inspection resources would depend on many factors, such as how many stories the buildings would have, the square footage of the buildings, the proximity of the buildings to other structures and the size of those structures, the types of sprinkler and alarm systems, whether the alarm systems would be connected to the fire station, the proximity of fire hydrants, and the available water pressure. Many of these factors have not been finalized for the realignment action. Once the site location and specific design features of the buildings are determined, the Army would consult with the fire department to assess if additional resources (e.g., a ladder truck, another engine company) would be required to provide sufficient firefighting and inspection services.

Schools. No effects would be expected. The 300/600 Area Alternative would not change the ROI population and would not affect school enrollment. Full-time employees and the reservists would commute from their homes to the AFRC.

Family Support, Shops and Services, and Recreation. Short-term minor adverse effects would be expected. The 300/600 Area Alternative would increase the number of permanent on-post personnel stationed at Fort Buchanan slightly and weekend personnel appreciably. The increase in on-post population would increase demand for Fort Buchanan community services, such as PX, Commissary, and other dining, service, and recreational facilities. The effect would primarily be on the weekends. For example, the number of personnel eating at the Commissary or shopping at the PX on weekends would increase. Levels of service would decrease, causing customers to have longer wait times or to return at other times, until additional personnel are hired or facilities are expanded to meet the increased demand.

The Child Development Center and the Dental Clinic on the 300 Area parcel would be relocated to another area on the installation.

Environmental Justice. No effects would be expected. Implementing the 300/600 Area Alternative would not result in disproportionate adverse environmental or health effects on low-income or minority populations.

Protection of Children. No effects would be expected. Implementing the No Action Alternative would not result in disproportionate adverse environmental or health or safety risks to children.

4.10.2.2 No Action Alternative

No effects on socioeconomics, environmental justice, or the protection of children would be expected. Under the No Action Alternative, there would be no changes to the existing condition of socioeconomic resources.

4.11 TRANSPORTATION

This section describes the existing highway and transit subsystems on and near the post, the effects associated with the alternatives, and potential mitigation measures, if required.

4.11.1 Affected Environment

4.11.1.1 On-Post Transportation

Transportation in and around Fort Buchanan is achieved mainly via road networks. There are a total of 17 miles of roads on Fort Buchanan. Access to the base is provided through the Main Gate off Highway 2 at the east end of the installation and through the Rear Gate off Highway 28. Most of the traffic on the installation is generated by use of the PX, the Commissary, and the school system.

The primary roads on the installation include Chrisman Road, Columbus Street, and Howard Drive. Chrisman Road connects the Main Gate with Columbus Street to the west. Secondary roads provide direct access to the Rear Gate; serve the community facilities on the northern part of the installation; and serve the administration, community facilities, and family housing areas in the central and southern parts of the installation.

Level of Service (LOS) is a qualitative measure of the operating conditions of an intersection or other transportation facility. Six LOSs (A through F) are defined: LOS A represents the best operating conditions with no congestion, and LOS F is the worst with heavy congestion. Roadways and intersections with LOS E or F would have traffic conditions at or above capacity. Traffic patterns would be congested, unstable, and normally unacceptable to drivers attempting to access and use roadways and intersections with LOS E or F (TRB 2000).

The installation has three entrances. The Main Gate entrance is the only one that is open 24 hours a day, and it receives most of the installation's traffic. The Rear Gate entrance is open on weekdays during daylight hours. It provides direct access to major community facilities at the installation, including the Commissary and PX. The South Gate entrance is closed, but it can be used for emergency purposes. The Main Gate is adjacent to the intersection of PR-165 and John Fitzgerald Kennedy Avenue. The Main Gate intersection is a five-legged intersection operating at a LOS F (Fort Buchanan 1997). This intersection is the only intersection or roadway segment on or adjacent to the installation that operates at an unacceptable LOS. Much of the traffic congestion at this intersection is created by the one-lane gate configuration and its lack of capacity during weekday peak periods.

4.11.1.2 Off-Post Transportation

Four major highways (Highways 2, 165, 22, and 28) pass near the installation and provide adequate access to Fort Buchanan from the surrounding area. There is no public transportation on Fort Buchanan. Public transportation off the installation is provided by the Metropolitan Bus Authority; Puerto Rico Highway and Transportation Authority (Metrobus); small, independent, private bus lines; and taxis.

4.11.2 Environmental Consequences

4.11.2.1 300/600 Area Alternative (Preferred Alternative)

Short- and long-term minor adverse effects on traffic would be expected. The 300/600 Area Alternative would increase the number of permanent on-post personnel stationed at Fort Buchanan slightly and weekend personnel appreciably. However, only small, barely unnoticeable changes to transportation systems on-post and off-post would be expected with the implementation of the 300/600 Area Alternative. The changes would be primarily attributable to

construction vehicles; small changes in localized traffic patterns from the additional permanent, on-post personnel; and increases in weekend peak-period traffic, primarily at the Main Gate.

Traffic congestion would increase from additional construction vehicles and traffic delays near construction sites. These effects would be temporary, ending with the construction phase. The local on-post and off-post road infrastructure would be sufficient to support any increase in construction vehicle traffic. In addition, road closures or detours to accommodate utility system work would be expected, creating short-term traffic delays. Such effects would be minimized by locating construction staging areas where they would not obstruct traffic and directing construction vehicles to access the installation at times and through gates to minimize traffic interruptions, to the extent practical. All construction vehicles would be equipped with backing alarms, two-way radios, and “Slow Moving Vehicle” signs when appropriate.

Approximately 25–50 additional permanent on-post personnel and support staff would work at the proposed AFRC during normal, weekday business hours. These personnel would primarily conduct office-related tasks, perform maintenance work, and provide administrative support services. These personnel would constitute approximately 60–120 more privately owned vehicle trips per normal weekday (ITE 2003), only a fraction of which would occur during peak-traffic periods. This small increase in traffic would not affect the LOS of any of the gates, roadway segments, or intersections on-post or off-post.

Long-term minor adverse effects on traffic would be expected after hours and on the weekends when training was conducted. These effects would occur primarily on Saturday morning and Friday and Sunday evenings. The 750 trainees would constitute approximately 1,750 more privately owned vehicle trips spread out over these periods (ITE 2003). None of the new trips would occur during weekday peak periods. Although this would be a substantial increase in trips to and from the installation, it would be only a fraction of the existing weekday traffic at any of the intersections or roadways affected (Fort Buchanan 1997). The additional traffic would not affect the LOS of any of the gates, roadway segments, or intersections on-post or off-post. Locating the OMS along South Terminal Road, near the Commissary/PX, would generate vehicle trips that could conflict with weekend PX traffic. However, the new Commissary/PX is at the Rear Gate, and this effectively reduces Commissary/PX traffic at the Main Gate and on-post. Therefore, all traffic effects would be considered minor.

4.11.2.2 No Action Alternative

Under the No Action Alternative, no effects on transportation resources would be expected because there would be no change to the road network or increase in traffic volume. Current and future traffic would remain as described in Section 4.11.1.

4.12 UTILITIES

Utility systems available at Fort Buchanan are potable water, wastewater collection and treatment, storm water drainage, electricity, solid waste disposal, and telephone.

4.12.1 Affected Environment

4.12.1.1 Potable Water Supply

The Puerto Rico Aqueduct and Sewer Authority (PRASA) provides potable water to Fort Buchanan. PRASA owns and operates three potable water treatment plants in the San Juan metropolitan area—Trujillo Alto, a 60-million-gallon-per-day (mgd) water treatment plant in the southeastern section of the San Juan metropolitan area; Guaynabo, a 30-mgd water treatment plant in the southern section of the San Juan metropolitan area; and La Plata, a 40-mgd water treatment plant in the southwest section of the San Juan metropolitan area.

Each water treatment plant transports potable water to Fort Buchanan via its own intake, and the water transmission pipes from the three treatment plants are interconnected to provide service flexibility. The three intakes can provide Fort Buchanan a total of approximately 4.1 mgd of potable water.

The Main Gate intake with a 10-inch cast-iron pipe connection to PRASA's 30-inch main supply line has a capacity of approximately 0.72 mgd. When pressure in the water system is low, a booster pump that is restricted to 0.72 mgd operates. The South Gate intake has a capacity of approximately 0.88 mgd, and it serves the Coconut Grove and Coqui Gardens housing areas. The Cataño intake has a capacity of 2.5 mgd. Although connected, this intake is not used regularly to supply potable water to Fort Buchanan.

There are two water storage tanks at Fort Buchanan with a combined capacity of 1.5 million gallons. They consist of a 1-million-gallon tank near the Las Colinas housing area and a 0.5-million-gallon tank in the haystack hills north of the 1300 Area. The water distribution system at Fort Buchanan consists of cast-iron, asbestos-cement, and polyvinyl chloride pipes with an age range of less than 1 year to 50 years. The Army owns and maintains the system. The 300 Area is serviced by 8-inch and 6-inch potable water lines that follow Chrisman Road and Crane Loop. A 4-inch line extends from Chrisman Road to the existing Child Development Center at the center of the site. The 600 Area is serviced by two 10-inch water lines and one 8-inch water line along North Terminal and South Terminal Roads and a 16-inch line that bisects the site (USACE, Mobile District 1999b).

The peak average per capita water consumption, adjusted for uncertainties in demand, was recorded as approximately 140 gallons per day. On the basis of this consumption rate, the existing potable water supply system at Fort Buchanan could support an effective population of approximately 29,000 people.

4.12.1.2 Sewer and Wastewater

Fort Buchanan owns and maintains the on-post wastewater collection system, except for a 42-inch reinforced concrete pipe trunk sewer, which is owned and operated by PRASA. PRASA has a 16.4-foot-wide easement for the trunk line. PRASA and Fort Buchanan have an interagency agreement authorizing Fort Buchanan to discharge wastewater to the trunk line without any flow restrictions. Sanitary sewer discharges from Fort Buchanan is treated at the Puerto Nuevo wastewater treatment plant, with a treatment capacity of 72 mgd. Effluent from the plant is discharged to San Juan Bay.

The 50-year-old sanitary sewer collection system is owned, operated, and maintained by the installation and consists of approximately 11 miles of sewer mains ranging from 6 to 24 inches. The collection system has a design capacity of 1.25 mgd.

The sanitary sewer system has one active pumping station and force main. The pumping station is northwest of the golf course maintenance building and has an approximate capacity of 0.72 mgd. This pumping station serves the Antilles intermediate school and the Coqui Gardens housing area. Most of the remainder of Fort Buchanan is served by a gravity wastewater collection system. Buildings 604 and 615 are served by septic tanks. Oil and water separators are installed at all existing car-wash racks and motor pool facilities to prevent the discharge of oil and grease into the domestic wastewater collection system.

The 300 Area is serviced by an 8-inch sanitary sewer line along Wilson Road, a 6-inch line along Crane Loop, and a line of unknown size that bisects the 300 Area parcel. The 600 Area is serviced by a 42-inch sanitary sewer main that follows the northern boundary of Fort Buchanan, and smaller lines feed into this main on the site (USACE, Mobile District 1999b).

Infiltration/inflow problems have been reported during and after rainfall events, although the infiltration/inflow sources have not been identified or quantified.

4.12.1.3 Electricity

The Puerto Rico Electric Power Authority (PREPA) provides electrical power to Fort Buchanan. The San Juan steam power plant in Puerto Nuevo supplies the power. When the steam plant is off-line, the installation can be fed from the Caparra substation at 38/13.2 kilovolts (kV). PREPA provides a separate 3.2-kV electrical supply to power the warehouse area. This supply was added because the construction of the new PX and Community Club overloaded the electrical system at the time. A substation near the Coqui Gardens housing complex has two transformers, each with a capacity of 7,500 kilovolt-amperes (USACE, Mobile District 1998). The 300 Area is serviced by a 13-kV overhead electrical lines along Chrisman Road, Wilson Road, and Crane Loop. The 600 Area is serviced by a 13-kV overhead electrical line along South Terminal Road, with smaller lines extending onto the site (USACE, Mobile District 1999b). Recent additions to the post have resulted in the existing electrical system being at or near capacity (Borchardt, personal communication, 2008).

Estimated monthly electrical demand is approximately 1.6 kilowatts per capita. Three 13.2-kV feeder lines provide secondary distribution to the installation from the Coqui Gardens substation. The system can supply a maximum effective population of 7,833 people. The effective population at Fort Buchanan in September 2006 was estimated to be approximately 4,415—819 military and 3,596 civilian personnel (Fort Buchanan 2006).

Natural gas and other energy resources are not available at Fort Buchanan.

4.12.1.4 Solid Waste

During the fiscal year (FY) 2005–2006, Fort Buchanan generated about 3,655 tons of municipal solid waste and 511 tons of construction and demolition debris (C&D). Of the above total municipal solid waste and C&D debris, about 21 percent of the municipal solid waste (762 tons) and 100 percent of C&D debris were diverted from the various local area landfills. Private contractors dispose of solid waste at local area landfills. The landfills used include Humaco Municipal Landfill, Guaynabo Municipal Landfill, and private facilities. Municipal solid waste generated at Fort Buchanan comes from various tenants at the post. Each tenant area is supplied with one or more dumpsters, depending on need.

Any contractor performing work on the installation is responsible for and manages its own C&D debris and disposal. Each contractor is required to obtain the required waste transport and disposal permits before using a landfill for disposal of C&D debris. The landfills, which might be affected by construction, are selected on the basis of each contractor's needs and landfill availability. C&D debris generated at Fort Buchanan has been recycled in the past.

4.12.1.5 Communication Systems

Local telephone system service is provided via underground cable. Puerto Rico Telephone Company provides the telephone trunk lines, which are tied into the installation's main telephone exchange building. Operators attend Fort Buchanan's switchboard 24 hours a day.

4.12.2 Environmental Consequences

4.12.2.1 300/600 Area Alternative (Preferred Alternative)

Long-term minor adverse and beneficial effects on utility systems serving Fort Buchanan would be expected under the 300/600 Area Alternative. Beneficial effects would be expected from utility system upgrades made to accommodate the additional personnel visiting Fort Buchanan for

training. Adverse effects would result additional demands on installation utility systems—in particular the electrical system, and from the generation of additional municipal solid waste and C&D debris at Fort Buchanan and its effect on local landfills.

The potable water and wastewater systems have sufficient capacity to meet the increased demand that the BRAC action would produce. Under the 300/600 Area Alternative, a 600-member team would use the proposed facilities at Fort Buchanan for a few days per month. Using the reported per capita consumption of 140 gallons per day, the existing potable water system, with a capacity of 4.1 mgd, is sufficient for approximately 29,300 full-time residents. The wastewater collection system, with a capacity of 1.25 mgd, is sufficient for an effective population of approximately 12,500 full-time residents. The Puerto Nuevo wastewater treatment plant, with a treatment capacity of 72 mgd, has sufficient capacity to handle sanitary waste generated from the BRAC tenants.

The addition of an AFRC to Fort Buchanan could overtax the existing electrical system, and upgrades to the system could be necessary to accommodate the additional demand. Facility planning should include an assessment of the need for electrical system upgrades, taking into consideration that the AFRC would be used primarily on weekends when many other on-post facilities would not be in use. Fort Buchanan would minimize demand increases on the electrical system by installing electrical fixtures and air-conditioning systems in compliance with the Energy Policy Act of 2005 (Public Law 109-58) with specified goals for increased use of renewable energy sources, advanced utility metering, and procurement of energy-efficient equipment and building systems in all applicable contracts. Additional demands on the water supply system would be minimized by installing water-conserving devices such as low-flow shower heads, faucets, and toilets in new facilities.

All vertical building construction projects, starting with the FY2008, would be expected to achieve the SILVER level of Leadership in Energy and Environmental Design (LEED) of the U.S. Green Building Council (Deputy Assistant Secretary of the Army 2006). This rating system is based on sustainable design and development concepts and assesses the degree to which the design of a building successfully incorporates consideration of matters such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Using the LEED rating system improves the environmental and economic performance of facilities by using established and advanced industry principles, practices, materials, and standards.

Solid waste generated under the 300/600 Area Alternative would not be substantial in terms of overall monthly or yearly quantity or area landfill capacity. Assuming two pounds of municipal solid waste per day for each trainee, 750 trainees would generate approximately 117 tons of waste per year using an estimated average of 3 days of training per week. This equates to a monthly average of approximately 9.8 tons of municipal solid waste.

Table 4-3 provides an estimate of the C&D debris that would be generated at Fort Buchanan by construction under the 300/600 Area Alternative. Per an Army memorandum dated February 6, 2006 (ACSIM 2006), the Army's selected contractor would attempt to divert 50 percent or more of the estimated 844 tons of C&D debris from non-installation-operated landfill sites by recycling. As a result of this sustainable management of waste in military construction, renovation, and demolition activities, approximately 422 tons of C&D debris would be disposed of in landfill sites in the area.

Table 4-3
Estimates of construction and demolition debris generated at Fort Buchanan
as a result of implementing the 300/600 Area Alternative

Construction type	Gross building area (sf)	C&D factor (lb/sf)	Estimated waste (lb)	Estimated waste (tons)
Construction	90,334	4.4	397,470	199
Renovation	N/A	20	N/A	N/A
Demolition	11,225	115	1,290,875	645
Gross total	101,559	N/A	1,688,345	844
Amount recycled (50%)	N/A	N/A	844,173	422
Net total C&D debris generated	N/A	N/A	844,173	422

The 422 tons of C&D debris equates to a yearly average (on the basis of 2 years of construction activity) of 211 tons, or a monthly average of approximately 17.6 tons. In addition, under the 300/600 Area Alternative, the Reserve and National Guard units visiting Fort Buchanan for training for a few days per month would generate approximately 9.8 tons of municipal solid waste per month. Area landfill life spans would be reduced from their current estimates because of solid waste generated under the 300/600 Area Alternative.

4.12.2.2 No Action Alternative

No effects on utility systems would be expected at Fort Buchanan under the No Action Alternative. Facilities for BRAC would not be constructed, and neither the visiting population of Fort Buchanan nor demand on the installation's utility systems would increase.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

4.13.1 Affected Environment

Specific environmental statutes and regulations govern hazardous material and hazardous waste management activities at Fort Buchanan. For the purpose of this analysis, the terms *hazardous waste*, *hazardous materials*, and *toxic substances* include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act; the Resource Conservation and Recovery Act (RCRA); or the Toxic Substances Control Act. In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, might present substantial danger to public health or welfare or to the environment when released into the environment.

4.13.1.1 Storage and Handling Areas

Active underground storage tanks (USTs) on the installation are used for fuel storage and have capacities of up to 20,000 gallons (Table 4-4). Aboveground storage tanks (AST) on the installation have capacities of up to 10,000 gallons; they store fuel, waste oil, and pool chemicals. All the ASTs and USTs are monitored and have adequate spill containment (FBEMB Undated a). Numerous USTs and ASTs have been removed from the installation (USARC, Fort Buchanan 2006). There are two active USTs and eight active ASTs in buildings in the 300 Area and 600 Area, as listed in Table 4-4.

**Table 4-4
Active USTs and ASTs in 300 Area and 600 Area buildings**

Building number	UST/AST	Capacity (gallons)	Contents
376	AST	1,500	Diesel
376	AST	1,500	Diesel
380	AST	500	Used oil
399	AST	315	Diesel
606	AST	1,000	Diesel
660	AST	1,500	Diesel
677	UST	20,000	Gasoline
677	UST	20,000	Gasoline
689	AST	8,000	Diesel
689	AST	8,000	Diesel

Used oil and coolant; pesticides, herbicides, and associated dispensing equipment; and field equipment with radiological sources are stored in 55-gallon drums in on-post buildings. X-ray equipment is stored in the Dental Clinic (Building 313), which is on the 300 Area parcel.

4.13.1.2 Hazardous Waste Disposal

Fort Buchanan is listed as a RCRA Small Quantity Generator of hazardous waste under Identification Number PR 1210099999. As a small-quantity generator, the installation may generate 100–1,000 kilograms of hazardous waste per month. The on-site quantity of waste may not exceed 6,000 kilograms at any one time, and the waste may be stored at the installation for up to 270 days (Fort Buchanan 2005, 40 CFR 262.34).

4.13.1.3 Site Contamination and Cleanup

The only site of contamination near the proposed footprint areas is Building 380, the former AAFES gas station. The station has been closed and out of service since October 2007 (FBEMB 2008). The site (UST Site 380) is under the Fort Buchanan Environmental Compliance Cleanup Program in compliance with a RCRA Corrective Action order. The U.S. Army Corps of Engineers is performing Remedial Action at the site under the Army Compliance Cleanup Program. A release of fuels within the facility was discovered in December 2004. Therefore, the Army Corps of Engineers, Jacksonville and Omaha Districts, conducted a Preliminary Site Assessment. During FY2006, a RCRA Site Characterization was performed to define the extent of contamination. After the area of contamination was defined, the districts developed a Remedial Design Study in FY2008. The Corps of Engineers installed a pneumatic fuel recovery system, which is maintained monthly, in January 2008. Recommended action for the site is natural attenuation along with long-term maintenance. Building 380 is scheduled for demolition and tank closure.

4.13.1.4 Special Hazards

Asbestos. Two categories are used to describe asbestos-containing material (ACM). *Friable ACM* is defined as any material containing more than 1 percent asbestos (as determined by polarized light microscopy) that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. *Non-friable ACM* is material that contains more than 1 percent asbestos and does not meet the criteria for friable ACM.

Fort Buchanan has an asbestos management program that includes surveys for ACM and removal actions (USACE, Mobile District 1998). Depending on the age of the structures within the

proposed BRAC parcels, asbestos could be in floor tile mastic, duct mastic, pipe mastic, joint compound and tape, roofing material, pipe insulation, transite panels, fireproofing material, fiber board, duct expansion fabric, furnace gaskets, vinyl floor tile, boiler insulation, vent flashings, door insulation, caulking, and other building components.

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are industrial compounds used in electrical equipment, primarily capacitors and transformers, because they are electrically nonconductive and remain stable at high temperatures. Because of their chemical stability, PCBs persist in the environment, bioaccumulate in organisms, and become concentrated in the food chain. The disposal of PCBs is regulated by the Toxic Substances Control Act, which regulates the removal and disposal of contaminated equipment containing PCBs at concentrations greater than 50 parts per million.

Before September 1978, transformers containing PCBs were removed from the installation (USACE, Mobile District 1998).

Lead-Based Paint. Current Army policy calls for controlling lead-based paint (LBP) by using in-place management. In-place management is used to prevent deterioration over time of surfaces likely to contain LBP, followed by replacement as necessary. Maintenance staff and residents are given instructions on routine cleaning procedures leading to capture of LBP fragments from suspected locations. LBP materials in existing facilities are to be encapsulated or removed in accordance with Army and Occupational Safety and Health Administration (OSHA) guidelines. LBP debris from renovation and demolition activities is managed and disposed of as construction debris in accordance with applicable regulations.

Pesticides. Pesticides are not considered hazardous waste if used at their current location for their intended purpose, instead of being stored, disposed of as waste material, or allowed to migrate to their current location from the site of application. Pest management on Fort Buchanan is conducted by personnel who are DoD-certified and in accordance with the installation Pest Management Plan.

Ordnance. AR 385-63 and U.S. Army Training and Doctrine Command Regulation 385-2 require weapons ranges within Army installations to comply with established safety standards. Munitions and explosives of concern (MEC) have been identified within and adjacent to Fort Buchanan. Stokes mortars have been recovered from a former range area in the eastern/central portion of the installation, which is now used as a recreational area. The potential exists that additional MEC items remain in the recreational area. No other areas on the installation have been identified as potential zones containing unexploded ordnance (USACE, Mobile District 1998). From available information, there is no indication that AFRC parcels are within former ranges.

Ammunition is stored in a building about 400 feet southwest of the AFRC 200 Area Alternative site. It is the only facility on the installation that is used for ammunition storage. There is a 100-foot safety distance arc around the building, and no inhabited facilities are allowed to be constructed within the arc. There are no ranges, explosive ordnance disposal areas, or other facilities that require quantity safety arcs on the installation (USARC, Fort Buchanan 2006).

Medical/Biohazardous Waste. The Dental Clinic in the 300 Area site provides dental services to active duty personnel. Regulated waste includes sharps, pathological waste, laboratory waste, used dental amalgam, used x-ray fixer, lead foil, and used x-ray film. X-ray developing materials are recycled by a local contractor (Fort Buchanan 2005).

Radon. Radon gas is a naturally occurring, colorless, and odorless radioactive gas that is produced by the decay of naturally occurring radioactive material (e.g., uranium). Atmospheric radon is diluted to insignificant levels; however, when concentrated in enclosed areas, radon can

present considerable human health risks such as lung cancer. Radon testing in 555 buildings on the installation produced no results above the EPA action level of 4 picocuries per liter (USACE, Mobile District 1998).

Mold. Mold spores continuously migrate through indoor and outdoor air and can grow and reproduce in wet mediums on wood, paper, carpet, and foods. When excessive moisture or water accumulates indoors, mold growth often occurs, especially if the moisture problem remains undiscovered or unaddressed. Moisture problems in buildings can be caused by a variety of conditions, including roof and plumbing leaks, condensation, and excess humidity. Some of the potential effects and symptoms associated with mold exposures are allergic reactions, asthma, and other respiratory complaints. Mold problems are controlled on the installation as needed by eliminating sources of mold followed, where required, by repairing and cleaning mold-affected substrates.

4.13.2 Environmental Consequences

4.13.2.1 300/600 Area Alternative (Preferred Alternative)

No effects on hazardous material storage or disposal would be expected. No environmental or health effects resulting from the removal, handling, and disposal of hazardous materials would be expected during construction, demolition, or renovation activities. All proposed activities would be conducted in accordance with all applicable regulatory requirements. In addition, demolition waste that contains ACM and LBP would be handled in accordance with all applicable regulatory requirements. Wastes generated during demolition or renovation activities that contain ACM would be handled and removed by a licensed contractor, and all hazardous materials would be properly disposed of at an authorized disposal site. Fort Buchanan would also evaluate demolition that involves LBP for compliance with Army Engineering and Housing Support Center Technical Note 420-70-2 and the OSHA Standard at 29 CFR 1926.62 and would implement measures to control airborne asbestos and lead dust.

If any contamination related to the plume associated with the former AAFES gas station was discovered during site development, the Fort Buchanan Environmental Division would be notified immediately. Construction crews would be informed about the potential for contamination before site development would begin, and the installation Environmental Division would determine the best course of action.

No effects would be expected from hazardous waste disposal. The current hazardous waste disposal procedures would continue with implementation of the 300/600 Area Alternative. All contractors associated with implementation of the 300/600 Area Alternative would be responsible for adhering to Fort Buchanan's policies and procedures and local and federal regulations for storage, handling, and disposal of hazardous wastes.

No effects from mold would be expected with implementation of the 300/600 Area Alternative.

No effects from pesticide use would be expected. Pesticides are not considered hazardous waste if used at their current location for their intended purpose, instead of being stored, disposed of as waste material, or allowed to migrate to their current location from the site of application.

Additional potentially hazardous materials that could be found on-site during construction activities include paints, asphalt, and fuel and motor oils for construction vehicles and equipment. The construction contractors would be responsible for preventing or responding to paint and fuel spills. The construction contractors would be responsible for collecting and storing potentially hazardous materials used or found on-site in proper containers for a limited amount of time, properly disposing of them in accordance with applicable federal and local laws, and preventing spills of paint and fuels. Spills could be prevented by proper storage and handling, attention to the

task at hand, and responsible driving. Wood and dry concrete can generate airborne particulates as they are cut or sanded. To protect against adverse effects, workers should wear facemasks and safety glasses when performing these tasks. Wood and other construction materials are also flammable. Establishing smoking areas and prohibiting open flames near flammable materials would greatly reduce the risk of fire.

No adverse environmental effects from MEC would be expected; however, construction personnel should be trained in MEC avoidance and reporting.

4.13.2.2 No Action Alternative

No adverse effects on hazardous and toxic substances would be expected from the No Action Alternative. Current procedures would continue to be implemented in accordance with applicable laws.

4.14 CUMULATIVE EFFECTS

In 40 CFR 1508.7, the Council on Environmental Quality defines *cumulative effects* as the “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” No specific concurrent projects have been identified, and, as such, no cumulative effects would be expected under the 300/600 Area, 200 Area, or 200/600 Area Alternatives.

4.15 MITIGATION SUMMARY

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The EA did not identify the need for any mitigation measures.

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SECTION 5.0 CONCLUSIONS

This EA was prepared to evaluate the potential effects on the natural and human environment from activities associated with implementation of the BRAC Commission's recommendations pertaining to Fort Buchanan, Puerto Rico. The EA examines the Army's Preferred Alternative (300/600 Area Alternative) and the No Action Alternative.

The EA evaluates potential effects on land use, aesthetic and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice and protection of children), transportation, utilities, and hazardous and toxic substances.

Evaluation of the 300/600 Area Alternative, identified as the Army's Preferred Alternative, indicates that the physical and socioeconomic environments at Fort Buchanan would not be significantly affected. The predicted consequences of the 300/600 Area Alternative on resources are briefly described below. Table 5-1 provides a summary and comparison of the consequences of the Preferred Alternative and the No Action Alternative.

5.1 SUMMARY OF CONSEQUENCES

5.1.1 300/600 Area Alternative (Preferred Alternative)

5.1.1.1 Land Use

No effects would be expected. This alternative would be compatible with surrounding land uses.

5.1.1.2 Aesthetic and Visual Resources

Long-term minor adverse effects on aesthetics and visual resources in the 600 Area would be expected. Construction of an AFRC building and associated facilities in the 300 Area would not change the character of the area, which is already an area of military administrative use. Construction of the OMS and storage facility in the 600 Area would not change the use of the area as military maintenance and supply/storage, but would change the visual character of the parcel from open space to developed land with large, open parking areas and a vehicle maintenance building.

5.1.1.3 Air Quality

Short- and long-term minor adverse effects on air quality would be expected. Emissions associated with construction and operation of facilities, however, would not exceed *de minimis* thresholds, be regionally significant, or contribute to a violation of any federal, state, or local air regulation.

5.1.1.4 Noise

Short-term minor adverse effects on the noise environment would be expected. The minor increases in noise would primarily be from heavy equipment used during construction. These minor increases would be temporary in nature and would end upon completion of construction.

5.1.1.5 Geology and Soils

Short-term minor adverse effects on soils would be expected. Because of the slight slope of the 300 and 600 Area project sites, and characteristics of the underlying soils, effects from demolition- and construction-related erosion could occur. Storm water runoff and erosion would likely occur during construction due to removal of vegetation, exposure of soil, and increased

**Table 5-1
Summary of potential environmental and socioeconomic consequences**

Resource area	Environmental and socioeconomic effects of alternatives	
	300/600 Area	No Action
Land use	No effects	No effects
Aesthetic and visual resources	Long-term minor adverse	No effects
Air quality	Short- and long-term minor adverse	No effects
Noise	Short-term minor adverse	No effects
Geology and soils	Short-term minor adverse	No effects
Water resources		
• Surface water	Long-term minor adverse	No effects
• Hydrogeology/groundwater	No effects	No effects
• Floodplains	No effects	No effects
• Coastal zone management	No effects	No effects
Biological resources	Short-term minor adverse	No effects
Cultural resources	No effects	No effects
Socioeconomics		
• Economic development	Short-term minor beneficial	No effects
• Population	No effects	No effects
• Housing	No effects	No effects
• Quality of life	Short-term minor adverse	No effects
• Environmental justice	No effects	No effects
• Protection of children	No effects	No effects
Transportation	Short- and long-term minor adverse	No effects
Utilities	Long-term minor adverse and beneficial	No effects
Hazardous and toxic substances	No effects	No effects

susceptibility to wind and water erosion. However, these effects would be minimized by the use of appropriate best management practices for controlling runoff, erosion, and sedimentation.

5.1.1.6 Water Resources

Long-term minor adverse effects on surface water quality and storm water quantity would be expected. Land clearing and construction activities would increase erosion as well as increase dissolved solid, sediment, and petroleum hydrocarbon content in storm water runoff to surface waters. Development on the 300 Area and 600 Area would increase surface imperviousness and the quantity of storm water runoff and could potentially increase flooding. No effects on groundwater resources, floodplains, or the coastal zone would be expected.

5.1.1.7 Biological Resources

Short-term minor adverse effects on biological resources would be expected. Demolition and construction would deter wildlife from using the project areas during construction and would remove some trees in the 300 Area, potentially removing some roosting and nesting habitat for birds and bats. These effects would be considered minor. There are no sensitive species in the proposed project areas, and no effects on sensitive habitats or protected species would be expected.

5.1.1.8 Cultural Resources

No effects on cultural resources would be expected. The 300/600 Area Alternative would have no effect on NRHP eligible or potentially eligible archaeological sites because none are found within the project area or immediately surrounding areas. During implementation of activities associated with the proposed action, there would be the potential that previously unknown archaeological resources could be discovered. If such resources were discovered, the standard operating procedures outlined in the ICRMP would be followed. Any intact archaeological resources discovered would be recorded and evaluated for eligibility to the NRHP, in consultation with the Puerto Rico SHPO. Treatment of the discovery would be determined by the installation, again in consultation with the Puerto Rico SHPO.

5.1.1.9 Socioeconomics

Short-term minor beneficial and adverse effects would be expected. Short-term minor beneficial effects would be expected from the employment and income generated by the proposed demolition and construction activities. Short-term minor adverse effects on services and shopping and recreation facilities would be expected. The additional facilities and personnel associated with the proposed action would be expected to generate minor increased demand on on-post law, fire, and health care resources and on family support, shops, services, and recreation facilities. No effects would be expected on population, housing, schools, environmental justice, or protection of children.

5.1.1.10 Transportation

Short- and long-term minor adverse effects on traffic would be expected. The 300/600 Area Alternative would increase the number of permanent on-post personnel stationed at Fort Buchanan slightly and weekend personnel appreciably. The changes would be primarily attributable to construction vehicles; small changes in localized traffic patterns from the additional permanent, on-post personnel; and increases in weekend peak-period traffic.

5.1.1.11 Utilities

Long-term minor adverse and beneficial effects on Fort Buchanan utility systems would be expected. Beneficial effects would be expected from utility system upgrades made to accommodate the additional personnel visiting Fort Buchanan for training. Adverse effects would result from additional demands on utility systems, including the electrical system, and the generation of additional municipal solid waste and C&D debris at Fort Buchanan, which would consume capacity at island landfills.

5.1.1.12 Hazardous and Toxic Substances

No effects would be expected. No environmental or health effects resulting from the removal, handling, and disposal of hazardous materials would be expected during construction, demolition, or renovation activities. All proposed activities would be conducted in accordance with all applicable regulatory requirements. In addition, demolition waste that contains ACM or LBP would be handled in accordance with all applicable regulatory requirements.

5.1.2 Cumulative Effects

No adverse cumulative effects would be expected. No specific concurrent projects have been identified, and therefore no cumulative effects would be expected under the 300/600 Area Alternative.

5.1.3 Mitigation

Mitigation actions are used to reduce, avoid, or compensate for significant adverse effects. The EA did not identify the need for any mitigation measures.

5.1.4 No Action Alternative

No effects on any of the resource areas considered in the EA would be expected to result from implementing the No Action Alternative.

5.2 CONCLUSIONS

On the basis of the analyses performed in this EA, implementing the 300/600 Area Alternative would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Issuance of a FNSI is appropriate.

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SECTION 9.0

PERSONS CONSULTED

Borchardt, David, IMCOM-AR. Email to Sam Pett RE: 14 April 2008 teleconference notes. April 2008.

Fuentes, Iris, Housing Manager, Fort Buchanan Housing Office. January 2007.

Galvez, Jesus M., Environmental Engineer, Division Chief, 1st Mission Support Command Army Reserve Installation Management. November 2006–April 2007.

Gardner, Jeffrey, Cultural Resource Specialist, Brockington and Associates, Inc. February 2007.

Hernandez, Yamil, NEPA/Environmental Protection Specialist, 1st Mission Support Command Army Reserve Installation Management. November 2006–April 2007.

Johnson, Raymond, Fire Chief, Fort Buchanan Fire and Emergency Services. January 2007.

Mariani, Felix, Fort Buchanan, Directorate of Public Works, Environmental Division. November 2006–April 2007.

Negron, Anibal, Environmental Protection Specialist, Fort Buchanan, Directorate of Public Works, Environmental Division. November 2006–April 2007; April 2008.

Torres, Manuel, Master Planner, Fort Buchanan. November 2006–April 2007.

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SECTION 10.0

ACRONYMS AND ABBREVIATIONS

AAFES	Army & Air Force Exchange Service
ACM	asbestos-containing material
AFRC	Armed Forces Reserve Center
AQCR	Air-Quality Control Region
APE	Area of Potential Effect
AR	Army Regulation
AST	aboveground storage tank
BRAC	Base Realignment and Closure
C&D	construction and demolition
CFR	<i>Code of Federal Regulations</i>
CS	Combat Support
CZMA	Coastal Zone Management Act
DDESS	Department of Defense Domestic Dependent Military and Secondary Schools
DES	Directorate of Emergency Services
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FNSI	Finding of No Significant Impact
FY	fiscal year
ICRMP	Integrated Cultural Resources Management Plan
kV	kilovolt
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
mgd	million gallons per day
MEC	munitions and explosives of concern
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NRHP	National Register of Historic Places
OMS	Organizational Maintenance Shop
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PRASA	Puerto Rico Aqueduct and Sewer Authority
PREPA	Puerto Rico Electric Power Authority
PX	Post Exchange
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RRC	Regional Readiness Command
SHPO	State Historic Preservation Office
sf	square feet
USAR	U.S. Army Reserve
U.S.C.	<i>United States Code</i>
UST	underground storage tank

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APPENDIX A
Defense Base Closure and Realignment Commission
Recommendations

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DEFENSE BASE CLOSURE AND REALIGNMENT COMMISSION RECOMMENDATIONS

In relevant part, the BRAC Commission recommended the following actions related to Fort Buchanan.

RESERVE COMPONENT TRANSFORMATION IN PUERTO RICO

- *Secretary of Defense Recommendation:* “Close the US Army Reserve Center 1st Lieutenant Paul Lavergne, Bayamon, PR, and relocate the 973rd Combat Support (CS) Company into a new Armed Forces Reserve Center on United States Army Reserve property in Ceiba, PR, and relocate all other units into a new Armed Forces Reserve Center (AFRC) on Fort Buchanan, PR. Realign the US Army Reserve Center Captain E. Rubio Junior, Puerto Nuevo, PR, by relocating the 807th Signal Company into a new Armed Forces Reserve Center on Fort Buchanan, PR. The new AFRC on Fort Buchanan, PR, shall have the capability to accommodate units from the Puerto Rico Army Guard San Juan Readiness Center, San Juan, PR, if Puerto Rico decides to relocate those National Guard units.”
- *Commission Recommendations:* “The Commission found the Secretary’s recommendation consistent with the final selection criteria and force structure plan. Therefore, the Commission approved the recommendation of the Secretary.”

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APPENDIX B
Record of Non-applicability
and
Air Emissions Calculations

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RECORD OF NON-APPLICABILITY

In Accordance with the Clean Air Act—General Conformity Rule for
300/600 Area Alternative
for the Construction and Operation
of an Armed Forces Reserve Center at Fort Buchanan, Puerto Rico

13 May 2008

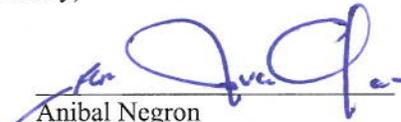
The Army proposes to construct and operate a 600-member AFRC at Fort Buchanan, Puerto Rico. Primary facilities would include an AFRC building, Organizational Maintenance Shop (OMS), and unit storage building. Buildings would be of permanent construction with HVAC, plumbing, mechanical, security, and electrical systems. Work performed to support the facilities would include land clearing, paving, fencing, general site improvements, and extension of utilities to serve the project. Force protection (physical security) measures would be incorporated into design of the facility, to include consideration of standoff distance from roads, parking areas, and vehicle unloading areas. The Dental Clinic (3,000 sf) on the 300 Area and a child development center (8,225 sf) fronting Crane Loop would be removed; the functions would be moved elsewhere on Fort Buchanan. The AFRC would be on a 4.2-acre parcel in the 300 Area (the approximate center of Fort Buchanan). The parcel is bounded by Chrisman Road to the northeast, Wilson Road to the southeast, and Crane Loop to the southwest and northwest. The OMS and storage facility would be on a 3.6-acre parcel in the 500 Area (in the western portion of Fort Buchanan), bounded by Columbus Street to the north and west, parking lots to the south, and open space to the east.

General conformity under the Clean Air Act, Section 176, has been evaluated according to the requirements of 40 CFR Part 93, Subpart B. The requirements of this rule are not applicable to this alternative because:

Total direct and indirect emissions from this alternative have been estimated at 0.7 tons PM₁₀ during the year in which the greatest levels of emissions are anticipated. These estimated rates are below the conformity threshold values established at 40 CFR 93.153 of 100 tons PM₁₀ and are not regionally significant.

Supported documentation and emission estimates:

- Are Attached
- Appear in the NEPA Documentation
- Other (Not Necessary)



Anibal Negron
Acting Chief Environmental Division, Fort Buchanan, PR

7/22/08

Date

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**Table B-1
Construction parameters—300/600 Area Alternative**

Project name	Year	Duration (days)	Clearing area (acres)	Building area (sq ft)	Landscaping (acres)	Paving (acres)	Days of clearing	Days of building	Days of landscaping	Days of paving
Building 312, Demolition	2007	30	0.18	0	0	0	18.9	0	0	0
AFRC Building, Clearing and grading	2007	60	5.8	0	0	0	37.81	0	0	0
AFRC Building, Building construction	2007	210	0	72039	0	0	0	132.33	0	0
AFRC Building, Landscaping	2007	45	0	0	0.83	0	0	0	28.36	0
AFRC Building, Paving	2007	45	0	0	0	4.14	0	0	0	28.36
OMS Building, Clearing and grading	2008	30	0.36	0	0	0	18.9	0	0	0
OMS Building, Building construction	2008	120	0	5437	0	0	0	75.62	0	0
OMS Building, Landscaping	2008	15	0	0	0.06	0	0	0	9.45	0
OMS Building, Paving	2008	15	0	0	0	0.23	0	0	0	9.45
OMS Storage Unit, Clearing and grading	2008	60	0.57	0	0	0	37.81	0	0	0
OMS Storage Unit, Building construction	2008	180	0	7472	0	0	0	113.42	0	0
OMS Storage Unit, Landscaping	2008	45	0	0	0.17	0	0	0	28.36	0
OMS Storage Unit, Paving	2008	45	0	0	0	0.23	0	0	0	28.36

Table B-2
Construction emissions roll-up—300/600 Area Alternative

Year	CO (tons)	NO _x (tons)	PM ₁₀ (tons)	PM _{2.5} (tons)	SO ₂ (tons)	VOC (tons)
2009	7.3	5.9	1.0	0.4	0.8	4.6
2010	1	0.7	0.1	0	0.1	0.8
Annual construction emissions						
	2009					
Construction activity	CO (tons)	NO_x (tons)	PM₁₀ (tons)	PM_{2.5} (tons)	SO₂ (tons)	VOC (tons)
Heavy equipment emissions	6.4	5.8	0.7	0.4	0.8	0.5
Worker trip emissions	1	0.1	0	0	0	0.1
Architectural coating emissions	0	0	0	0	0	4
Paving off gas emissions	0	0	0	0	0	0
Fugitive dust emissions	0	0	0.3	0	0	0
Total	7.3	5.9	1.0	0.4	0.8	4.6
Annual construction emissions						
	2010					
Construction activity	CO (tons)	NO_x (tons)	PM₁₀ (tons)	PM_{2.5} (tons)	SO₂ (tons)	VOC (tons)
Heavy equipment emissions	0.8	0.7	0	0	0.1	0.1
Worker trip emissions	0.1	0	0	0	0	0
Architectural coating emissions	0	0	0	0	0	0.7
Paving off gas emissions	0	0	0	0	0	0
Fugitive dust emissions	0	0	0	0	0	0
Total	1	0.7	0.1	0	0.1	0.79

Table B-3
Operational emissions roll-up—300/600 Area Alternative

Activity	CO (tpy)	NO _x (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)	SO ₂ (tpy)	VOC (tpy)
Ventilation, air-conditioning emissions	0.1	0.2	0	0	0	0
Employee commuting emissions	41.1	3.1	0.1	0.1	0.1	3.1
Total	41.2	3.2	0.1	0.1	0.1	3.1

**Table B-4
Ventilation and air conditioning emissions—300/600 Area Alternative**

Project name	Cooled area (sq ft)	Fuel used (cubic feet)	CO (tons)	NO_x (tons)	PM₁₀ (tons)	PM_{2.5} (tons)	SO₂ (tons)	VOC (tons)
AFRC Building, Operations	72039	2478142	0.1041	0.1239	0.0094	0.0094	0.0007	0.0068
OMS Building, Operations	7437	711720.9	0.0299	0.0356	0.0027	0.0027	0.0002	0.002
Total	79476	3189863	0.13	0.16	0.01	0.01	0	0.01

Sources: USEPA 1995, DOE 1999.

**Table B-5
Employee commuting emissions—300/600 Area Alternative**

Project name	Number of employees	Average commute	CO (tons)	NO_x (tons)	PM₁₀ (tons)	PM_{2.5} (tons)	SO₂ (tons)	VOC (tons)
Weekend Commuters, Operations	600	30	41.09	3.05	0.12	0.11	0.01	3.12

Source: USEPA 2003.

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APPENDIX C

Agency Review and Comment

[Preparer's note: Consultation with Puerto Rico agencies, including the Puerto Rico Environmental Quality Board, SHPO, and Department of Natural Resources, occurs at the same time as final document review. Upon the agencies' review of the Final Environmental Assessment, comments from the agencies on the document will be added to this appendix. Consultation with the U.S. Fish and Wildlife Service is being done in the same manner because it is protocol in Puerto Rico.]



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BUCHANAN
218 BROOKE STREET
FORT BUCHANAN, PUERTO RICO 00934-4206

REPLY TO
ATTENTION OF

Directorate of Public Works

JUL 29 2008

Mr. Javier Velez- Arocho
Secretary
Puerto Rico Department of Natural and Environmental Resources
P.O. Box 366147
San Juan, Puerto Rico 00936

DEPTO. DE RECURSOS
NATURALES Y AMBIENTALES
OFICINA DEL SECRETARIO
2008 JUL 29 PM 3:10

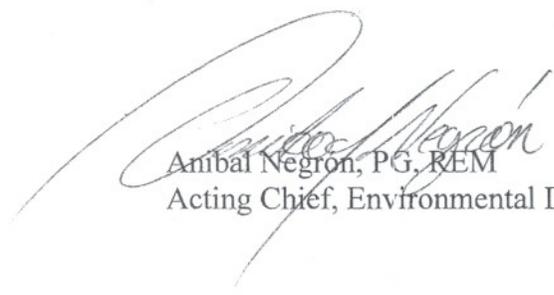
Dear Mr. Velez:

In accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the Code of Federal Regulations ([CFR] Parts 1500-1508) and the Army (32 CFR Part 651), Fort Buchanan must inform decision makers and the general public regarding the probable environmental and socioeconomic consequences of implementing the proposed actions and alternatives.

Enclosed is the Environmental Assessment of the Implementation of Base Realignment and Closure, (BRAC), at Fort Buchanan, Bayamon, Puerto Rico. Should you have any comments on the enclosed action, please submit within thirty (30) business days of receipt of this Environmental Assessment.

Our point of contact is Ms. Alicia Navedo, Environmental Conservation Manager, 787-707-3508, email: alicia.navedo@us.army.mil.

Sincerely,


Anibal Negron, PG, REM
Acting Chief, Environmental Division

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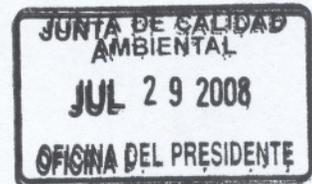
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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BUCHANAN
218 BROOKE STREET
FORT BUCHANAN, PUERTO RICO 00934-4206

REPLY TO
ATTENTION OF

Directorate of Public Works



JUL 29 2008

Mr. Carlos W. Lopez Freytes
Chairman, Environmental Quality Board
1308 Ponce de Leon Avenue
State Road 8838
El Cinco Sector
Rio Piedras, Puerto Rico 00926

Dear Mr. Lopez:

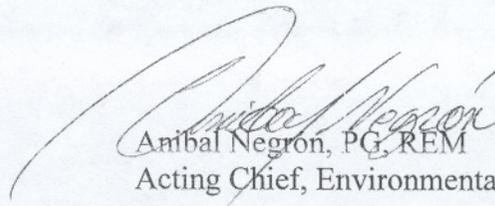
In accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the Code of Federal Regulations ([CFR] Parts 1500-1508) and the Army (32 CFR Part 651), Fort Buchanan must inform decision makers and the general public regarding the probable environmental and socioeconomic consequences of implementing the proposed actions and alternatives.

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Sincerely,

RECEIVED


Anibal Negron, PG, REM
Acting Chief, Environmental Division

COPY



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BUCHANAN
218 BROOKE STREET
FORT BUCHANAN, PUERTO RICO 00934-4206

REPLY TO
ATTENTION OF

Directorate of Public Works

JUL 30 2008

Mr. Jose A. Hernandez, Director
Carnegie Library
Ave. Constitución # 7
San Juan, PR 00901-2010

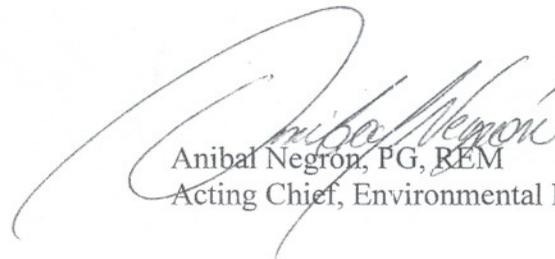
Dear Mr. Hernandez:

In accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the Code of Federal Regulations ([CFR] Parts 1500-1508) and the Army (32 CFR Part 651), Fort Buchanan must inform decision makers and the general public regarding the probable environmental and socioeconomic consequences of implementing the proposed actions and alternatives.

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Our point of contact is Ms. Alicia Navedo, Environmental Conservation Manager, 787-707-3508, email: alicia.navedo@us.army.mil.

Sincerely,



Anibal Negrón, PG, REM
Acting Chief, Environmental Division



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BIBLIOTECA CARNEGIE
7 Ponce de León Ave.
San Juan, PR 00901-2010



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BUCHANAN
218 BROOKE STREET
FORT BUCHANAN, PUERTO RICO 00934-4206

REPLY TO
ATTENTION OF

Directorate of Public Works

JUL 30 2008

Dr. Jose Luis Vega
Executive Director
Puerto Rico Institute of Culture
P.O. Box 9024184
San Juan, Puerto Rico 00902-4184

JUL 30 11 07 AM '08
DIRECCION EJECUTIVA
ICP RECIBIDO

Dear Dr. Vega:

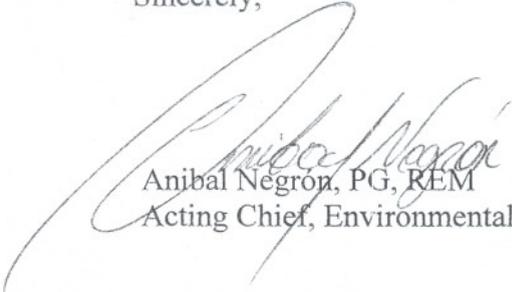
In accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 of the Code of Federal Regulations ([CFR] Parts 1500-1508) and the Army (32 CFR Part 651), Fort Buchanan must inform decision makers and the general public regarding the probable environmental and socioeconomic consequences of implementing the proposed actions and alternatives.

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Our point of contact is Ms. Alicia Navedo, Environmental Conservation Manager, 787-707-3508, email: alicia.navedo@us.army.mil.

Sincerely,

RECEIVED


Anibal Negron, PG, REM
Acting Chief, Environmental Division

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Invoice #: 53578
Publication: El Nuevo Dia
Run date(s): August 12, 2008
Keyword: Public Notice (2)
Size/Cost: \$1561.52

The US Army Garrison Fort Buchanan

prepared an Environmental Assessment (EA) that considers the proposed implementation of the Base Realignment and Closure (BRAC) Commission recommendations at Fort Buchanan, Puerto Rico. The EA identifies, evaluates, and documents the environmental and socioeconomic effects of facility demolition, construction, renovation, maintenance, and operation proposed to accommodate the changes mandated by the BRAC 2005 Commission.

A No Action Alternative is also evaluated.

Implementation of the proposed action is not expected to result in significant environmental impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FONSI) will be published in accordance with the National Environmental Policy Act. The EA and FONSI are available for review and comment for 30 days. Copies of the EA and FONSI can be obtained by contacting Mr. Anibal Negron at **787-707-3575**, or by e-mail requests to **anibal.negron1@us.army.mil**. Copies of the EA and FONSI are available for review at the **Carnegie Public Library, 7 Ponce de Leon Avenue, San Juan, PR 00901**. Comments on the EA and FONSI should be submitted to **Mr. Negron** by no later than 30 days after publication of this Notice of Availability.

El Fuerte Buchanan del Ejercito de los Estados Unidos

ha preparado una Evaluación Ambiental (EA) que considera la implementación de las recomendaciones del Programa de Realineamiento y Cierre de Bases del 2005 (BRAC 2005, por sus siglas en inglés). La EA identifica, evalúa y documenta los efectos ambientales y socio-económicos de la demolición, construcción, renovación, mantenimiento y operación propuesta para acomodar los cambios requeridos por BRAC 2005. La alternativa de no llevar a cabo la acción propuesta también fue evaluada. Sin embargo, no se espera que la alternativa propuesta resulte en impacto ambiental significativo. Por lo tanto se requiere solamente una Declaración de No Impacto Significativo (FONSI, por sus siglas en inglés) el cual será publicado de acuerdo con el Acta de la Política Pública Ambiental de los Estados Unidos. La EA y el FONSI están disponibles en la **Biblioteca Pública de Carnegie, 7 Avenida Ponce de León, San Juan** y también se puede comunicar con el **Sr. Anibal Negron**, al teléfono **787-707-3575**, ó por correo electrónico a **anibal.negron1@us.army.mil**.

Se aceptarán comentarios sobre la EA por 30 días desde la fecha de publicación de este aviso.

Job #: _____



COMMONWEALTH OF PUERTO RICO
Office of the Governor
Environmental Quality Board

Environmental Emergencies Response Area

August 27, 2008

Mr. Aníbal Negrón, P.G., REM
DPW Environmental Division
USAG Fort Buchanan, Puerto Rico

**RE: REVIEW OF THE ENVIRONMENTAL ASSESSMENT OF THE
IMPLEMENTATION OF BASE REALIGNMENT AND CLOSURE AT
FORT BUCHANAN, BAYAMÓN, PUERTO RICO, MAY 2008**

Dear Mr. Negrón:

The Puerto Rico Environmental Quality Board (PREQB) has completed its review of the Environmental Assessment of the Implementation of Base Realignment and Closure at Fort Buchanan, Bayamón, Puerto Rico, dated May 2008. Enclosed our comments.

Please remember that PREQB is always available to discuss the environmental assessments and investigations throughout the process. Having PREQB as an active participant, would expedite the review process and assure that the assessment are prepared taking in consideration the concerns of PREQB.

Please contact me at (787) 767-8181 X.6141 if you have any questions or comments about our review.

Cordially,

Wilmarie Rivera
Federal Facilities Coordinator

Technical Evaluation Environmental Assessment of the Implementation of Base Realignment and Closure, (BRAC), at Fort Buchanan, Bayamón, Puerto Rico

I. INTRODUCTION

This evaluation is of the Environmental Assessment (EA) of the Implementation of Base Realignment and Closure, (BRAC), at Fort Buchanan, Bayamón, Puerto Rico. The Army prepared the EA to report the probable environmental and socioeconomic consequences of implementing the proposed actions and alternatives.

II. GENERAL COMMENTS

1. There appears to be no discussion of impacts for the areas to be closed at Bayamón and Puerto Nuevo. This assessment should discuss the impacts to the areas to be closed in each applicable section of the EA. For example, how will the closing affect the local economy? What will happen to the old site? Will it be demolished? What are the plans for the old site?

III. PAGE-SPECIFIC COMMENTS

1. Page 1, Alternatives, Paragraph 1: Please clarify whether the area is identified as the 6500 Area or the 600 area in the second sentence of this paragraph.
2. Page 4-5, Section 4.5.2.1, Paragraph 2: Please include a discussion of the proximity of residential house to the construction sites and the potential noise impact on residents. Although this paragraph states that the use of heavy construction equipment would not normally occur during the night, it does not indicate that such activity will not occur. Should these activities result in elevated noise in adjacent residential areas, construction activities and the use of heavy construction equipment should not occur at night.
3. Page 4-9, Section 4.7.2.1: Please clarify whether hazardous substances will be stored and used at each facility and discuss the methods or procedures that will be employed for disposing of hazardous wastes associated with on-going operations at each building.
4. Page 4-11, Section 4.8.2.1: Short-term impacts on biological resources include the removal of trees that provide potential roosting and nesting habitat. Please discuss the percentage loss of habitat in comparison to the remaining habitat unaffected by the proposed development. Please clarify why the loss of habitat is not discussed under the second paragraph, which presents long-term impacts of the proposed development.
5. Page 4-17, Section 4.10.2.1: Please clarify what mitigation measures will be employed to address adverse impacts on fire department resources if the fire department indicates they require additional resources for the preferred alternative.

6. Page 4-22, Section 4.12.2.1: Please discuss what disposal methods will be employed for wastes resulting from vehicle maintenance activities at the Area 600 building and the capacity of the proposed system for handling this type of waste.
7. Page 4-26, Section 4.13.2.1: Please clarify why the long-term effects associated with the operation of each facility is not discussed in this section. It appears that this section only addresses impacts associated with the construction of each facility; however, due to the proposed operation of a vehicle maintenance facility, a discussion of potential long-term effects associated with the use and disposal of hazardous or toxic substances should be discussed.
8. Page 4-27, Section 4.14: Please include the effects on the areas to be closed at Bayamón and Puerto Nuevo in discussing the cumulative effects of these alternatives. For example, how will the closing affect the local economy? What will happen to the old site? Will it be demolished? What are the plans for the old site?
9. Page 4-27, Section 4.15: The EA identified potential impacts that may require mitigation measures, such as upgrades to the electrical system, adverse impacts on landfills and the need for additional fire department resources. Refer to Sections 4.10.2.1 and 4.12.2.1 for additional discussion of these potential adverse impacts associated with the preferred alternative. Therefore, this section should be revised to discuss the potential mitigation measures that may be required.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BUCHANAN
218 BROOKE STREET
FORT BUCHANAN, PUERTO RICO 00934-4206

COPY

Directorate of Public Works

OCT - 2 2008

Hon. Javier J. Rúa Jovet
Chairman, Environmental Quality Board
1375 Ponce De León Avenue
State Road No. 8838
Sector El Cinco
Río Piedras, P.R. 00926-2604

Revised per:
JUNTA DE CALIDAD
AMBIENTAL
OCT 02 2008
Ruiz Calderón
OFICINA DEL PRESIDENTE

Dear Mr. Rúa,

Reference is made to your letter dated 27 August 2008 that include your Agency inputs and comments associated with the review of Environmental Assessment for the implementation of the Base Realignment and Closure (BRAC) action at US Army Garrison Fort Buchanan, Puerto Rico.

Enclosed is a copy of our agency response addressing your concerns. Should you have additional questions on the subject action, please submit within thirty (30) business days of receipt of this response.

Our point of contact is Mr. Yamil Hernandez, Reserve Environmental Conservation Manager, at telephone 787-707-2553 or email Yamil.hernandez@us.army.mil.

Enclosure

Anibal Negron
ANIBAL NEGRON, P.C., REM
Acting Chief Environmental Division

ENCLOSURE

RESPONSE TO Technical Evaluation Environmental Assessment of the Implementation of Base Realignment and Closure, (BRAC), at Fort Buchanan, Bayamón, Puerto Rico

GENERAL COMMENTS:

Comment: There appears to be no discussion of impacts for the areas to be closed at Bayamón and Puerto Nuevo. This assessment should discuss the impacts to the areas to be closed in each applicable section of the EA. For example, how will the closing affect the local economy? What will happen to the old site? Will it be demolished? What are the plans for the old site?

Response: The 1 LT Paul Lavergne US Army Reserve Center (USARC), Bayamón, will be closed, but that closure will not affect the action at Fort Buchanan, as the units from that USARC will be moved to a new US Armed Forces Reserve Center (AFRC) in Ceiba (on the former Naval Station Roosevelt Roads). The 807th Signal Company will move from the USARC in Puerto Nuevo to a new AFRC at Fort Buchanan, but the USARC at Puerto Nuevo will not close. Instead, some units from that center will relocate and space made available will be occupied by other units. Therefore, no discussion of USARC closure is relevant to this EA.

PAGE-SPECIFIC COMMENTS:

Comment: Page 1, Alternatives, Paragraph 1: Please clarify whether the area is identified as the 6500 Area or the 600 area in the second sentence of this paragraph.

Response: The proposed action would occur at Fort Buchanan in the 300 Area and the 600 Area.

Comment: Page 4-5, Section 4.5.2.1, Paragraph 2: Please include a discussion of the proximity of residential house to the construction sites and the potential noise impact on residents. Although this paragraph states that the use of heavy construction equipment would not normally occur during the night, it does not indicate that such activity will not occur. Should these activities result in elevated noise in adjacent residential areas, construction activities and the use of heavy construction equipment should not occur at night.

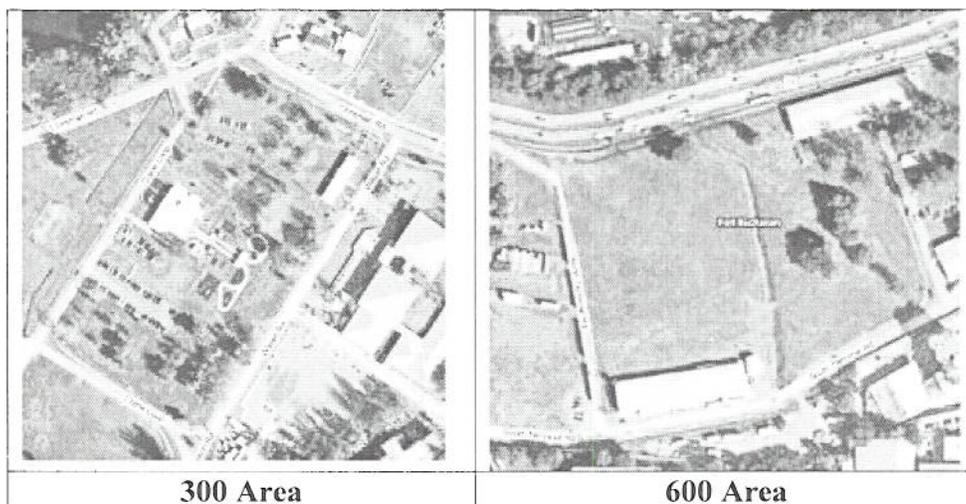
Response: There would be no construction in areas near neighborhoods where noise impact might be a concern. Even Fort Buchanan's family housing is more than 1,000 feet from the proposed construction site. Therefore, noise in residential areas on Fort Buchanan or near the installation should not be a problem. While Fort Buchanan will do everything possible to ensure that construction is limited to day time hours (7 a.m. to 5 p.m.), BRAC law requires that all BRAC 2005 construction and movements be completed by September, 2011, and if adherence to this schedule requires working on some evenings and/or weekends, Fort Buchanan will comply with BRAC law.

Comment: Page 4-9, Section 4.7.2.1: Please clarify whether hazardous substances will be stored and used at each facility and discuss the methods or procedures that will be employed for disposing of hazardous wastes associated with on-going operations at each building.

Response: Fort Buchanan has a Spill Prevention, Control, and Countermeasure Plan (SPCCP) and is a RCRA Small Quantity Generator of hazardous waste under Identification Number PR 1210099999. Activities at the new AFRC will not require the use of hazardous materials and will not generate hazardous waste. Activities at the OMS will use hazardous materials and generate hazardous wastes, however, and the Fort Buchanan SPCCP will be amended to include contingencies for the facility.

Comment: Page 4-11, Section 4.8.2.1: Short-term impacts on biological resources include the removal of trees that provide potential roosting and nesting habitat. Please discuss the percentage loss of habitat in comparison to the remaining habitat unaffected by the proposed development. Please clarify why the loss of habitat is not discussed under the second paragraph, which presents long-term impacts of the proposed development.

Response: It is true that construction of the AFRC and the OMS will remove some natural habitat from Fort Buchanan. However, the habitat that will be lost is not of high value and does not support any endangered or threatened species of the United States or Puerto Rico or species of special concern in Puerto Rico. (Habitat in the 600 area is primarily maintained grass; habitat in the 300 Area is primarily maintained grass with scattered trees. See photo inserts below.) Habitat of high value on Fort Buchanan—the mogotes and wooded southern areas—are not near the proposed project sites and will not be disturbed by the proposed action. With the purpose of the EA being to identify potential significant adverse effects, extensive discussion of the effects of losing habitat that does not support protected species was not provided in the EA.



Comment: Page 4-17, Section 4.10.2.1: Please clarify what mitigation measures will be

employed to address adverse impacts on fire department resources if the fire department indicates they require additional resources for the preferred alternative.

Response: Fort Buchanan has its own Fire Department and the likely impact to the Department will be a need for additional firemen but not necessarily additional equipment. Also, any additional demand on the Fire Department will be minimized considering that the new buildings will have fire protection alarms, sprinkler systems, standpipes, and other equipment that will both prevent damaging fires and facilitate firefighting work.

Comment: Page 4-22, Section 4.12.2.1 : Please discuss what disposal methods will be employed for wastes resulting from vehicle maintenance activities at the Area 600 building and the capacity of the proposed system for handling this type of waste.

Response: All new facilities will comply with all Federal and Puerto Rico requirements, including those for POI.s and hazardous materials, as well as NPDES permit provisions. The OMS will have an oil/water separator with a pretreatment system to minimize any exposure of waste water to storm water and the storm sewer system. For the purposes of the EA, an extensive discussion of these protocols was not germane to the determination of no significant effect in the EA.

Comment: Page 4-26, Section 4.13.2.1 : Please clarify why the long-term effects associated with the operation of each facility is not discussed in this section. It appears that this section only addresses impacts associated with the construction of each facility; however, due to the proposed operation of a vehicle maintenance facility, a discussion of potential long-term effects associated with the use and disposal of hazardous or toxic substances should be discussed.

Response: Because Fort Buchanan will strictly comply with its SPCCP, the assumption of the EA is that there will be no long-term adverse effects associated with the new facilities and their operation and related to hazardous materials and wastes. Fort Buchanan is considered to have no adverse effect, for the purposes of the EA, as long as it remains in compliance with its permits and approved plans. While some adverse environmental effects on the environment are inescapable with the operation of a vehicle maintenance facility, adherence to the SPCCP will keep those effects within the range of tolerance and below the level of significance.

Comment: Page 4-27, Section 4.14: Please include the effects on the areas to be closed at Bayamón and Puerto Nuevo in discussing the cumulative effects of these alternatives. For example, how will the closing affect the local economy? What will happen to the old site? Will it be demolished? What are the plans for the old site?

Response: As noted above, the Puerto Nuevo USARC is not closing, and closure of the USARC in Bayamón is not related to the subject action of the Fort Buchanan EA. Please note, however, that the Bayamón USARC site bordered by industrial land uses with manufacturing plants—such as Goya, Bohio, and a liquified petroleum distribution plant (DANA). Ceasing operations at the USARC at Bayamón should, therefore, not produce any short- or long-term effects on the surrounding land users.

Comment: Page 4-27, Section 4.15: The EA identified potential impacts that may require mitigation measures, such as upgrades to the electrical system, adverse impacts on landfills and the need for additional fire department resources. Refer to Sections 4.10.2.1 and 4.12.2.1 for additional discussion of these potential adverse impacts associated with the preferred alternative. Therefore, this section should be revised to discuss the potential mitigation measures that may be required.

Response: While it is true that the proposed action would have some adverse effects, as noted above, none of the effects identified in the EA were considered to be significant. The Army does not, therefore, intend to implement mitigation measures associated with the proposed action. All identified adverse effects are below the level of significance and can be ameliorated with conventional means. Fort Buchanan is discussing possible solutions to the electrical system upgrade with PREPA—which would not involve any major changes to PREPA itself, but instead a substation upgrade on Fort Buchanan; waste from demolition of the CDC and Dental Clinic will be recycled in accordance with Army policy; and impacts on the Fire Department are well within the realm of normal for a growing installation.

--NOTHING FOLLOWS--